THE YEAR-BOOK OF TREATMENT FOR 1899.

AR-BOOK OF TREATMENT FOR 1889

A Rational Dietary for Infants.

This series of Foods has been designed to supply for the first time a need in the rational dietary of infants fed by hand. None of the substitutes for mother's milk have hitherto been physiologically accurate. Especially is this so with the diluted cow's milk given usually in the earlier days of infant life.

The following table enables one to appreciate the difference between—

Cow's Milk—as sold in Towns.		Human Milk—direct from Breast.	
Reaction.	Acid.	Reaction.	Alkaline.
Specific gravity	1·031	Specific gravity	1·027
Water	87·0	Water	87·5
Fat	3·5	Fat	3·8
Casein	3·0	Casein	1·0
Albumin	0·5	Albumin	1·2
Milk Sugar	4·5	Milk Sugar	6·2
Bacteria	very numerous	Bacteria	absent

Thus cow's milk contains an excess of casein which curdles in the infant's stomach, and a deficiency in soluble albumin and sugar. Condensed milk, on the other hand, contains an excess of sugar, but a decided deficiency in fat and soluble albumin, and a slight deficiency in casein. We have therefore endeavoured successfully to produce two complete Foods which are, physiologically, practically the same as the mother's milk. These are—

The "Allenburys" Milk Food No. 1,

Which is prepared in the form of a powder, is made from fresh cow's milk, from which, after the proximate composition has been ascertained, the excess of casein is removed, and the deficiency in fat, soluble albumin, and milk sugar corrected. The method of preparation renders this food sterile, and boiled water alone is required in preparing it for use.

Infants reared by hand should be brought up on this food until they are three months old.

If the child be strong and able to assimilate the food, it is advisable to now begin using

The "Allenburys" Milk Food No. 2.

This food, to meet the increasing requirements of the digestive apparatus, contains, besides the constituents of "First Food," maltose, with a small proportion of dextrine, together with soluble phosphates derived from whole meal. There is, however, no unconverted starch left in the food which at this age the infant would be unable to digest.

Experience has shown conclusively that after five or six months the infant can be most advantageously reared on

The "Allenburys" Malted Food No. 3.

This has been manufactured by us for many years after the formula of Liebig, but by improved methods. The basis of the food is fine wheaten flour rich in nitrogen, with this advantage, that a large proportion, but not all the starch, is converted by the action of Malt Extract. The proportions are so arranged that the infant economy is not paralysed, as with some foods, by having everything digested for it, while on the other hand it is not given too much starch to digest. This food can be most successfully given when the mother's milk is beginning to fail both in quantity and richness, without the child being actually weaned. In this way a gradual transition can be effected from the natural to the full use of the artificial food.

It has been found already that this series of desiccated foods have proved invaluable on board ship, especially in the case when children have to be taken at an early age to India. It is found that owing to their careful preparation the foods keep well in hot climates, and the infant is shielded from the risk of bacterial infections by polluted milk. All risk is removed if only the water used be sterilised by well boiling.

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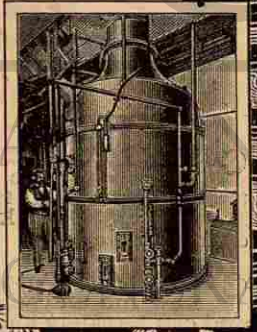

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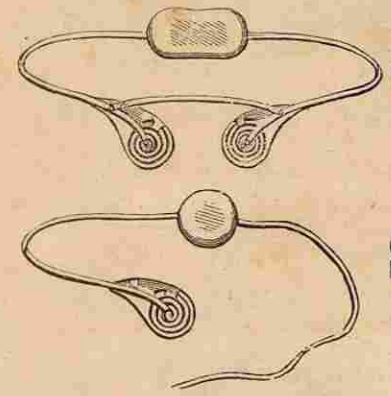

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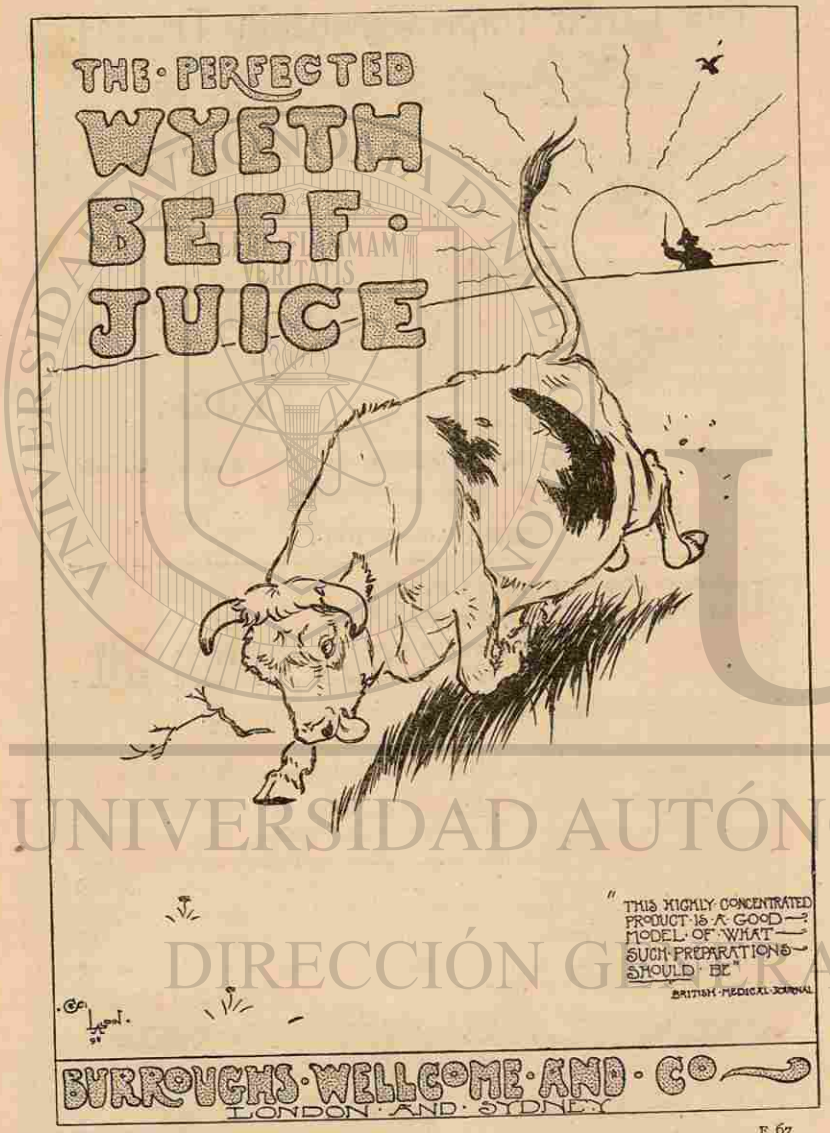

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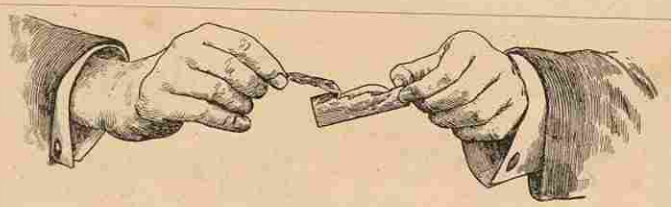

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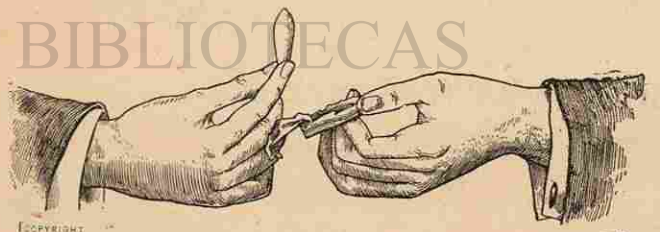

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The Extern Midwifery-Assistant is appointed every three months.

The Ophthalmic House-Surgeon is appointed every six months by the Ophthalmic Surgeons. All the above officers receive a salary of £80 per annum whilst resident.

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Assistant-Surgeons—Mr. Cripps, Mr. Bruce Clarke, Mr. Bowlby, Mr. Lockwood, Mr. D'Arcy Power.
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THE

YEAR-BOOK OF TREATMENT

FOR 1899

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FOR

1899

A CRITICAL REVIEW FOR PRACTITIONERS OF MEDICINE AND SURGERY

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PREFACE.

For this, the fifteenth annual issue of the "Year-Book of Treatment," only a few words of introduction are required. The book is now generally acknowledged as indispensable to all members of the medical profession who endeavour to keep themselves abreast of progress in therapeutics. A new feature in the present volume is an article on the Open-air Treatment of Phthisis by Dr. Burton-Fanning, who has had practical experience of the method at Cromer. The other contributors are the same as last year, with one exception, Dr. Vincent Harris, Physician to the City of London Hospital for Diseases of the Chest, and Examining Physician to the Royal National Hospital for Consumption, Ventnor, has summarised the work on Diseases of the Lungs and Organs of Respiration published during the past year.

It is hoped that this issue of the "Year-Book" will be found as useful as the previous editions in enabling the busy practitioner to get the new knowledge suitable for his needs *cito, tuto et jucunde.*

THE EDITOR.

January, 1899.

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AND

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Extra Physician to the Royal Hospital for Sick Children, Edinburgh.

HEART DISEASE IN GENERAL.

SINCE the last volume of the "Year-Book" was published a considerable amount of work has been done upon diseases of the circulation, and several important books have been brought out.

Immediately after its appearance in the end of 1897, a valuable work upon the nature and management of heart failure was published by Morison (Cardiac Failure and its Treatment, with special reference to the use of baths and exercises: London, 1897). Although this work is mainly intended to serve as a guide-book to the treatment of cardiac failure, it is full of interesting and important observations upon heart disease in many different forms. The portion of the work devoted to means of investigation not only contains a most excellent summary of our present methods, but by the application of physiological and pathological facts, it is to be regarded as of much utility, and in it, as well as in the succeeding portions which deal with the effects of cardiac failure on the other systems of the body, Morison shows a wide acquaintance with previous and contemporary literature. The following section on the neuro-muscular and hæmic factors in their bearing upon prognosis and treatment is full of ingenious suggestions. In regard to the general treatment

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of cardiac failure, Morison emphasises the importance of managing the neural factor in disease as being of the highest importance. Sleeplessness and restlessness are to be combated, not merely by the administration of hypnotics, but by bringing up the condition of the blood to an adequate level. The author, when considering the digitalis group of cardiac remedies, in regard to the drug treatment of the muscular factor, is of opinion that the form of affection in which cardiac tonics are to be employed with most caution is sigmoid valvular reflux, and this conclusion is based not only upon experience in aortic mischief, but also in pulmonary incompetence. He strongly advocates the importance of belladonna and its congeners as accelerant stimulants in many cases in which the digitalis group may be contra indicated.

Turning to the pulmonic and hæmic factors, he sets himself to answer the question how to reduce advantageously excessive pressure in the right heart and venous system, and classifies these various methods under the heads of diet, purgation, bleeding and posture. Dry diet, originally suggested by Hope, is strongly commended. Aperient remedies, and more especially mercury, are also shown to be of eminent service. Blood-letting, which after being for a long period banned as a piece of therapeutic iniquity, has during recent years been found invaluable in suitable cases, has the cordial approval of the author. The orthopnœic position is demonstrated as a matter of the highest utility, and Morison mentions that even though the sitting posture should produce anasarca of the limbs, this is to be regarded as to some extent a natural provision for withdrawing a certain amount of blood from a turgid circulation. The author wisely emphasises the disadvantage of allowing a patient to remain in orthopnœa and insomnia, adding that the sufferer must be permitted to indulge in sleep in any position, totally regardless of scientific hydraulics. The last matter to which attention is directed in this section of the book is the utility of oxygen as an inhalation. This, again, cannot be regarded as a novelty, seeing that Hope in one of the earlier editions of his great work commends its employment.

The rest of the work is almost entirely taken up with the treatment of cardiac failure by baths and exercises. After giving a historical retrospect of the use of baths in the treatment of circulatory disorders, Morison gives the analysis of the most important waters of Nauheim employed for bathing purposes, and afterwards describes how artificial baths by various methods may be introduced. He next fully describes the mode of applying such baths, and then proceeds to discuss their

effects. In this connection he records 14 cases under treatment, some at Nauheim, others by means of artificial baths. He agrees with the general conclusion that such baths raise the blood pressure, sometimes with retardation, sometimes with acceleration of the pulse. As to the alteration in the size of the heart, he writes with caution: "That the volume of the heart is diminished *pari passu* with the improved condition of a cardiac patient, I, and I presume all others who have dealt with such matters, are prepared to concede; but I confess that even the apparent immediate shrinkage of the organ as a consequence of bathing has not been perceived by me in any such degree as to attribute it to any other circumstance than the varying position occupied by the organ, regulating its own pulsations under the disturbing influences of the exertion, and changing conditions of temperature and gravitation incidental to the act of bathing." The effect of the baths upon the respiration, shown by diminution of frequency and increase of depth, is noticed, and the author quotes the observations of Groedel that respiratory power, especially as regards expiration, undergoes increase during bathing. The cutaneous effects, as shown by reddening of the surface, are believed by Morison to be produced by the carbonic acid gas; and the increase in the renal secretion, ascribed to a raising of propulsive blood pressure, is regarded by him as evidence of beneficial action. Morison believes that the effect of these baths is partly due to their stimulant effect on the skin, partly to the alternating exertion and repose involved in the act of bathing. In treating this subject, the author states that he has carefully refrained from using the language of enthusiasm, and that he has contented himself with the narration of a series of objective facts, from which he has endeavoured to draw the conclusions to which they seem to point: "The most cautious estimate of the value of the balneological treatment of cardiac failure is thus, in my opinion, justified in regarding it, skilfully and patiently administered, as a method which may singly in some cases, and in combination with other remedies in others, effect much good. But believing, as I do, with August Schott, that baths are a 'kind of gymnastics,' I do not consider that they have either the power or the scope, as a therapeutic agent, of the more active movements to be described presently, but that they may be used with benefit when the latter are inadmissible, as will be stated in the context, or together with these when they can be safely employed. It might be argued that if the baths are but a milder form of gymnastics, as the greater includes the less, gymnastics alone should be able to accomplish

all that the baths do. But such a conclusion would be erroneous, as it loses sight of the effects of temperature and gaseous and mineral stimulation of the peripheral nervous system. This is not unimportant, for a cumulative stimulation of the central nervous system by reflexion or continuation into the intrinsic nerve centres of the heart, and a general effect upon the vasomotor nerves may, as I have already stated, render more lasting impressions which might otherwise be fugacious."

The gymnastic treatment of heart disease commences with a consideration of the work of Ling, Stokes, Zander and Schott, which is followed by a consideration of passive exercise or massage, mechanical exercise, as used by Zander, and resistance exercise, as practised at Nauheim. All of these are fully described, and the analysis of the resistance exercises is accompanied by a series of excellent pictorial representations. The methods of administration of these movements and their regulation are also carefully given.

As an aid to estimating the effects of mechanical treatment of heart disease, Morison has devised a simple instrument by means of which the amount of force employed in the movements may be regulated. The author summarises the facts of eleven cases treated by resistance exercises, and proceeds to analyse their effects upon the heart. Like everyone who has taken the trouble to observe facts connected with resistance exercises, Morison acknowledges a reduction in the size of the area of cardiac dulness, but he is convinced—and it is impossible not to agree with him in his conclusion—that the diminution in the size is probably due to enlargement of the size of the chest and alteration in the position and outline of the heart. That there is greater lung expansion is proved by the author. The increased vigour of the circulation is accompanied or followed by the disappearance of evidences of backward pressure, so that catarrhs of mucous membranes, engorgements of solid viscera, effusions into serous cavities, and œdema of dependent parts disappear.

As to the persistence of such improvement, the author is inclined to believe that the effects may last for a considerable time. Morison gives an ingenious explanation of the effects of these exercises. The total result of carefully executed movements is cardiac retardation; this varies inversely as peripheral pressure: the less frequent the action of a powerful heart, the larger the amount of blood projected by each systole into the arteries. "The peripheral vascular pressure . . . is associated with a proportionate lowering of arterial tension due to the vasomotor conditions induced by the raised peripheral pressure." Morison

follows the exhaustive analysis of these modern mechanical methods by a consideration of the cases suitable for the various means.

Another important work which has appeared since the publication of last "Year-Book" is the third edition of Balfour's now classical "Clinical Lectures on Diseases of the Heart and Aorta" (London, 1898). While the form of the lectures remains practically as in the two previous editions, advantage has been taken of its third appearance to make a considerable number of alterations and additions. Not merely has the author introduced a considerable amount of observation and investigation resembling in its nature much of the work which was incorporated in his charming treatise on "The Senile Heart," but he has also added a good deal bearing directly on cardiac therapeutics. The former scarcely falls under the direct notice of a work specially devoted to treatment. On turning to the lecture on the therapeutics of cardiac disease, it is interesting to observe echoes of the discussion on cardiac therapeutics which took place in the Medico-Chirurgical Society of Edinburgh three sessions ago, as was fully reported in the "Year-Book of Treatment" for 1896. The key-note to Balfour's principles of treatment is to be found in the following paragraph: "In estimating the value of any treatment, it is an unwise error to suppose that recovery or improvement has been necessarily due to the use of any special drug. In past ages many cardiac patients recovered from ruptured compensation without any material aid or drugs, and in the present day many recover, even after dropsy has set in, under the influence of diet and rest alone; and this enables us to undertand the recoveries that often take place under the use of drugs of no great activity. Powerful drugs are always potent for evil as well as for good, and in the hands of the less skilful, the less active drug may be actually more useful than one which is more energetic, with the management of which the practitioner is less acquainted." Balfour pronounces what can only be called a eulogistic panegyric upon digitalis, emphasising its powerful influence upon the muscular wall of the heart, and the muscular coat of the arterioles. He allows that the effects on the circulation are partly due to the action of the drug on the cardio-inhibitory centre, but he admits that the action on the muscles is quite sufficient to account for all the phenomena observed. He draws a clear distinction between the abnormally slow (by which he means infrequent) pulse of digitalis saturation, and the rapid (*i.e.* frequent), irregular pulse of digitalis poisoning; the former of which he regards as quite devoid of danger, while the latter is not unattended by risk. He

refers to the fact that Corrigan long ago gave a warning as regards the use of digitalis in aortic incompetence—a direct consequence of his idea that the drug was purely sedative with a tendency towards prolongation of the diastole, which could only be regarded as a source of danger. Balfour holds it to be a very instructive proof of how ill-understood the true action of digitalis is even yet, that similar ideas are still upheld; and states that the prevalence of such a conception is a proof of how theory has been allowed to usurp the place of observation, since cursory observation is enough to show that undue prolongation of the diastole is never requisite to enable us to obtain all the benefit we desire.

After reviewing Fraser's observations on strophanthus, the author asserts that, like all its congeners of the same natural order of plants, strophanthus is a cardiac poison, and not a cardiac tonic. It forces the heart into increased energy of movement, without providing for any corresponding improvement in its metabolism, so that the heart must draw upon its reserve, and the patient is only saved from dire disaster by the benefit he derives from rest, warmth, and nutritious food. Balfour holds, therefore, that the drug stimulates and exhausts the energy of the heart, that it is uncertain in its dose, and may be dangerous in its action; while, though not cumulative, it may be injurious, and even fatal without warning; so that, from this point of view, there may be worse things than the early indications of saturation which digitalis gives in those symptoms we are accustomed to ascribe to accumulation.

In regard to the modern mechanical methods of treatment, Balfour does not condescend to make any remarks, except in regard to the advantage of moderate and regulated bodily exertion, as originally recommended by Stokes.

Amongst works of importance in their bearing upon cardiac disease, must be mentioned the latest volume of Allbutt's "System of Medicine" (vol. v., London, 1898). It contains a most excellent account, compressed into wonderfully small space, of congenital malformations, by Laurence Humphry. This is exceedingly well arranged, and contains the very latest observations which have been made upon such diseases. An admirable account of the diseases of the pericardium is furnished by F. T. Roberts. In his remarks upon the treatment of pericarditis, the author seems to agree with Caton in believing that the effects of the disease may be minimised by counter-irritation; while, as regards paracentesis, he advocates the use of the aspirator. For pyopericardium, Roberts advocates solely surgical methods, conducted as promptly as possible, by means of free incision with all modern precautions.

Throughout the whole of this article the most recent observations, such as those of John Broadbent, Rotch, and Ewart, are fully taken advantage of. The functional disorders of the heart are described by the editor himself. Those which are discussed in this section are, for the most part, the motor disorders, such as palpitation, tachycardia, and bradycardia. As regards paroxysmal tachycardia, the author is inclined to give a less grave prognosis than is commonly accepted. In addition to ordinary methods of treatment, he has found mechanical measures, and even such active exercise as cycling, to be of much use. Mechanical strain of the heart also falls, as is right, to the editor, and contains a most useful account of the condition. A short summary of injuries by electric currents of high pressure is furnished by Oliver, and Dreschfeld sums up endocarditis. In this section, although he still retains the old classification into simple and malignant, which modern bacteriology has done so much to discourage, the diseases in question are considered from the most recent point of view. As a prophylactic measure he adopts the plan introduced by Caton, of repeated counter-irritation by small blisters; and in undoubted infective endocarditis of a grave type, he recommends the trial of antistreptococcic serum, which was mentioned in last issue of the "Year-Book."

The diseases of the myocardium have been entrusted to Douglas Powell. They are succinctly, if briefly, summed up, and the questions of treatment falling to be considered under the different heads are excellent. Powell, in the early conditions of myocardial implication, strongly urges the advantage of exercise, baths, and regulation of the diet, with general tonic remedies.

The editor himself discusses aortic diseases. One of Allbutt's remarks in regard to treatment deserves to be termed axiomatic: "Give your prognosis with the best suppositions; treat your patient on the worst." Careful regulation of the diet, strict precautions as to alcohol, the employment of graduated exercise—such must ever be carefully studied. Allbutt has no fear of digitalis in aortic incompetence when judiciously given; and, in comparison with it, he appears to find strophanthus disappointing. The scientific employment of the nitrites, and the administration of morphine hypodermically also find favour in his eyes. The section on mitral diseases is written by Sansom, and in it the treatment both of incompetence and stenosis is most fully discussed. Since there are few vexed questions or important changes arising in connection with these affections, it is, however, unnecessary to deal largely with this section.

Many papers have appeared dealing with the anatomy, physiology, pathology, symptomatology, and diagnosis of affections of the circulation, but it is unnecessary, in a work devoted specially to treatment, to refer to any of these that do not bear directly upon prognosis and therapeutics.

PHYSICAL EXAMINATION.

Dalgarno and **Galloway** (*Lancet*, 1897, 2., p. 168) show the advantage of employing the X-rays in the diagnosis of aneurysm, and **Aron** (*Deutsch. med. Wochenschrift*, vol. xxiii., p. 342, 1897), goes even further in extolling the importance of radiography in the early diagnosis of aneurysm.

Bouchard, in an important contribution upon the applications of radioscope in chest affections (*Compt. Rend. de l'Acad. de Sc.*, 1897, p. 1068), shows, by means of the X-rays, it was possible to make out an early case of cancer of the œsophagus; while in another instance a dilatation of the aorta associated with incompetence was revealed.

Schott has conducted (*Deutsch. med. Wochschft.*, vol. xxiii., p. 495, 1897) an interesting investigation with the X-rays upon the influence of hard muscular exercise in producing dilatation of the heart, and found that it is remarkably easy to cause transient dilatation by means of strenuous exertion

Satterthwaite (*Med. Record*, li., p. 508, 1897), as the result of a good many investigations, strongly urges the employment of fluorography for determining the position, size, and movements of the heart.

PROGNOSIS IN HEART DISEASE.

A very important paper from the point of view of prognosis is that of Gillespie, including the analyses of 2,368 cases of cardiac disease admitted to the Edinburgh Royal Infirmary during the years 1891 to 1896 ("Edinburgh Hospital Reports, 1898," vol. v., p. 31). Since the treatment of cardiac disease is so intimately associated with the great facts of prognosis, some of the statistics which he gives must be cited.

Taking the general facts first, we find that the aortic lesions are more fatal than the mitral, and that double lesions, whether mitral or aortic, show a much greater mortality than those of either valve singly. In males, the aortic lesions do not show nearly such a high death-rate as in females, while that of the mitral cases is also less. Lesions of both valves prove more fatal in males than females.

Of the aortic lesions, aortic incompetence shows the highest death-rate, chiefly due to the great mortality among the females admitted with this, 35·7 per cent., against 16·5 per cent. in the males. Aortic stenosis, again, causes 20 per cent. of deaths among females, but only 6·6 per cent. among males; while the double aortic lesion proves fatal in 13·7 of every one hundred males, and in nine in each one hundred females.

Similarly, mitral incompetence and mitral-stenosis give a higher mortality among the females, the double mitral lesion among the males; while in the total of both sexes mitral incompetence proves the most fatal, with the double lesion close behind it.

In the cases of aortic and mitral disease, those with aortic incompetence and each of the three mitral lesions prove most fatal, 25·2 per cent., and equally so in both sexes; next in order come those cases in which the aortic valve is both incompetent and stenosed in addition to mitral disease, and here the death-rate among the males exceeds that of the females; where the aortic valve iss tenosed along with mitral lesions the rate is lower, but that among the females exceeds that among the males.

The cases in which aortic incompetence and mitral stenosis were diagnosed to be coexistent show the highest mortality in the total for both sexes, and for each sex singly; next in those suffering from a double aortic lesion and mitral stenosis, two out of the total three are female cases; those with stenosis of both valves show a very similar mortality; while double lesions of both valves, incompetence of both valves, and double aortic lesions with mitral incompetence, follow in that order and close together. Only one patient died of those diagnosed as having aortic stenosis and mitral incompetence.

Comparison of the facts of the various valvular lesions shows that the incidence of mortality, analysed with regard to age, differs markedly from the incidence of admissions. As regards all the cases with aortic lesions no deaths are shown until after the age of 19. The rates for each period, until 69 is passed, are very similar; the male members, however, exhibit a marked rise between the years of 20 and 29; and the females a great excess over the males from the age of 39 to 69. The maximum mortality among males falls between 20 and 29, among females between 40 and 49.

The maximum mortality in both sexes taken together, from aortic incompetence, occurs between 50 to 69; from aortic stenosis, between 40 and 49, as also in double aortic lesions. The greatest proportion of males with aortic incompetence or stenosis

occurs between 50 to 69, but in those with double lesions the years from 20 to 29 are the most fatal. The female maximum in aortic incompetence and aortic stenosis falls between the years 49 and 50, and in the first is much higher than in the males; the 100 per cent. at that age under aortic stenosis is only fortuitous, the one female case admitted at that age having died. In double aortic lesions no deaths among females are recorded, except between the ages of 40 and 69.

The curve representing the mortality from all mitral lesions in both sexes rises progressively with the age, the female rate always a little over that of the males until after the age of 69, when three deaths out of four female admissions raises it to 75 per cent.

The rates in mitral incompetence are very similar to those for all mitral cases, except for a more pronounced mortality between 30 and 39. Mitral stenosis proves most fatal from 30 to 39 in the males, and from 40 to 49 in the females. The female rate between 20 and 29, 40 and 49, and 50 to 69, is higher than in males. In cases of double mitral lesions, both males and females show a death-rate between the years 10 to 19 above that for the next decade. The male maximum falls between 30 and 40, the female between 50 and 69. The highest rate for the two sexes occurs between 50 and 69.

The rates in relation to the ages in cases of disease of both these valves have only been calculated for three groups, and for the totals at each age. The groups are classified by the nature of the aortic lesion present, and each, therefore, contains three members.

The total rates at each age show a decided maximum between the years 30 and 39, and a higher death-rate between 1 and 9 than 10 and 19. The male maximum is at the same age as of the total, the female from 40 to 49, save the 100 per cent. over the age 69, due to one case which proved fatal.

The first group, containing cases with aortic incompetence and the three different mitral lesions, proved most fatal between 1 and 9 years, where one case out of two admissions died. The decade between 30 and 39 shows the high rate of 44·4 per cent., due to a rate of 50 per cent. in the males and 33·3 per cent. in the females. In the females, however, the rate is higher between 40 and 49, 40 per cent.

Where aortic stenosis is associated with mitral lesions few deaths fall to be recorded, and all of these between the years 20 and 49. The highest rate here is 33·3 per cent. in males between 30 and 39.

The death-rates in cases of double aortic with mitral lesions

are, highest, 30·9 per cent. between 40 and 49; lowest, 9·6 per cent. between 10 and 19; while no deaths are recorded between 1 and 9 of the three cases admitted, or in the case of the one admission over 69 years of age.

Five of the six cases reported as suffering from lesions of more than these two valves proved fatal, or 83·3 per cent., while of the fourteen admissions in which symptoms of tricuspid incompetence were found, three died—all of them males, giving a death-rate of 21·4 per cent. of the total, or 27·2 per cent. of the males.

PHYSIOLOGICAL BASIS FOR TREATMENT OF SCLEROSIS.

Rumpf (*Verh. d. 15 Cong. f. inn. Med. Wiesbaden*, 1897, p. 351), in an interesting paper upon the treatment of chronic heart diseases, raises the question whether an abundant supply of lime salts has any influence upon those suffering from cardiac troubles as the result of arterial changes. From many observations upon the amount of calcium in the excretions, as well as of the food and the blood, he reached three results:—That by increased supply of lime salts, a considerable accumulation may take place in the body; that, in cases with vascular changes, a considerable diminution of the output, as compared with the intake, of lime may occur; and that the amount of chalk in the blood under normal and pathological conditions is not constant. Starting from these results, the author endeavoured to make out whether lessened supply of lime salts is of therapeutic importance in particular diseases; and, further, if it were not possible to produce an increased output of lime salts by medicinal remedies. He found that with free diuresis the output of lime was for the most part increased, but that it was in no ways proportional to the amount of the diuresis. Most frequently the administration of particular medicines had a retarding influence, more especially shown in the case of phosphoric acid, and phosphate of sodium. Other drugs, however, such as hydrochloric acid, lactic acid, and more particularly lactate of sodium and iodide of sodium increase the lime output. The use of fruit and vegetables which contain large amounts of soda and potash, along with lime, gives rise to a considerable increase of the lime excretion. It seems possible, however, by the administration of smaller quantities of lime, and at the same time the administrations of suitable remedies, to produce an intake considerably exceeding the output. The author has treated a large number of patients upon such lines, and has obtained many surprising consequences. Since the origin of lime deposits lies in disturbances of metabolism, and most of

the affections manifesting such changes show increased destruction of albumen and great excretion of ammonia, leading to a diminution in the potassium and sodium salts of the blood, if in such circumstances there be a large amount of lime in the blood, it is probable that the blood is making an attempt to balance its loss by absorption of lime which, however, is a powerful cause of deposits. It is necessary in such cases to prevent an excessive destruction of albuminous substances. In consequence of the author's investigations, it is obvious that in certain chronic affections of the heart which reduce the possibilities of nitrogenous nutrition below what is necessary, while fat and carbohydrates accumulate, it is necessary to supply fruit and vegetables containing abundance of sodium and calcium.

MECHANICAL METHODS IN HEART DISEASE.

Wiede, in a paper which has been accessible through the translation by Weltz (*St. Petersb. med. Wochenschft.*, xxii., p. 253, 1897), enters into a very full description of the various mechanical means by which the circulation may be improved. These he strongly recommends as of the highest utility, seeing the nature, amount, and duration of such mechanical means may be carefully measured, their effects carefully watched, and the results therefore controlled. In a paper upon the general treatment of chronic cardiac inadequacy, based upon his own observations, **Neumann** (*Berl. klin. Wochenschft.*, xxxiv., pp. 376 and 405, 1898), considers the treatment from a very different point of view. He advocates, in the first place, rest in whatever position may be most agreeable to the patient, in which he is periodically to breathe as deeply as he can. As soon as possible, a certain amount of exercise is to be taken, at first by means of passive exercise in bath chairs, afterwards in a carriage driven slowly up to a certain height, by preference in shady woods. So soon as the patient feels inclined to rise, it may be permitted. Various forms of baths are recommended which exert stimulating effects on the skin, both thermally and mechanically. A suitable diet is, above everything, to be followed; and the chief point lies in the administration of easily digested food, which is to be given in small quantities, regularly, but often. As to alcohol, Neumann is of opinion that the medium course is the best.

Groedel, in an article upon the treatment of chronic disturbances of the circulation by means of mechanico-gymnastic methods (*St. Petersb. med. Wochenschft.*, xxii., p. 107, 1897), is of opinion that the alteration in the size of the heart which is often stated to follow a single bath, or a single application of manual

gymnastics, is only an exceptional occurrence. **Schott** attempted (*Deutsch. med. Wochenschft.*, xxiii., 1897, p. 342), by means of the X-rays, to show a reduction in the size of the dilated heart by means of baths and exercises. It must, however, be confessed that the reduced skiagraphs which he publishes leave the matter in a somewhat ambiguous condition, since the borders of the heart are by no means so well defined as they ought to be in reductions. The remarks of Morison in regard to apparent reduction are singularly applicable to this subject.

CARDIAC TONICS.

Battestini (*Il Policlinico*, iv., pp. 23 and 72, 1897) also gives some therapeutic researches with Merck's digitoxin. He found the best results were given in cases of mitral lesions with loss of compensation, in which the favourable action of the drug showed itself in rise of arterial pressure, diminution of the rate of pulsation, increased diuresis, lessening of the area of cardiac dulness, and an improvement of the general condition.

Hare (*Therap. Gaz.*, xxi., p. 505, 1897) discusses the active principles of digitalis. He believes digitalis to increase the energy of the heart and cause contraction of the blood-vessels from vasomotor action, from both of which factors an increase of pressure occurs. Digitalin and digitoxin have, according to him, similar effects, except in regard to their action upon the vasomotor and vagus nerves, whence it follows that on increase of the blood pressure diminution of rate does not occur. While digitalin stimulates the vagus, digitoxin produces opposite effects. It is, however, not in sufficient quantity in digitalis to produce these effects. On account of the different solubilities of the various principles, Hare prefers the tincture to the infusion.

Houghton (*Journ. Amer. Med. Assoc.*, p. 517, 1897), as the result of a large series of investigations, enunciates certain facts in regard to strophanthus. He regards the principal effects as due to the influence of the drug upon the regulator nerves and the heart muscle itself, whereby there is a diminution of the frequency of the pulse, an elevation of the blood pressure, and an increase of the action of the heart without contraction of the blood-vessels, or any influence upon the vasomotor apparatus. Increased diuresis and other powerful effects are principally to be ascribed to the increased rapidity of the circulation. He is of opinion that the chief difference between strophanthus and digitalis lies in the fact that the former does not irritate the digestive system, and is not cumulative in its effects. He is of opinion that strophanthus acts more promptly and more softly.

Wilcox (*Am. Journ. Med. Sc*, cxiii., 1897, p 538, 1897) has also carried out a number of clinical observations with different preparations of strophanthus. From his investigations he believes the tincture of strophanthus to be an active preparation, and as to its effects, as compared with digitalis, he believes it is more prompt, not cumulative, and exerts no influence upon the arterioles.

OPIUM IN VALVULAR DISEASE.

Work (*Med. Surg. Report*, Aug., 1897) strongly recommends the administration of opium or morphine in aortic incompetence, which by producing hyperæmia of the brain, combats the troublesome anæmia, and therefore works like cardiac tonics.

TREATMENT OF SEROUS PERICARDITIS.

Frankel, in an interesting paper on the results of operative treatment in pericarditis, (*Verhand. d.* 15 *Congr. f. inn. Med., Wiesbaden*, xv. p. 492, 1897), describes the case of a girl aged ten suffering from rheumatic pericarditis with effusion, who was successfully treated by the resection of a small part of the fifth left rib close to the cartilage, with free opening to the pericardium. The author recommends such a method of proceeding in preference to aspiration seeing that the puncture may penetrate the heart wall or the pericardial vessels which may belong to the most important coronary branches or tributaries. **Roberts** deals with the same subject in an excellent paper on the "Surgical Treatment of Suppurative Pericarditis" (*Am. Journ. Med. Sc.*, 1897, cxiv., p. 642) and condemns puncture of the pericardium on account of its uncertainty and danger, seeing that the pleura on the one hand, or the heart wall on the other, may be injured. The one satisfactory method, according to Roberts, lies in exposure of the pericardium, incision, and drainage.

DISEASES OF THE LUNGS AND ORGANS OF RESPIRATION.

By Vincent D. Harris, M.D., F.R.C.P.,

Physician to the City of London Hospital for Diseases of the Chest, Victoria Park; Examining Physician to the Royal National Hospital for Consumption, Ventnor.

In passing in review the various subjects of interest which have arisen during the year in connection with the Treatment of Diseases of the Lungs and Organs of Respiration, it will be convenient to employ the following order:—

A.—Diseases in connection with the bronchial tubes.
- (*a*) Bronchitis.
- (*b*) Asthma.

B.—Diseases of the lung tissue.
- (*a*) Pneumonia.
- (*b*) Tuberculosis.
- (*c*) Actinomycosis.

A.—DISEASES IN CONNECTION WITH THE BRONCHIAL TUBES.

(*a*) **Bronchitis.**

Although there is not much that is new in the treatment of bronchitis to be recorded, the paper of **Prof. Leech** (*Practitioner*, May, 1898), upon the treatment of bronchitis by drugs, gives us some very practical hints, not so much as to the use of new drugs, as concerning the right dosage and means of administration of those with which we are all familiar. The general deduction which may be made from his paper is that most of the drugs are given in too small doses. Thus, in acute bronchitis, in the ordinary saline mixture, which contains ammonium acetate, spirit of nitrous ether and ipecacuanha or antimony, the first-named drug, ammonium acetate, is given in drachm or in drachm-and-a-half doses every four hours. This is not sufficient to have much effect, and Leech suggests that the dose should begin with three drachms which should be increased up to six drachms if the skin does not act freely. Again, spirit. ætheris nitrosi may act in half-drachm doses, but when given in drachm to two-drachm doses, it is a very

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distinct diaphoretic. This drug, mixed with water, rapidly decomposes, but when acetate ammonium is present this decomposition is slower. In young children, Leech says antipyrin does more good than acetate ammonium, and adds that 5-gr. doses to a young child five or six years old, induces profuse perspiration and marked improvement. Contrasting antimony and ipecacuanha, he believes that antimony in doses of $\frac{1}{20}$ gr. (of tartrate?) is of most service where there are small basic moist sounds and the breathing is oppressed, whilst where there are small rhonchi all over the chest with irritable cough, ipecacuanha is most useful. As regards the use of ammonium carbonate, he thinks that the dose to be of much service, if wanted to produce its proper physiological effect, should be increased from 3 gr. to 5 gr. every four hours, the usual amount given, 5 to 10 gr. every hour or so. It is best not to give it with the usual drugs with which it is generally combined, such as squills and senega. These should not be administered often, whereas ammonium carbonate should be so given. The plan suggested is to give the ammonium carbonate in milk. If 60 gr. be dissolved in 6 oz. of water, one tablespoonful can be given every hour in the milk which is taken by the patient. It is not unpleasant. It should be remembered that if this drug is given in a mixture containing strychnine, it is apt to throw down the latter. Senega, which appears to be an expectorant of some value, is very irritating to the stomach and should be given at intervals of not less than four hours. Squills is both an expectorant and a cardiac tonic; it is useful in both acute and chronic bronchitis, but when there is evidence of accumulation in the bronchial tubes ipecacuanha in large doses is of more use. Leech mentions a case in which he ordered ipecacuanha wine in drachm doses every four hours, and on the next day he found the patient much relieved and charmed with the medicine, but discovered that by mistake the wine had been given in ounce doses and produced some sickness, but not much. Leech thinks that oxygen inhalation, to be of any service, should be administered much earlier than it is the custom to give it. If given early it may prevent the advent of cyanosis. It is not, of course, curative.

(*b*) **Asthma.**

A very interesting discussion upon the treatment of asthma took place at the Medical Society at the end of March, 1898, on the occasion of the reading of a paper by **Kingscote** on the vagus origin of asthma. Beginning by premising that asthma is generally to be connected with irritation of one or more branches of the vagi, which can be traced in the majority of cases (whether from the origin in the bulb, from Meckel's ganglion, from the

superior laryngeals, from ear mischief, through Arnold's nerve, through the pharyngeals, through the recurrent laryngeals, or through pressure on the vagi trunks, or through irritation of the heart, lungs, stomach, liver, spleen, or abdominal system), the author separated a class of cases the origin of which cannot so easily be discovered. He had found that such obscure cases usually recover, and later, that the cases which recover invariably have a deep-seated dilatation of the heart, and that improvement in the asthma accompanies improvement in the cardiac condition. From this he concluded that a dilated heart may set up asthma by its pressure upon the vagus, backwards against the spine. The treatment which under such circumstances seemed to be indicated, and which was tried with good effect, was a modification of the "Schott" method and the inhalation of oxygen.

The discussion which followed on the reading of the paper was valuable. It indicated that in the opinion of those with great experience of asthma, the disease may be recovered from, and that it may be improved in many cases by the administration of iodide of potassium—such was **Theodore Williams's** experience; and secondly that there are two distinct forms of the affection, namely, true spasmodic asthma, which is benefited by citrate of caffein and fuming inhalations, and cardiac asthma, in which ordinary cardiac drugs do good for a time and which later benefit by oxygen inhalations, whereas fuming antispasmodics do no good—such were **Thorowgood's** views. The idea of Kingscote that iodide of potassium acts in this affection by its influence on the blood pressure is not generally received.

As regards the contention of **Maguire** that the muscular spasm of the bronchioles in asthma is a pure assumption, it should be remembered that sudden diminution of the calibre of the tubes, producing interference with the entrance and exit of air is scarcely conceivable except from some degree of muscular contraction. In most cases, no doubt, there is evidence of congestion or of incipient inflammation of the mucous membrane going with the muscular spasm.

At the meeting of the Climatological Association of America, held in August and September, **B. Robinson**, of New York, gave some clinical notes upon asthma. He had found so-called nervous asthma of rare occurrence and considered that the supposed functional cases will, on further investigation, prove to have some definite pathological substratum. For example, conditions of the blood are often overlooked. He especially considered that malarial toxæmia is frequently present and is not recognised.

For the recognition of this condition he recommended that if there be a sudden chill followed by rise of temperature and sweating, at the time of the chill and previous to the giving of quinine, the blood should be examined. The plasmodium malariæ would be discovered. For this kind of case the author strongly advised the administration of Fowler's solution till its physiological effect is produced. If the bowels are constipated and the liver inactive, Warburg's extract should be given in 5-gr. doses three to four times a day; if anæmia be present, quinine, iron and arsenic. Antispasmodic remedies are no doubt sometimes required as well in severe attacks, for example the smoking of cigarettes d'Espec or of datura tatula or of nitre paper. In extreme conditions of spasm, chloroform inhalations or hypodermics of morphia, or atropine become necessary. Gout and rheumatism were also sometimes connected with the nervous irritability underlying an asthmatic attack. When the attack is connected with gastric catarrh brought on by errors of diet or alcoholic excess, frequently lavage of the stomach and regulated diet bring relief. In asthma connected with bronchitis when the secretion is slight, efforts should be made to increase it; hence small doses of ipecacuanha, tartar emetic, chloride of ammonium, iodide of potassium or of grindelia robusta may be useful. When the secretion is abundant in the bronchial catarrh, belladonna or atropine may be used in small or moderate doses with the above-named drugs or with a little camphor or quinine in capsule or tablet form. When emphysema and bronchitis are clearly defined, antispasmodic cigarettes, inhalation of oxygen, Hoffman's anodyne, alcohol, hot coffee, ether, or chloroform may be tried. When in addition there is cardiac distension, nitroglycerine or the nitrites, salicylate of caffeine, either by the mouth or injection subcutaneously may be employed. Again, venesection or leeches, or wet cups to the chest or epigastrium, afford more or less lasting relief. Speaking very generally as to climatic treatment, the speaker was inclined to believe that the climatic conditions suitable for subacute or chronic bronchitis were also those desirable for bronchitis when complicated with asthma.

B.—DISEASES OF THE LUNG TISSUE.

(*a*) ACUTE PNEUMONIA.

The question of the treatment of acute pneumonia remains one about which much difference of opinion prevails. Remedies recommended at one time appear to have little effect for good at another; active treatment, palliative treatment, and no treatment

each has its day, and the mortality of the disease varies with the year or with the season.

It is now, however, generally thought that acute pneumonia is a specific disease, and that the micro-organism which produces it is the pneumococcus of Friedländer. In order to account for a difference in type which the disease presents, it has been suggested that the infection may be a mixed one, and that other microbes may enter into the production of the disease from time to time. This suggestion is based upon the fact that acute pneumonia occurs in connection with influenza, erysipelas, and the like, in which special microbes are known to be the exciting cause. As the disease is believed to be bacterial, most hope for cutting short the affection is placed nowadays in the production of an antitoxin, and experiments with antitoxic sera are increasing in number. Some of these experiments will be mentioned, but if the suggestion of a mixed infection, which has been discussed by **Moore** (*Brit. Med. Journ.*, Feb. 15, 1898), is a correct one, it will be seen that the production of antitoxin suitable for different cases becomes a complicated one.

The use of antipneumococcal serum.

At the Italian Medical Congress, **Massalongo** and **Franchini** reported some results obtained by them on treating cases of grave and acute pneumonia with Prof. Pane's serum. Ten cases were described. All of them were advanced and occurred in old people, and those who through poverty, fatigue, and vicious habits were nearly all alcoholics, with weak hearts, nephritis and arterio-sclerosis. Contrasting the results of this method of treatment with those obtained by other means in similar cases, the authors concluded (1) that the results were better and (2) that the serum had a direct action on the evolution of the pneumococcal process. In the discussion as to the value of antitoxins which followed the reading of the paper, a good deal of difference of opinion was shown to exist as to whether anything but an early injection was of any use, **Bozzolo** maintaining that unless used early they were of little use, whereas **De Renzi** considered that a later injection, even to the fourth or fifth day, if given in adequate amount and intravenously, might produce good effects.

From other directions opinions favourable to the trial of this serum have appeared, viz. from **Ughetti**, of Catania, and from **Cantieri**, of Siena, and from many others who have tried it. The serum is prepared at the Instituto Siero-terapeutico at Naples.

De Renzi (*Gaz. degli Osped. e delle Clin.*, Feb. 13, 1898, quoted from *Brit. Med. Journ.*) has used the serum with excellent results during the past three years. He has used it in thirty-two cases, and in the earlier years only in the severest cases; in

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the past year fourteen cases were treated, with a mortality of 9 per cent. against 24 in previous years when former methods were in vogue. No bad results followed in any case.

The use of other sera.

Some few cases have been reported of the treatment of pneumonic patients with serum obtained from the blood of patients who have passed the crisis of the disease with apparently good effect, and other cases have been injected with serum from immunised rabbits. In all **Beverley Robinson**, of New York (*Med. Record*, Feb. 19, 1898), was able to collect upwards of thirty cases (we presume excluding those treated with Pane's serum) of pneumonia in the human subject, which had been treated by injection of serum either from convalescents from pneumonia or from immunised animals, with excellent results.

The use of creosote inhalations.

B. Robinson (*loc. cit.*) strongly advocates the vapour of creosote both as a prophylactic to prevent the spread, and also in the actual treatment of pneumonia. A drachm of creosote is dissolved in an ounce of spirit, and a teaspoonful of this mixture is placed in the water of the croup kettle. More is added as required. The inhalation of the creosote thus vaporised is employed for several days. At the same time, creosote may be given internally, but this method is not so successful.

The use of salicylic acid.

De Becker has employed salicylic acid in this disease for two years. He has treated twelve patients, of whom eleven have recovered. He has given 10 centigrm. of salicylic acid every hour, but the dose must be adapted to the condition, the guiding symptoms being the expectoration. The acid is best given in a little hot water, a good quantity of jam or honey being added to it, but coffee, chocolate, or even diluted milk, will act as a good vehicle (quoted from *Brit. Med. Journ.*), and **De Renzi** recommends washing the mouth out either with salicylic acid (1 in 500) or with sublimate solution (1 in 5,000).

The use of salts of quinine.

G. Amoroso, of Naples (*Lancet*, Feb. 26, 1898), describes a form of pneumonia of which he had recently seen several examples characterised by high initial fever, mostly with strong rigors, subsiding after a few hours in well-pronounced diaphoresis, only to reappear with new though less strong rigors, the temperature still remaining high; lateral pain referred to a point; adhesive sputum mixed with blood, but not rusty; abrupt extension; tubular breathing, becoming all at once dull and bronchial; marked nervous depression and rapid enfeeblement of pulse; scanty urate-laden urine, high-coloured; spleen enlarged; and diarrhœa sometimes frequent. Asssuming the disease to be "pernicious," he employed strong doses of quinine, notably subcutaneous injections of the bichloride, $\frac{1}{2}$ gr. per injection. This method appeared to be successful, as the patient soon recovered, first from the external signs of distress, then from the fever, finally entering into speedy and steady convalescence. Considerable exception seems to have been taken to the idea of the author that this form of pneumonia is either uncommon or new, and M. de Capoa suggests that, under the influence of the prevailing influenza epidemic, typical pneumonia may be modified to produce such hybrid or capricious forms as that described by Amoroso. The point about the matter which is interesting to us, however, is that quinine in large doses may be tried in such cases with the likelihood of success.

In a paper by **M. H. Fussell**, of Philadelphia (*Med. News*, New York, March 5, 1898), giving an account of 134 patients with acute pneumonia treated in private practice, in which the mortality of all cases was about 16 per cent., the author sums up his experience of treatment by saying that it consists of **rest and the care of the heart.** Rest should be absolute, the patient not being allowed to leave his bed even to relieve the bowels, but making use of a bed-pan. In delirium a hypodermic injection of morphia should be given. As regards the heart, when in spite of absolute rest the cardiac action becomes weak, strychnia given hypodermically, digitalis or whisky, should be employed. As regards the administration of strychnia, a dose of $\frac{1}{20}$ of a gr. every three hours may be injected. This seems to act more powerfully than either digitalis or whisky, although both of these are often of value. Venesection, aconite, and veratrum viride the author has not employed. Poultices enveloping the chest afford relief sometimes when there is much pain. Cold baths when the temperature is high. Local application of cold, in the opinion of the author, has not proved very successful, but cold sometimes relieves pain. This last symptom may also be relieved by cups or opiates.

Premature resolution of the lung in acute pneumonia and its teachings.

T. F. Raven, of Broadstairs, gives an interesting account (*Practitioner*, Sept., 1898, p. 269) of a case of acute pneumonia with the very unusual complication or sequel of suppuration of the bronchial glands, forming a mediastinal abscess which discharged through the bronchi. The points about the case seem to be as follows:—A healthy boy of twelve years of age, who had been

previously suffering from a slight bronchial catarrh and had been exposed to the wind three days before, was seized with a rigor and frontal headache on Dec. 2nd. Temperature was 100° F. and pulse 116, with pain, increased by breathing, about the right mamma. Physical signs declared themselves slowly, and hepatisation was not apparent until the fifth day, when it involved the whole of the posterior aspect of the lung from apex to base (right side). On the sixth day moist crackling could be detected at right base and tubular breathing. On the seventh there was a temporary remission of symptoms and the temperature, which had been as high as 105° F., fell to 102·8°F. Physical signs as before. Four hours later the temperature rose again; the patient was sleeping badly and was delirious for the first time. Pulse 144, respirations 55, temperature fluctuating between 103° and 104°. A bad night followed, and next morning the patient was rambling. Temperature and pulse as before, but respirations quicker. On examination of his chest, however, practically the *whole of the physical signs had disappeared, breath sounds were normal, and percussion note good.* The lung lesion had cleared up suddenly. From this time and for twenty-four hours the patient was in a very precarious state, temperature rising to 105° F. necessitating cold sponging and packing in cold sheets. After a time the bad symptoms subsided, and for a week there was marked improvement. Physical signs were irregular; sometimes there was fugitive evidence of consolidation at one part of the right lung and then at another, but the morning temperature was 99°, and the evening never above 101°. On the 19th day new symptoms developed, the temperature rose to 103°, and there was dry cough of a very troublesome and exhausting character, almost like whooping cough. On the 24th day there were rigor and a temperature of 104·2°. At this time it was noticed that the heart apex was being gradually pushed over to the left; other things being excluded, a diagnosis of enlarged bronchial glands was made, probably suppurating and forming a mediastinal abscess. By the 28th day apex beat was two inches outside nipple, and a small quantity of pus was found in the sputum, which was also slightly blood-stained. On December 31st, on the 32nd day, expectoration of pus was repeated, and on January 4th a considerable quantity of the same material was brought up, estimated at half an ounce. From this time forth the boy steadily improved, and by February 15th was convalescent and able to take horse exercise, with normal weight regained, and heart apex in natural position.

From the history of this most interesting case, Raven suggests a view of the nature of pneumonia, which, if correct,

certainly should influence the treatment of the condition. As acute pneumonia is a constitutional one, of which the local manifestation is in the lung (this being shown first by the fever preceding the lesion; seeondly, by the fever being in no direct proportion to the lesion, a small lesion being sometimes accompanied by a very high fever; thirdly, because when the fever terminates by crisis, the condition of the lung does not in the same sudden way show a diminution; and, fourthly, because inflammation of the lung from injury does not exhibit a clinical picture of the disease known as acute pneumonia), Raven suggests that the consolidation of the lung is not a mere local manifestation of the disease, but may be the main channel by which the disease is eliminated from the system. In the present case he suggests that the premature disappearance of the signs of lung consolidation showed that the useful process by which the poison was being eliminated was for some reason or another suddenly interrupted, that morbid products were absorbed, that they were arrested by the bronchial glands, which in consequence suppurated. If this suggestion is correct, it should naturally alter the present system of endeavouring by treatment to check or stop the inflammatory process of the lung. Assuming this view to be feasible, Raven *condemns the use of ice-bags* applied to the chest (when used to check the lung inflammation), and views with little favour the various methods which have been tried for the cure of pneumonia, from the application of heat or cold, the use of drugs, mercury, digitalis, aconite, and the like, brandy and blood-letting, to the more heroic methods of the injection of antiseptics into the hepatised lung, unless any of these remedies are employed for the relief of symptoms. There can be no doubt that if the lung consolidation is a conservative process, it would be folly to cut it short prematurely.

The use of compressed air in septic bronchopneumonia.

A. Abrams, of San Francisco (*New York Med. News*, Sept. 24th, 1898), draws a distinction between forms of bronchopneumonia and makes suggestions as to treatment. From notes of all the cases of bronchopneumonia seen during the last ten years, namely 61, the autho says 25 were cases of tuberculous bronchopneumonia; that is to say, cases in which tubercle bacilli were found in the sputum; simple bronchopneumonia, the form usually recognised, 10 cases; non-febrile bronchopneumonia chronic, 15 cases; and septic bronchopneumonia, 11 cases. In all of them the pathological condition may be considered the same, viz. an accumulation of inflammatory products in the smaller bronchi and in the pulmonary alveoli, environed by hepatised tissue. Excluding

tuberculous bronchopneumonia and the ordinary form which in adults it is customary to regard as a foudroyant affection attended by pronounced dyspnœa, cyanosis, raised temperature, and symptoms of collapse, the author confines his attention in his remarks almost entirely to the non-febrile variety and to the septic form. The non-febrile form was made up of four cases which were subacute and 11 that were chronic; slight dyspnœa in five cases. Sputum nearly always contained staphylococci and streptococci. Physical signs were of bronchitis in the small tubes, discrete areas of percussion, dulness with broncho-vesicular or rarely bronchial breathing. In the septic form the clinical picture is practically that of tuberculosis of the lung, minus the presence of tubercle bacilli in the sputum, and eight of the cases were believed to be such before investigation by the author. The symptoms were those of sepsis, remittent and intermittent types of fever, night sweats, chills pronounced, and rapid emaciation, and the signs almost always at the apex. The sputum of these patients contained streptococci, staphylococci, bacilli coli communis and pneumococci in large numbers. The main difference is that the prognosis is good, cure being secured in the majority of cases by the *pneumatic cabinet, or by means of compressed air.* It is noted that the usual therapeutic methods were of little avail, but compressed air as administered in the pneumatic cabinet appeared to effect a mechanical dislodgment of the inflammatory and septic products from the small tubes and air sacs. In addition to this method iodide of potassium as one of the best of expectorants was administered by the mouth.

The above description of septic bronchopneumonia sheds considerable light upon certain cases which one has occasionally met with, in which a patient with all the usual symptoms of phthisis, and a considerable amount of sputum per diem, never has tubercle bacilli in the sputum. In one such case the sputum was examined over and over again, and the pathologist's report was, *no tubular bacilli, but almost a pure culture of pneumococci.*

(*b*) TUBERCULOSIS OF THE LUNG (PULMONARY CONSUMPTION).

1. The prophylactic treatment of consumption.

There can be little doubt that the interest in the subject of the prophylactic treatment of pulmonary consumption has markedly increased during 1898. This may be attributed chiefly to two causes: first, that the facts with regard to the method of the spread of tuberculosis by means of the sputum of patients affected with consumption, and of the simple means of checking that spread, have at last begun to make an impression upon the laity; and secondly, because of the formation, under favourable auspices, of an association for the repression of tuberculosis, within the past few months. The object of this association is to disseminate knowledge concerning tuberculosis and its prevention, and also to help on the formation of sanatoria for the treatment of consumptive patients upon the open-air system. The new association has attracted much attention and has already been successful in exciting the public interest in the movement, which is described as "the new crusade against consumption." In this direction it has been greatly helped by the daily press. The danger to the community arising out of the careless treatment of the sputum, &c., of consumptive patients has been known for sixteen years—in fact, ever since the date of Koch's first announcement upon the subject in 1882—and for many years it has been the custom of those connected with hospitals, especially those devoted to consumption and chest disease, to impress upon their consumptive patients and the patients' friends, how they ought to act in order to avoid spreading the disease. All those interested in the subject must be sincerely glad that there is the chance of the whole question being taken up on a broader basis.

In order to prevent the spread of tuberculosis, measures of three kinds appear to be indicated:—

(*a*) With regard to the individual consumptive, that he shall not be a danger to the community in general, and to those in immediate contact with him in particular. These measures have chiefly to do with the destruction of all tubercular sputum, discharges, and excreta; his personal cleanliness and the proper cleansing and sanitation of the rooms in which he lives.

(*b*) The protection of the food supply of the community by the prohibition of the sale of meat or of milk obtained from tuberculous animals.

(*c*) The improvement of the general sanatory conditions of the people by means of which it is possible to prevent a condition of body predisposing to consumption.

The first two measures may be roughly said to be for the purpose of preventing the dissemination of the seed, the third in order to provide a resisting soil.

It will be of interest to note any evidence of the adoption of remedial measures in any one of these directions during 1898.

(*a*) With reference to **the prevention of the spread of consumption by the individual,** it may be noted that the leaflets upon the subject giving directions as to the proper method of dealing with sputum and the like, the proper cleansing of the house, the room, utensils, and so on, which up to a year ago had

been issued either by individuals or by consumption hospitals, are now beginning to be distributed by public authorities, following the excellent example of the Glasgow corporation in the matter, to which attention was drawn in last year's "Year-Book," pp. 25–27. The issue of literature upon this important subject is felt by some, however, to be insufficient for the purpose, chiefly for the following reasons:—First, because the classes for whom the leaflets are intended seldom read such papers carefully, even if they read them at all; secondly, that however carefully and simply the directions are drawn out, they are seldom understood; and, thirdly, that even when the directions are understood, they are seldom carried out. It is therefore urged by an increasing number of the medical profession that, if a system of compulsory notification of all cases of consumption were introduced, it would become incumbent upon the sanitary authority to see that the various hygienic precautions necessary to prevent the spread of the disease by or from the individual are carried out. This plan would, at any rate, do away with the present uncertainty as to whether the precautions recommended in these leaflets are really followed, which, as we have seen above, is extremely doubtful.

The **compulsory notification of pulmonary consumption** has been suggested for some years by experts upon the subject. In a paper upon "The Placing of Tubercular Phthisis under Control," by **Arnold Chaplin**, in the *Medical Magazine*, in May, 1893, this author summarises a number of additional regulations which might be expected to follow in the wake of the compulsory notification of the disease, which he strongly urged:—"(1) Prevention of patients with actual phthisis . . . from marrying; (2) prohibition of patients with actual phthisis from frequenting churches, theatres, railway carriages, tramcars, or any public place; (3) disinfection of sputa, habitations, and all things coming in contact with phthisical patients; isolation of the consumptive."

It will be seen by this bare enumeration of a few of the sequences which might arise in connection with this subject that the problem is a complex one, and it is to this, no doubt, that we may attribute the unwillingness of the Local Government Board to take it up. We may assume this unwillingness from their action in the matter of the Town Council of Carlisle (*Brit. Med. Journ.*, May-21st, 1898). The Town Council of Carlisle adopted the suggestion of the Medical Officer of Health for the borough, that it would be advisable to place phthisis, tuberculous meningitis, and tabes mesenterica upon the list of notifiable diseases. Application was in due course made to the Local Government Board

to have these affections so dealt with under the Notification Act of 1889. The reply of the Board was as follows:—"The Board are not prepared to approve of the resolution on the subject passed by the Town Council." The official view of the Board may also be inferred from the remarks made by **Sir Richard Thorne**, its chief medical adviser, in his recent Harben lectures (*B. M. J.*, Nov. 19, 1898). The lecturer stated that he agreed with the central authority, on the ground that there was no such similarity between phthisis and the diseases now notifiable as would, in his opinion, justify compliance with the demand to include it under the notifiable diseases. In spite, however, of this decision of the Local Government Board, it will be generally acknowledged that the question seems to be emerging from the ideal into the region of the possible.

It is interesting to note what may be called **an experiment in notification** attempted by a semi-public body—viz. **the Jewish Board of Guardians.** This well-known corporation, which has done so much to alleviate the condition of the Jewish poor in the East End of London, has taken two important steps in the direction of preventing the spread of tuberculosis among that class of the community. In the first place, a special committee of the Board has made an exhaustive inquiry into the alleged prevalence of consumption among the Jewish poor, the result of which appeared to prove that, allowance being made for the augmentation of the Jewish population in the East End of London during the past fifteen years, while there has been no increase in the relative prevalence of phthisis, there has been an increase in the number of cases of chest complaints generally. Secondly, the Board, with the object of preventing the spread of consumption, etc., has decided to issue to visitors among the poor, for their own information, the pamphlet by Russell, of Glasgow, "A Popular Exposition of the Modern Doctrine of Tuberculosis," and, for distribution among the poor, copies in English and Jüdisch, with certain modifications, of the leaflet issued by the Health Committee of Glasgow to all ratepayers of the city. These leaflets are for the purpose of calling attention of the poor to the facts which have been demonstrated within these later years in connection with consumption, and to point out the nature of the disease, the means by which it may be controlled, and its communication from the sick to the well, stopped. The visitors are further instructed, by means of a carefully-worded letter issued to them by the Board, **to read over and explain the leaflet** to any consumptive patients they may visit, and are particularly asked to lay great stress on the *wickedness* of

sufferers expectorating elsewhere than into proper receptacles, such as are mentioned in the said leaflet. Visitors are further requested to notify to the Board the names, etc., of any cases of consumption they may meet with, so that, after verification by medical certificate, the patients may be visited by a sanatory officer, who will advise as to the sanitary measures necessary. In case of necessity, assistance will be given to provide spittoons, separate beds, disinfectants, and the like, or to carry out such washing and disinfection as may seem expedient in all cases of tuberculous diseases in which there is a discharge. It is to be noted with pleasure that the Board carefully cautions the visitors to explain to the poor that they do not lose their independence by accepting the advice and help tendered to them on their cases being reported to the Board, but, at the same time, warns them lest the tendering of advice and sanitary inspection should become the means of pauperising. All cases will be thoroughly investigated before help, in the form of money or the free grant of sanatory appliances, is given. The Board has further asked the assistance of the medical officers of the hospitals chiefly frequented by Jews to notify to them the names, etc., of any Jews who may be found to be suffering from tuberculosis.

It will be seen from the accompanying summarised report of the Commission of the Academy of Paris for combating Tuberculosis that in some respects their recommendations go beyond anything which has been urged in Great Britain with reference to the recognition and isolation of the tuberculous. Compulsory notification does not, however, appear to be recommended. Although, in part, these recommendations have to do with the question of animal tuberculosis, which will be treated of later, it will be as well to insert them here, as they are of general interest.

Grancher (May 3, 1898) brought up this report, which concluded with the following recommendations:—

(1) The Academy confirms the three recommendations of 1890, viz. as to the sputum being received in proper spittoons containing a solution of carbolic acid, 5 per cent., or water; secondly, as to doing away with sweeping for the removal of dust, and the substitution of washing or rubbing with a damp cloth; and thirdly, as to boiling of all milk, whatever its source, before drinking.

(2) As to the appearance of the disease in private practice, the Academy recommends to all medical men the persevering application of measures of prophylaxis against tuberculosis as soon as a diagnosis has been arrived at. They also recommend that the disease should, if possible, be kept in a quiescent state by early diagnosis and appropriate treatment.

(3) As regards the army, soldiers in whom tuberculosis has been diagnosed should be invalided temporarily, as long as their sputum does not contain tubercle baccilli, and permanently as soon as it does.

(4) The heads of schools, factories, and shops should be urged to carry out the simple and easy means which are sufficient effectually to prevent the extension of tuberculosis.

(5) In hospitals the commission recommends (*a*) that tuberculous patients should be kept separate in special wards until new (special) sanatoria can be provided. (*b*) Antiseptic precautions should be taken in the cleansing of both tuberculous and general wards, especially by the cleansing of the floors and the substitution of washing for sweeping. (*c*) The improvement of the conditions of nurses by higher pay and retiring pensions. (*d*) The formation of a staff of sanatory officers for the hospital.

(6) The Academy approves of the laws already proposed for the treatment of meat from tuberculous animals. Tuberculin is recommended to farmers, &c., for the separation of tuberculous animals.

(7) Finally, the Academy, wishing to show the exceptional interest which attaches to the continuity of its action in favour of prophylaxis, has formed a permanent commission under the name of "Commission for the Prophylaxis of Tuberculosis," the object of which will be to encourage and co-operate with any effort against the dissemination of the bacillus tuberculosis. (*La Sem. Méd.*, May 4, 1898.)

(*b*) As regards the **prohibition of the supply of meat or milk from tuberculous animals.** Without going into details in the matter, it must be noted that since the report of the Commission on Tuberculosis has been issued, there have been in several directions indications that public bodies are inclined to carry into effect its recommendations. This is certainly the case with regard to London and Manchester. (*Brit. Med. Journ.*, Nos. 1972–1973.) These recommendations (not in order) may be put shortly thus: (*a*) Compulsory notification of every disease of the udder of cows. (*b*) Powers to exclude from a district milk from cows with tuberculosis or exhibiting clinical symptoms thereof, and powers to slaughter such cows subject to compensation. (*c*) Provision of public slaughter houses with inspectors to be engaged to inspect all animals immediately after slaughter, and to stamp the joints of all carcases passed as sound. (*d*) Inspection of all meat not slaughtered at the public slaughter-houses at proper places for such inspection, and all meat brought into the district from elsewhere. (*e*) Power to take samples, and make analyses from time

to time of milk brought into the district, and to make milk vendors supply sufficient information as to sources from which their milk is derived. At ports where milk and milk products are received from foreign countries, any costs that may be incurred in their examination to be borne by the importers. The London County Council have notified to the Local Government Board that they are prepared to carry into effect these recommendations, and Manchester has instructed the Town Clerk to apply to Parliament for powers for dealing with the milk supply, similar to those obtained by Glasgow in 1890. These powers are chiefly to enter cowsheds where cows are kept for furnishing milk to the city, to examine any cow to see whether it is suffering from any disease which renders milk dangerous or injurious to health, and to deal with dairymen or cowkeepers who keep cows which have been officially declared to be suffering from tuberculosis or other disease, which might render the milk dangerous or injurious to health. When these powers are conferred upon local authorities generally, the danger of tuberculous infection from meat or milk will be very considerably reduced.

(*c*) Then as concerns **the improvement of the general sanitary conditions of the people,** we have at least two ways pointed out to us in which some of the conditions which help in producing phthisis may be avoided. First of all, by improved ventilation, and secondly, by improved drainage. Both these points are insisted upon by the Massachusetts Board of Health in its conclusions relating to the prevalence of tuberculosis in the state. It strongly insists that one of the chief conditions favourable to the production of the disease is the continuous and habitual breathing of unrenewed air; consequently, in workshops, factories, schoolrooms, public buildings, halls, churches, and the inhabited apartments of dwellings and tenement-houses, the absence of adequate means of ventilation must conduce to the danger. Of course, dampness of the soil on which a house stands and dampness of the immediate neighbourhood tend to the same result, as does naturally the occupancy of living- or sleeping rooms or apartments which are constantly damp, or are partly or wholly underground. Another factor inducing the spread of this disease was found to be the presence of dust in the air of apartments, factories, mills, and workshops; hence necessarily, occupations or trades, in which men, women, and children are exposed to the inhalation of irritating dust, must increase the liability to contract phthisical ailments. (*Lancet*, June 4, 1898.)

Again, in a report on the mortality of phthisis as affected by the operations of the Board in the metropolis of Sydney (N.S.W.),

Kendall draws these important conclusions: (*a*) That there is an undoubted relation between the incidence of phthisis and the dampness of the soil. (*b*) That as the phthisis death-rate has been reduced in those districts provided with proper sewerage since the laying of the main sewers, the laying of the main sewer has exercised an influence over the phthisis death-rate through drying of the soil. (*c*) That in view of the success which has attended the Board's operations up to the present time, the extension of these operations will prove of great benefit in coping with the disease called phthisis.

2. The treatment of consumptives in sanatoria. It will readily be acknowledged that if a duty is imposed upon the individual consumptive so to act that he does nothing to spread the disease of which he is the subject, a duty quite as strong is imposed upon us to see that each consumptive is placed in a condition as favourable as possible for improvement or recovery. Some would go even further than this and say that if no chance of improvement exists, every incurable consumptive should, if necessary, be taken care of in a suitable home or asylum until his death. In the past, the duty of specially caring for the consumptive in Great Britain has been recognised by the establishment of special hospitals, and no one will deny the excellent work which has been done by these institutions. In all the special chest hospitals in the kingdom, however, there are very few more than 1,000 beds, of which London provides over 600, and this is obviously insufficient. Granted the need for further accommodation for the consumptive, it is generally conceded that this further accommodation can best be supplied in the form of sanatoria, in which it would be possible to follow out the plan of treatment which has been so successful on the Continent, viz. the open-air treatment. We have accumulating evidence from experiments which have been made on a small scale in England, that this treatment is successful even when the exact climatic peculiarities of the Continental sanatoria cannot be repeated; in other words, as put in a leading article in the *Medical Record*, "the general methods of treatment are of greater importance than the climate."

The next question is: By whom are these sanatoria to be provided? Many say without hesitation, "By the State or municipality." **Knopf**, of New York, for example (*Medical Record*, September 24, 1898), in an extremely vigorous and comprehensive review of the whole subject says:—

"If any government is in earnest in its endeavour to combat tuberculosis effectually, besides its regularly enforced laws against bovine tuberculosis, its thorough hygienic and prophylactic

to time of milk brought into the district, and to make milk vendors supply sufficient information as to sources from which their milk is derived. At ports where milk and milk products are received from foreign countries, any costs that may be incurred in their examination to be borne by the importers. The London County Council have notified to the Local Government Board that they are prepared to carry into effect these recommendations, and Manchester has instructed the Town Clerk to apply to Parliament for powers for dealing with the milk supply, similar to those obtained by Glasgow in 1890. These powers are chiefly to enter cowsheds where cows are kept for furnishing milk to the city, to examine any cow to see whether it is suffering from any disease which renders milk dangerous or injurious to health, and to deal with dairymen or cowkeepers who keep cows which have been officially declared to be suffering from tuberculosis or other disease, which might render the milk dangerous or injurious to health. When these powers are conferred upon local authorities generally, the danger of tuberculous infection from meat or milk will be very considerably reduced.

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measures against tuberculosis in man through sanitary regulations and published instruction, it must take upon itself the care and treatment of the curable and incurable cases of tuberculous patients among the poor and among those with limited means. I mean here by limited means a financial condition which does not permit a tuberculous patient to enter a private sanatorium or to have at home such medical, hygienic, and dietetic care as will assure him the best possible chance of recovery."

If compulsory notification of tuberculous diseases be established, it will naturally follow that accommodation for the phthisical will have to be provided, if need be, by the State in some form or other.

At present, both notification of tuberculous diseases and the provision of State sanatoria for consumptives belong to counsels of perfection, and local effort of some kind will have to be depended on; and indeed a great deal may be done by local authorities. There are many indications that the public is taking an interest in the matter, and in Edinburgh, for example, we are told by the *British Medical Journal*, "the trend of opinion is undoubtedly in the direction of the corporation providing hospital accommodation for consumptives" (October 8, 1898). We also learn from the same source that in Liverpool the guardians of the West Derby Union have under consideration a proposal from their medical superintendent of the Infirmary, **Nathan Raw**, to establish a sanatorium in some suitable locality in the country for the open-air treatment of the large number of consumptives for whom the Board is responsible (October 22, 1898). As regards the poor in receipt of parish relief, suffering from this disease, it is only fair that they should have a chance of life given them by definite treatment. When they become ill they must be looked after by the State, and the result is that we have the sick poor collected together into huge infirmaries under the care of two or three medical officers to each infirmary. The phthisical are practically untreated in such places.

It has been suggested that sanatoria should be established in connection with all town hospitals at suitable places in the country, so that each establishment would be able to treat its own cases of phthisis. If this could be done it would obviate the collection of large numbers of the phthisical at any one place. The chief argument against the idea would seem to be the expense. That some plan of the kind is possible has been demonstrated in London by the North London Consumption Hospital, which has its out-patient department in town with its hospital at Hampstead, and also in Edinburgh by the Victoria

Hospital, which has its out-patient department in the heart of the town and the hospital at Craigleith. A report of the treatment pursued at this latter establishment by **R. W. Philip** (*British Med. Journal*, July 23, 1898), is of great interest. The hospital is situated about a mile to the north-west of Edinburgh, on a gentle slope, facing south. It is an old mansion adapted to its present purpose, standing in seven and a half acres of grounds which include a beautiful park and gently-inclined lawns and winding paths. The accommodation is at present unfortunately small, viz. for seven male and eight female patients, but a considerable extension may shortly be expected. In this hospital the patients are able to experience the good effects of sunshine and fresh air in a life spent as much as possible out of doors, with a special and liberal dietary and graduated exercises. The summary of his results, by Philip, is very modest. He says: "In so chronic and treacherous a disease it is not wise to speak confidently of cures effected. The proportion of patients, however, who have left the hospital and maintained for years continuously good health and been able to resume regular work, perhaps with a change of employment, is a large one. The list includes cases where both lungs and larynx were involved on admission. On the other hand disappointments are frequent. Some of the most promising cases have returned on our hands or have gradually fallen back elsewhere. The proportion of these cases is larger than it should be from causes over which we have meantime no control." These causes appear to be that the treatment is seldom sufficiently prolonged, the patients being in poor circumstances and so compelled too soon to resume the conditions of life which induced the disease. Moreover, the hospital accommodation being small and the demand great, the stay of the patient is too often curtailed.

If provision be made in sanatoria for the very poor there still remain the wealthy and those of limited means. As regards the first of these, the question of sanatorium accommodation is of little moment; if open-air treatment is ordered they will have it! For those of limited means it may be presumed that the new association will help to found suitable institutions in which small charges only will be made for daily keep.

It will be interesting to add a note upon the experimental treatment of consumptives on the open-air system (of which mention has already been made) in Great Britain.

Burton-Fanning has given an interesting account of his employment of some beds at a convalescent home at Cromer, in connection with the Norfolk and Norwich Hospital, to test the practicability

of treating phthisical patients on the hygienic methods of the German, and with encouraging results. **Jane Walker** had similarly treated a small number of patients in a very healthy part of Norfolk with excellent effect. **Denton Johns** and **Pott**, both of Bournemouth, have been able to show that the south coast of England is as good as the north for the so-called pure-air treatment of consumptives. All of the results so far, although dealing as yet with comparatively small numbers of patients, indicate the value of still further extending such experiments. It appears likely that before very long we shall have many more sanatoria for consumptives in Great Britain. According to **Rufenacht Walters** there are already forty-three in working order in Germany, of which seventeen are for patients paying from £3 to £6 per week. In America there are nineteen, besides one in course of erection. The same author (*British Med. Journ.*, October 15, 1898) goes on to say, "sanatoria are intended for presumably curable patients; advanced and incurable cases should be sent to special homes or refuges. Sanatoria should not, if possible, be the property of individual physicians. They should be rendered self-supporting."

Results of treatment in the Loomis Sanatorium.

The Loomis Sanatorium is situated about 100 miles from New York, on the Catskill Mountains. The climate of Liberty and the site of the sanatorium seem to be particularly adapted for the treatment of pulmonary tuberculosis during the whole of the year, but particularly during the winter months. The elevation is 2,300 feet, the atmosphere is dry and the sunshine abundant, and the winds which have prevailed (north-west) have not been at all detrimental to the patients. At any rate the results of treatment according to the latest report are very good. During the first year the sanatorium was opened 8 per cent. of patients lost their tubercle bacilli; during the last six months of the report 18 per cent. During the first period 73 per cent. gained in weight, during the second 81 per cent. More important still, during the first period 13 per cent. were discharged apparently cured, while in the last six months 23 per cent. were in that condition. Last year 10 per cent. were discharged with the disease arrested, and during the last six months 9 per cent. It is a rule in the institution to allow patients whose evening temperature does not reach 101° F. to indulge in moderate exercise, and if the temperature does not exceed 99° F. no restriction whatever is placed upon the amount within reason of the exercise taken.

In the report it is to be noted that a good many drugs have been used, *e.g.* creosote and its derivatives, especially valerianate of guaiacol; ichthyol in keratin-coated pills when intestinal

complications have arisen, and seemingly with success. Serum treatment has also been tried, twenty-nine cases in all, of whom seven, or 24 per cent., lost their tubercle bacilli, and in 48 per cent. the bacilli decreased in the sputum. In an examination of fifteen cases treated by the serum method not one case, it is stated, had redeveloped the disease, but all had been enabled to remain in their homes and at their work.

3. The feeding of consumptive patients.

In a very amusing account of his recollections as to the treatment of consumption in his early days, **Sir Samuel Wilks** (*Practitioner*, June, 1898) gives some simple general principles which he has had in mind in treating consumptives during his professional life. These may be shortly summarised. He had urged change of the circumstances in which the disease had developed; change, including living as far as possible in the air and leading a simple animal life—the locality for the change not being of first moment but depending upon circumstances; as medicines, he had ordered, perhaps, tonics, and cod-liver oil. He had always laid stress, however, upon sunshine and air. He concludes his reminiscences with these words: "The only remedies I know for consumption are *air* and *sunshine*—air, air, fresh air." If one might be allowed to add another and a third remedy, it would be—*good food*. Of the importance of feeding in consumption there can be no doubt, and feeding after a special plan is adopted in all the sanatoria upon the Continent. A very simple demonstration of the same fact is seen in the hospital treatment of the poor. It almost invariably happens that consumptive patients, unless too far gone to benefit by any treatment whatever, begin to gain weight, sometimes very rapidly, as soon as they are admitted into hospital, in whatever way they are treated, if they can take food; the difference between the hospital food and what they have been in the habit of obtaining at home being so marked. The patient is able both to take more and to digest better what he takes.

R. W. Wilcox, in an interesting clinical lecture (*New York Med. News*, July 7, 1898) strongly emphasises the **importance of feeding** in the **treatment of consumptive patients.** Feeding must rank with other natural methods of improving the general health, and of so preparing the tissues that the specific bacilli will cease to grow in such a soil. He described the method of "forced feeding" about which we hear little nowadays, and as the observer appears to use this method in some cases, it may be interesting to recount his experience of it in Paris sixteen years ago. The treatment is known as the "*Debove*

method." Lean meat is taken, all fat, tendon and cartilage being removed, and the remainder chopped fine, dried in an oven at 150° F. until absolutely dry ; the temperature is then raised about 30 to 40 degrees. When perfectly dry the meat is ground up in a mortar and sifted. Six pounds of beef are reduced to 1 lb. of beef powder. The patient's stomach is first of all washed out and then about ¾ lb. of beef powder are introduced into the stomach, and three times as much milk. All is left in the stomach, and the meal is repeated twice a day. Gradually the amount of the beef powder and milk is increased, until the patient takes from 1 to 1½ lb. of powder and 4 to 5 pints of milk per diem. If there is trouble in digesting this the milk is omitted and a little acid is added to the powder. As a sequence of this treatment the observer states that hopeless cases of tubercle of the larynx and lungs gain weight and are relieved. This method of forced feeding, Wilcox states, he employs now in cases of tuberculous laryngitis, in which every act of coughing and swallowing is painful. By a preliminary application of cocaine to the larynx the stomach-tube may be inserted without pain, and enough of the prepared food may be inserted at one sitting to nourish the patient for twenty-four hours. In this way a great deal of discomfort is avoided. The distressing vomiting which occurs in some of these cases is by means of this method obviated. The observation is founded on large clinical experience.

Wilcox summarises in a few words what he considers the true diet of consumptives, "meats, starches, and fats, with an excess of the latter and a certain amount of phosphates "; and while insisting upon the golden rule of food, " early and often," recommends the separation of the meals into those containing the bulk of the starchy food and meals containing the bulk of the proteids. Three hours or three hours and a half should be allowed for the digestion of the heavier meals, so as to be sure the stomach is fairly emptied before the next consignment of food goes into it. He recommends (but not with great heartiness) the semi-solid, not the liquid, malt extracts to help the conversion of starch into sugar.

4. Treatment of consumption by special methods.

(*a*) **Koch's tuberculin** (old).

Little has been done during 1898 to test the value of this remedy further, but there have been some short notes about former patients upon the subject, which it will be of interest to mention.

Heron (*Brit. Med. Journ.*, July 7, 1898) says, of the thirty-seven patients treated in 1891 with Koch's tuberculin, five were cases of lupus ; these have all relapsed. Of the remaining thirty-two

cases, all of lung tuberculosis, eight have died, eight are fairly well, while of the remaining sixteen no reports have been received.

McCall Anderson (*Brit. Med. Journ.*, Oct. 1, 1898), who has been in the habit of using both the old and the new tuberculin, considers the former to be useful (*a*) as a diagnostic test (this is generally admitted), (*b*) as a means of discovering additional foci of disease, of which there is no evidence whatever at the bedside, and (*c*) as a curative agency. As to its value in the latter capacity, he gives an account of two cases in which tuberculin appeared to have procured great improvement or absolute cure.

Boardman Reed, of Philadelphia (*Intern. Med. Mag.*, Aug., 1898), states that several medical men in America have continued to use tuberculin cautiously in suitable cases, with encouraging results. His own results in 1892–1893 with small doses of the remedy were in the main favourable, but not often striking.

(*b*) **With Koch's tuberculin R.**

It will be remembered that Koch's tuberculin R was introduced to the notice of the profession in the spring of 1897, in a paper in the *Deutsche medicin. Wochenschrift*, No. 14, and, although in the course of a few months several reports upon its use had appeared, it was generally felt that a longer time should be allowed to elapse before any conclusions for or against the remedy were enunciated. Eighteen months or more have now passed by, and we may begin to form some idea as to the position this method of treatment is to occupy, but even now it is too soon to draw too definite conclusions.

In the discussions which have taken place on the Continent upon the subject, we must confess that the majority of opinions seem to be against the remedy. Early in the year, at The Charité, Berlin, **Huber** reported that he had treated four non-tuberculous and fifteen tuberculous cases, of which four came within Koch's severe indications. He concluded that TR was generally neither harmful nor beneficial ; the good results sometimes obtained might well be attributed to improved hygiene and diet. **Burghart** arrived at much the same conclusion. His experience was with five pyretic and five apyretic phthisical cases. As a rule there was a gain in weight. He regarded the reaction as more severe than from the old tuberculin, and yet not so characteristic, for persons in good health as well as sufferers from other affections might react with fever. In Leyden's clinic, up to last spring, it was stated there had been no success with TR. Patients appear to acquire an immunity to reaction, but there seems to be no improvement of the tuberculous deposits. In some

cases there is some general improvement, but disappearance of physical signs has not been noted. The conclusion arrived at at The Charité is that TR cannot be considered better than other forms of treatment, which are less expensive and less worrying in every way. This opinion is also held at Gerhardt's and Senator's clinics.

It was disappointing to find that so little discussion upon the merits of TR took place at the annual meeting of the Congress for the study of Human and Animal Tuberculosis, held in Paris this summer (July 27, 1898, to August 8, 1898). The reports were too scanty. Neglecting the test experiments on animals reported by Arloing, Courmont, and Nicholas, of Lyons, who were unable to confirm Koch's statements, the experience of **Landouzy** (six cases), **Leclerc**, Lyons (eight cases), and **Vagnier**, Villiers-sur-Marne (five cases); all reported against the usefulness of the remedy in treatment. **Bourhial**, Algiers, had tried TR in doses up to 9 milligrm., and obtained nothing but ill effects. **Benoit**, of Paris, who had tried the remedy both experimentally and clinically, however, considered that in early cases it was beneficial and might even produce cure.

We have seen few reports as to the employment of TR in phthisis in England. As a matter of fact, it does not seem that many are testing the remedy. One thing against it is certainly its expense. It was recently stated by an expert that a complete course of TR for a patient might be considered to cost £12 or £13, or possibly a little more. We have, however, reports from Heron (*Brit. Med. Journ.*, July 9, 1898), Raw and Abram (*Lancet*, July 23, 1898), and from McCall Anderson (*Brit. Med. Journ*, Oct. 1, 1898).

Heron has used the new tuberculin R in nine cases of phthisis (chiefly at the City of London Hospital, Victoria Park), not one of which, he tells us in a very interesting summary of his results, was within the limits laid down by Koch, of the cases likely to derive benefit from the treatment. The typically hopeful case has rarely a temperature above 99° F., and the disease is confined to a small area of one lung. Such cases are exceedingly rare in hospital practice, at any rate in Britain. Of the cases taken, some being typically bad ones according to the same view of the subject—that is to say, being the subjects of extensive lesions on both sides, two died, and seven did well. The autopsy of one of the patients who died showed that there was no recent excavation; the other case was complicated with appendicitis. The diseased appendix was removed in the course of treatment in the hospital. Of the patients who did

well, the reporter is careful not to say that they were cured: "without exception they left the hospital at their own request, stating that they felt well enough to return to work, and wished to do so. They had all improved in health to a remarkable degree." Heron states that in no case has he heard of any one of these patients so treated having relapsed since discharge from the hospital, although several of them have left nearly a year. The conclusions which Heron arrived at from this experience of tuberculin are of practical value, although the cases treated were comparatively few. They may be thus summarised. In the first place, when the treatment is carried out with care, he has never seen any harm arise from the use of the remedy. He has seen the treatment do good in cases of early phthisis, but as regards advanced cases, he considers the discomfort inseparable from the use of the hypodermic syringe, to which many persons are exceedingly sensitive, is not sufficiently outweighed by the slight chance there may be of possible good from the use of tuberculin. As regards cure, as mentioned above, he feels unable to speak, because there is a possibility of the most favourable of the cases suffering relapse. Finally, he inclines to the belief that the new material is of more value than any other drug in the curative treatment of very early stages of tuberculosis affecting the lungs (or skin).

Raw and **Abram** treated in all (at the Mill Road Infirmary, Liverpool) thirteen cases of phthisis by this method, and their results may be epitomised as follows:—Of the thirteen cases of phthisis treated, four are completely cured. They all gained in weight, the physical signs noted on admission have disappeared, the tubercle bacilli are absent, and the patients at the time of writing are quite well. (A tabular analysis is supplied in the report.) In case 2 the treatment was stopped, as the disease steadily progressed, and weight was lost. In case 4, severe reactions followed the injection of 4 milligrammes on three occasions, and as weight was lost, the treatment was given up. In cases 6 and 7 reactions followed the smaller doses, weight was steadily lost, and the treatment was abandoned. In case 9, the whole of the right pleura was thickened, and the patient became hectic and lost weight. In case 11 no alteration for better or worse occurring, the treatment was abandoned when immunity doses had been reached. In case 8, which was hardly a suitable one, reactions were early and severe, and the treatment was abandoned on reaching 1 milligramme. In seven cases the blood corpuscles were counted whilst the treatment was being carried out. In two the number

of red cells was increased, in five diminished ; in four cases the white cells were increased, and in three diminished. The authors come to these conclusions : "From a very careful observation of the effects of tuberculin R, given alone in doses as prescribed by Koch, and not accompanied by any other treatment, on cases of phthisis pulmonalis, we are able to announce four cases of complete recovery out of the thirteen cases treated. These four cases were the most favourable for treatment, as the disease was localised, and the temperatures were not such as to suggest mixed infection. We feel that this result is little, if any better, than that of ordinary treatment, combined with nourishing dietand hygienic surroundings."

McCall Anderson, who does not give statistics, as they are too often unsatisfactory, with less experience of the new than the old tuberculin, is inclined to think that the former is the safer of the two, because in appropriate doses it produces much less reaction, but for that very reason is not so reliable as a diagnostic test. A serious objection to the TR is its cost, particularly when the higher doses are reached, which precludes its use among the poor. The final dose of the old tuberculin costs less than a penny, whilst the final dose of the new is 17s., so that it may be considered mainly a luxury for the rich.

(*c*) **With other tuberculins.**

The report of the committee of the Cooper Medical College upon **Hirschfelder's** method of treatment of pulmonary consumption by oxytuberculin, is distinctly favourable to its continued trial. Hirschfelder, of San Francisco, as long ago as February, 1896, presented some account of a new treatment of consumption by what he called oxytuberculin. He showed at this time a number of patients who had been treated with good effect. He was advised to withhold the results from publication until further experience had confirmed his previous results. In April, 1897, he read before the State Medical Society a paper embodying further results. A preliminary account of this method was contained in last year's "Year-Book," p. 42. With the various communications upon the subject from the author of the method before them, the Cooper Medical College determined to investigate the matter, and a committee was appointed for the purpose. This committee has repeatedly witnessed the culture experiments in the laboratory, and has also examined the fifteen patients who have been under treatment for from two to several months during the past two years, together with their histories, bacteriological specimens, and the corroborative evidence of other physicians as to the

diagnosis. Two of the patients presented a mild form of the disease, in five it was pronounced, in four the lung was very seriously involved, and the remaining four seemed hopeless. There is no reason to doubt that all were cases of tuberculosis. Fever, cough, sputum, hæmorrhages, night sweats, etc., had been present in nearly all, physical signs and bacilli in all. In many the diagnosis had been confirmed by other physicians. Physical examination of many of the cases was made by the members of the committee. No evidence of present tuberculosis could be discovered, although in some old cavities were found. The concurrent testimony of all, except two or three recent cases, was of complete return to health, so far as appetite, weight, and vigour are concerned. No cough, expectoration, hæmorrhage, or other symptom of disease was present. The conclusions of the committee are as follows :—

(1) Oxytuberculin prevents the growth of tubercle bacilli in veal bouillon.

(2) A positive therapeutic value has been demonstrated for it in the fifteen cases examined, the more clearly as no other treatment was used.

(3) No dangerous or untoward effects have resulted from its use.

(4) It has been legitimately brought before the profession, since a full description of its mode of preparation has been published, thereby putting it within the reach of all. Finally, the committee feel justified in certifying these facts to the profession, to the end that oxytuberculin may be thoroughly tested, the limits of its successful application determined, and its place in therapeutics established at the earliest possible time. While some remarkable results have been obtained in advanced cases, no claims are made for the later stages of the disease. The report is signed by Drs. L. C. Lane, Ellinwood, Barkan, Plummer, and H. Gibbons.

Hirschfelder read a further communication upon the results of the oxytuberculin treatment at the Paris Tubercular Congress in July, but without throwing more light upon the matter. There seems to have been no expression of opinion upon the subject at the meeting. We do not know whether the remedy has been tried in Great Britain.

H. P. Loomis, New York (*Medical Record*, May 21, 1898), says : "As far as my personal experimentation with this antitoxin on animals goes, it does nothing." It does not delay the development of tubercle in guinea-pigs as claimed by the inventor. In one human experiment no benefit was derived from its use.

At the Paris Congress in July, also, **Denys** gave an account of some results he had obtained with a *new form of tuberculin* (a full and detailed description of which he promised when his method was perfected). According to this account, in six cases of febrile tuberculosis with moderate or slight lesions, the temperature was reduced, and improvement took place; in forty-eight cases in which there was cavitation but not extensive invasion of the lung, and little fever, no fewer than fifteen were said to have been cured, twenty-five were improved, two remained stationary, and six died. On the other hand, in the last stage of tuberculosis, no improvement took place in the nineteen cases tried. The use of the remedy should be continued for six to twelve months or longer. The dose begins with very small amounts, and like tuberculin R is gradually increased.

(*d*) **With antituberculous sera.**

At the ninth International Congress of Hygiene and Demography, held at Madrid in the spring, researches with the serum of the donkey were reported, in the joint names of **G. Perron, A. Gimeno,** and **Jean Torres Babi**, which, if supported by further observers, should accentuate the difference between primary tuberculous infection of the lung and secondary infection.

In the first place, these observers obtained serum from donkeys (? immune to tubercle), and this, when injected into guinea-pigs, rendered these animals immune to tuberculosis. After this they used the serum in cases of human tuberculosis, and also obtained good results as far as external tubercle (lupus, etc.) was concerned. When, however, they applied the remedy to the treatment of lung tubercle, the result was different. At first the symptoms of the disease were improved and the tubercle bacilli in the sputum diminished, but, on the other hand, the streptococci and the staphylococci pyogenes markedly increased. In two cases tubercle bacilli actually disappeared from the sputum, but with this disappearance hectic fever set in, and the patients died, one in eight and the other in ten days, with the symptoms of septic poisoning. From these researches the authors conclude that pulmonary tuberculosis and phthisis are distinct from one another. The serum appears to produce immunity from tubercle bacilli, but has no effect in producing immunity from the streptococci and staphylococci. The phthisis is a result of the primary action of the tubercle bacilli and of the after-action of the other microbes. The hectic fever, night sweats, purulent sputum may be supposed to be due to the after-infection. The authors are of opinion that it is unwise to attack one part of infection without simultaneously attacking the other. They suggest that in order to procure a serum which will attack both of the two agencies which are in operation, serum from donkeys which have been rendered immune both to the bacillus of Koch and to the streptococci and staphylococci found in phthisical sputa should be employed.—(*Lancet*, April 30th, 1898.)

In connection with the above researches, the very important **question of the mixed infection of pulmonary phthisis** comes in. This is no new question, as the possibility of the infection in cases of phthisis not being purely of tubercle bacilli was recognised by Koch early in his researches. It is, however, coming to the front by reason of the influence it exercises upon treatment, as the bettering of the conditions of patients by stopping the secondary infection and its effects may often be expected, even in cases in which the primary disease is hopeless. **Michaelis** has demonstrated staphylococci in the blood of eight out of ten tuberculous patients, and these results have since been confirmed. It was, however, shown that these organisms were of very slight virulency. **Petruschky** made a similar observation with regard to the streptococci which he had been able to demonstrate in the blood of tuberculous persons. A careful study of the relations of the bacteria other than tubercle bacilli in such cases by **Davidsohn** induced the idea that amyloid disease might be experimentally produced. On experiment he found that it could be produced only with injections of staphylococci and their products. Streptococci did not lead to this degeneration, neither did putrefactive or other more virulent bacteria. Tubercle bacilli of themselves appear to be unable to produce it.

In February last an institute was opened in Rome for the supply of the **Maragliano serum** free of charge to the poor suffering from tuberculosis. The plan was chiefly promoted by Silla Passarini, who, on a tour of the Italian centres of population where tuberculosis is most frequent, had his own convictions as to the efficacy of the serum confirmed by the leading practitioners in those centres, and accordingly considered the time ripe for the opening of a dispensary in Rome so as to place the prophylactic and curative remedy within the reach of the humblest. Passarini, with a staff of assistants, agrees to undertake the consulting practice of the institute, and to be responsible for the diagnosis of the cases for which the serum is specially indicated, and Maragliano to supply the serum gratis. The establishment of this institute appears to show that the opposition to the use of the serum has, at any rate, died down, and that the remedy has "vindicated its right to citizenship" in the medical commonwealth (*Lancet*, Feb. 12th, 1898). It will be recollected that Maragliano's serum

is obtained by treating horses with tuberculin and then with virulent cultures of the tubercle bacillus. **Walter James** (as reported by Loomis) has employed the serum with much care and for a long period in the treatment of a patient, but reports that the said patient received no harm, but absolutely no benefit. (See "Year-Books" for 1896, 1897, and 1898, p. 38.)

(*e*) **Other Methods.—Treatment by means of Röntgen's rays.**

This method was suggested first of all by **Glover Lyon**, who made some experiments upon the subject without any definite result. Since then the rays have been used a good deal in the diagnosis of tuberculosis of the lungs with good effect, recently in Great Britain, for example, by **Hugh Walsham** (*Lancet*, Oct. 15, 1898), and more occasionally for the purpose of treatment. **Von Sinapius** has written a short *brochure* upon this subject, the basis of which was the treatment of a dozen cases of phthisis. He claims that they have been cured or improved. The method adopted was to expose the patient's bared chest to the perpendicular rays, in various places, for ten minutes at a time. The sitting lasts for an hour, and is repeated daily for three weeks or longer. Under the treatment cough and expectoration improved, and sometimes completely stopped; physical signs diminished. The after-history of the cases is not given.

Treatment by electricity.

Wassilieff (*Klin. ther. Wochenschrift*, 22, 1898) proposes a method of treatment of pulmonary diseases by static electricity, which (so it is stated), if it does not cure phthisis, at any rate comes near doing so. The patient, seated upon an insulated stool, inhales for five minutes a discharge of electricity, which is directed towards his mouth. At first he feels a dryness of the throat and giddiness. Sometimes the head breaks out into a light perspiration. At the end of six or eight sittings the expectoration diminishes, the sleep is improved, and night sweats disappear. In certain cases there is cicatrisation of vomicæ. Non-tuberculous catarrhal and hypostatic pulmonary troubles can be entirely cured in from two to eight weeks. The author's experience extends over four years.

5. The treatment of consumption with drugs.—The use of creosote, guaiacol, creosotal, and guaiacol carbonate.

An accumulating amount of evidence has been brought forward in favour of the use of **creosote and some of its derivatives** in the treatment of phthisis. Many important reports have been published during 1898 upon the subject. Of these, that by **Lamplough** may be considered particularly valuable. He gives an account of 100 consecutive cases treated with large doses of creosote (pure beechwood) at the City of London Hospital, Victoria Park. Of these 100 patients, to whom the drug was given in doses gradually increasing to 40 minims three times a day, only 5 were unable to continue to take it. Two of these were women with very advanced disease, both of whom died within three weeks of their admission to the hospital. The third objected both to the smell and taste of creosote; the other two preferred cod-liver oil. Of the 95 patients, 85 took 40 minims three times a day and 10 took a drachm three times a day. Of the 100 patients, 62 had disease of both lungs and 18 showed signs of cavitation; many were of an acute type; 3 had diarrhœa and 4 had albuminuria. In all doubtful cases the drug was not prescribed until tubercle bacilli had been found in the sputum. In 68 cases the symptoms either partly or entirely disappeared, the patients increased in weight, and the temperature fell in cases where there had been fever or remained unchanged in non-febrile cases. The average stay in the hospital was two months, and the average increase in weight was 4 lbs. The physical signs improved in many of the cases, but two months would be too short a time to expect the physical signs to show as much change as the symptoms; and in cases which have continued creosote for longer periods, the treatment being continued in the out-patient department, the improvement has been marked. The albumen disappeared from the urine of those who had presented this symptom, and in two out of three cases the diarrhœa also stopped.

Of the remaining 32 patients, 5 could not take the drug, as above mentioned, 15 did not materially alter, in 7 the disease showed signs of advance, and 5 died under treatment. Lamplough concludes his report with the following propositions:—

1. The best beechwood creosote can be given with benefit, in amounts varying from 120 to 240 minims daily, in cases of pulmonary tuberculosis.

2. The drug is best administered in cod-liver oil or in a spirituous solution, and in some cases the "creosote chamber" or ori-nasal inhaler may be ordered in addition, with advantage.

3. The dose should be small at first, but it can be rapidly increased to 40 minims three times daily for an adult. In three cases doses of 30 minims three times a day were well borne by children.

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3. The dose should be small at first, but it can be rapidly increased to 40 minims three times daily for an adult. In three cases doses of 30 minims three times a day were well borne by children.

4. Large doses rarely cause any gastric disturbance; on the contrary, the appetite is frequently increased, symptoms of dyspepsia disappear, and cod-liver oil is more easily assimilated. The cough, expectoration, and night sweats are diminished, and the physical signs improved.

5. Owing to its disinfectant action in the alimentary canal, the drug probably diminishes the risk of tuberculous enteritis by auto-infection when patients swallow their sputa, but owing to the increased peristalsis, which is created by creosote, it is usually contraindicated in cases where the ulceration is already advanced.

6. The drug does not tend to cause hæmoptysis, but rather to prevent its recurrence.

7. Creosote does not irritate the normal mucous membrane of the genito-urinary tract.

8. Owing to its extremely small cost, pure creosote can be given to a much larger number of patients than the carbonates of creasotes and guaiacol, which respectively cost four times and twelve times as much as the older drug.

While acknowledging the great value of creosote in cases of pulmonary phthisis, justifying its inclusion among "marvellous" remedies, **Chaumier**, of Tours (*Lancet*, January 22nd, 1898), says that it is absolutely necessary to understand that unless the tuberculous patient be submitted at the same time to the air-cure the drug is unlikely to be efficacious. Another point he insists upon is the necessity of giving large doses, and the most convenient form to administer the drug he considers to be by the mouth in the shape of pills or in solution in cod-liver oil. In either of these forms the dose should be 30 grains a day or more. The injection of creosote by rectum is not so good a form, and that by the trachea is impracticable, and the injection of the substance into the lung tissue is passed over.

As regards **guaiacol,** he considers that although formerly held in some repute it no longer holds its own. When used either by the mouth or as a hypodermic injection in oily solution, it has frequently given rise to pain, abscesses, induration, and the like, and while possessing all the disadvantages of creosote is in no way superior to it. Of another derivative, however, of creosote Chaumier speaks very highly, viz. of **creosotal.** On all hands there seems to be an agreement, the author says, that this substance is as efficacious as creosote, but without the disadvantages. Creosotal is the carbonate of the substances found in creosote and in the intestines, it is split up into creosote and carbonic acid; as the process is slow the creosote is absorbed throughout the alimentary

canal. It is a viscous liquid, made more fluid by warming; it has a slight tarry taste. It can be given in emulsion form with yelk of egg or mucilage, or with light claret or hot milk or pure. It can be given by the mouth, by the rectum, or by injection subcutaneously. When given by the mouth, a teaspoonful may be given to adults two or three times a day. The only contra-indications are fever and diarrhœa. With creosotal it is possible to increase the amount of creasote given per diem, when extreme doses of the creosote itself cannot be borne by patients. Of **guaiacol carbonate,** a dry white crystalline powder, which can be administered in form of powder or in solution in water, the dose, which may be largely exceeded, is 75 grains per diem for an adult. Its action is much the same as creosotal, and it is not more irritant.

In connection with this account by Chaumier, in a letter to the *Lancet*, April 2nd, 1898, **Seifert**, of Radebeul, writes to supplement the information upon creosotal. He says that it has been found in Germany that fever and diarrhœa do not contra-indicate it, but rather the contrary, as both with the use of creosotal and guaiacol carbonate the fever of phthisical patients is wont to disappear. The dose however should not be so large as is recommended above, viz. teaspoonfuls, rather it should be drops, as recommended by Von Leyden. The dose to begin with, according to this authority, should be five drops three times a day, the drops increasing three drops daily until twenty-five drops are taken at a dose. At this the patients should be kept for one to four weeks, and in some cases several months; the dose is gradually diminished in a similar manner until only ten drops thrice daily are taken, when the ascending scale of doses begins again. By this method of treatment great alleviations of the symptoms have been obtained. It should be said that the supposed advantage of creosotal over creosote, viz. that it does not diminish the appetite, but rather improves it, and does not cause gastro-intestinal disturbance, appears to indicate its administration in the cases, not very common according to the writer's experience, when creosote produces these effects. All of these derivatives of creosote are much more expensive than the drug itself.

Guaiacol.

With reference to the employment of guaiacol, **J. E. Squire** writes in the *Lancet*, April 9th, 1898, giving some details as to the use of this drug in phthisis at the North London Hospital. The paper appears more to demonstrate how much of this drug could be taken with safety than to draw any definite conclusions from its action. The drug has been given in capsules containing

five minims, or in emulsion with glycerine and tincture of orange peel, and this was followed by a drink of milk. The doses are taken after meals. Squire has not exceeded the dose of fifty minims, but several patients have taken this with benefit, and one patient who had been taking such an amount daily for three weeks, gained a stone and a half during the three months and a half he was in the hospital. In no case did the urine of patients who were taking large doses of guaiacol give a precipitate with hydrochloric acid as has been found by Seifert. Of the forty cases treated with guaiacol, one patient only experienced any ill effects. This person when taking twenty minims three times a day, complained of much gastric and abdominal pain, but on the remission of the drug was soon able to take smaller doses.

With reference to the supposed part played by guaiacol in the good results obtained by the administration of creosote, **Harrington Sainsbury** draws attention to two circumstances which appear to cast some doubt upon the theory. First, that creosotal, which is generally found to be quite, if not more, efficacious than creosote, does not contain much guaiacol as, in the course of manufacture from creosote, that substance is removed; and, secondly, that **pinewood creosote,** which is said to contain no guaiacol, appears to be as valuable as beechwood creosote, which contains a considerable percentage, in the treatment of phthisis.

As regards the action, dosage and best methods of administration of creosote.

At the meeting of the Academy of Medicine held in July, **M. Savine** said the favourable action of creosote is due (*a*) to a bactericidal action on the microbes which accompany the bacillus of Koch; (*b*) to its stimulating action on nutrition, so that phagocytes, which prey upon the tubercle bacilli, are increased in number; and (*c*) to its chemical action on the toxins excreted by bacilli. The drug was administered by the author to cases of pulmonary phthisis of the first and second degree who were not cachectic, either (i) by hypodermic injections of a 15 per cent. solution in olive oil, with sometimes the addition of a little myrtol or eucalyptol in a dose of 10 to 40 c.c., or (ii) by continuous inhalation of from 5 to 10 grammes of an alcoholic solution, containing 33 per cent. of creosote, or (iii) by the mouth, either in milk or oil, or as an emulsion, beginning with a dose of 40 drops per diem, increasing up to 300. Savine objects to giving creosote in capsules, pills, or cachets, since to such methods he considers the various gastric disturbances which have been set down to creosote are due. It should be given in a considerable quantity of fluid, and preferably at the same time as food.

The use of iodoform or europhen.

L. Flick makes a report upon the treatment of phthisis by means of inunctions of iodoform or europhen (*Therapeutic Gazette*, January, 1898). He has tried the method for eight years (the number of cases not stated). It consists of the rubbing in of iodoform or europhen, in solution in olive oil, and of the two he prefers europhen. Europhen, which has been introduced as a substitute for iodoform because of its freedom from the characteristic smell of that substance, is chemically iso-butyl-ortho-cresyl-iodide, and physically is a pale orange non-crystalline powder containing 28 per cent. of iodine, and is non-poisonous. This substance in olive oil (europhen, drachm i; olei rosæ, minims ij; olei anisi, drachm i; olei olivæ, 2·5 ʒ). About a tablespoonful of the solution is rubbed into the skin of the inside of the thigh and into the armpits at night. By means of this treatment, chiefly among out-patients, he comes to the conclusion (1) that incipient cases can always be cured by the use of this method; (2) that cases advanced to the breaking down stage may be improved very much by this method of treatment, and sometimes may be cured; (3) that the treatment ought to be continued even after the acute symptoms have disappeared, and should be maintained until perfect health is re-established. He attributes the good effects to the absorption of the iodine which both of these drugs give off.

It should be noted in connection with these statements that the author was giving creosote and tonics at the same time that he was using the inunction treatment. To these it may be that some of the resulting good might have been attributed. The author considers that a combination of the two methods, viz. the creosote and tonic with the inunction treatment, gives better results than either separately.

The use of formalin.

L. D. Johnson, in a prize essay published in *New York Medical News*, May 28, 1898, advocates the use of formalin in tubercle of the lungs. He bases his recommendation upon its well-known germicidal properties. For example in a culture tube in which tubercle bacilli are growing, a few drops of formalin placed on the cotton plug will cause their destruction. With any good inhaler in which hydrogen dioxide can be used as a means for supplying oxygen, a sufficient quantity of formalin may be added to make a solution of a strength of 1-1000 or 1-1500. With this apparatus the vapour of formalin mixed with oxygen can be deeply and slowly inhaled. The treatment should be applied twice a day and continued for ten or fifteen minutes at each sitting. The author also recommends that a consumptive patient

should sit for a few hours each day in a room in which formaldehyde is being generated.

It should be noted that no actual results of treatment by this method are given, and also that the author suggests the remedy in incipient tubercle of the lungs. One would think that formalin, if used in one of the ways suggested, might have a good effect in the cases of phthisis in which there is evidence of mixed infection and in a later stage than that which is known as incipient phthisis, but it is difficult to understand how such a disinfectant can be of more use than many others which have been unsuccessfully tried when the tubercle of the lung has not undergone softening. However, the plan appears worthy of trial.

The use of cinnamic acid.

Cinnamic acid has been used by **Heusser** and **Landew** in the treatment of consumption. Two minims are first of all injected either subcutaneously or intra-muscularly, and this is gradually increased until the amount is one gramme per injection. After the injection there is burning pain, sense of fatigue, headache, and sometimes vertigo; these soon pass off. After this treatment the patients are said to increase in weight, to exhibit increased appetite, and to be relieved from cough. The physical signs improve and the amount of elastic fibres and bacilli in the sputum diminishes. Although improvement begins in two or three weeks the treatment must be continued for some time. The remedy should be used with caution.

The use of ichthyol.

Le Tanneur (*Wien. med. Blätter*, December 2, 1897) has employed this remedy in doses of 4 gr. eight times a day with success for two years in the treatment of diseases of the respiratory tract, both chronic and acute, *e.g.* bronchitis, bronchiectasis with offensive sputum, as well as in tuberculous disease. The drug is given in capsules of gluten, and the medicine is exhibited after meals in two doses.

6. The treatment of the symptoms of consumption.—The sweating of the phthisical—an idea as to treatment.

In a valuable series of experimental researches upon the elimination of bacterial toxins by the skin, **Salter** (*Lancet*, January 15, 1898) appears to have proved that the night sweats of phthisis contain tuberculin in notable quantity. The *modus operandi* consisted in injecting given quantities of the collected sweat of the phthisical into guinea-pigs which had been rendered

tuberculous by virulent cultures of tubercle bacilli. The sweat of fourteen patients with well-marked phthisis with numerous tubercle bacilli in their sputum was employed. Injection of from 3 to 7 cc. from all but two of these cases produced a well-marked reaction. A tuberculous guinea-pig had its temperature taken every four hours; it was found always above normal, viz. 102° F., for five days. On the sixth day 5 cc. of sweat from one of the phthisical cases was injected at 10 a.m,; at noon the temperature began to rise, at 2 p.m. it was 104°, and by 3 p.m., it had reached its maximum, 105·5°; by 4 p m. it was 104·5°, by 5 p.m. 103°, by 6 p.m. 102° (under), and by 7 p.m. 100·5. Next day the temperature was normal. As control experiments, normal sweat was injected into tuberculous animals and phthisical sweat into healthy animals, but with the exception of a temporary fall in temperature no appreciable effect was produced. From these experiments, taken in conjunction with others which showed that the injection of large quantities of sweat from a healthy individual could produce little effect in animals, thereby confirming and extending the results of other observers, Salter considers that it is proved that the night-sweats of phthisis contain tuberculin in notable quantity. From this he deduces the theory that as the sweats are eliminative efforts on the part of the tissues, the very worst treatment which can be adopted is that of attempting to arrest the sweating by atropin, zinc oxide, picrotoxin, and the like. He suggests that the rational line of treatment should be the encouragement of sweating by warm blankets, hot bottles, and the enveloping of the patient in some garment of highly absorbent material, such as a night-shirt of Jäger's texture or other woollen material.

It must be confessed that from a practical point of view this treatment does not seem to commend itself, for everybody who sees much of phthisical patients must be struck by the extreme depression and apparent loss of strength which always follow a copious night- or sleep-sweat.

The use of acetate of thallium in night-sweats.

Combemale, of Lille (*La Semaine Médicale*, February 28, 1898) at the Academy of Medicine on February 22, read a note upon the subject of the treatment of the night-sweats of phthisis by the administration of acetate of thallium. He stated that he had treated thirty cases suffering from excessive sweats with only a single failure. Chronic catarrh of the bronchi and cases of bronchiectases benefit when suffering from night-sweats just as do tuberculous patients. The drug is given in the form of pills in centigramme doses, rarely requiring to be exceeded. The drug

should not be given for more than four days in succession and should be administered about an hour before the sweating is wont to begin.

The indications for blisters in phthisis pulmonalis.

At the Academy of Medicine, Paris, on March 15, **Vallin** read for Daremberg a note upon the subject of blistering in phthisis. Blistering is contra-indicated in very acute cases of the disease, also in cases of slower course, but infectious from the first, as well as in cases of extending bronchopneumonia and tuberculous cases with hæmoptysis and high fever. On the other hand, blisters render great service in cases of phthisis, whether bronchial or pulmonary, with localised pleural congestion when the temperature is not above 38·5° C. In such cases small blisters often applied are attended with the best results. Blisters are also useful in bronchopneumonia without hæmoptysis when of limited extent with fever amounting to 39° or 40° C. Care should be taken to watch the urine and also to restrict the application to adults and young people.

(*e*)—Actinomycosis Pulmonum.

The use of iodide of potassium and of eucalyptus.

Actinomycosis pulmonum is an extremely fatal disease, the mortality from which is said to amount to 90 per cent. In fact, unless the lesion is within reach of surgical interference, we might almost say that all the known cases have been fatal. The clinical symptoms of the disease vary much with the exact seat of the lesion, but speaking roughly the local signs strongly resemble those of chronic pleurisy or lung tuberculosis, to which may be added the general symptoms of pyæmia with those of evidence of implication of other organs, the liver, spleen, or intestines. The employment of drugs in such cases has appeared to be practically useless, and when the disease has been diagnosed by the discovery of the actinomycotic "rays" (a rare event), or mycelium in the sputum, or in the pus from pyæmic abscesses, unless, as we have said, there is any chance of surgical interference, the case generally goes from bad to worse and ends in death. The **present writer** has recorded during the past year in the *Journal of Pathology* a case in which the signs and symptoms resembled chronic pleurisy coupled with pyæmia, which was fatal and in which the autopsy showed grave implication of the liver and spleen as well as of the lung. In this case **iodide of potassium** was used in large doses without apparently in any way hindering the course of the fungus. Under such circumstances it is of interest to draw attention to the use of another drug in one case, namely, **eucalyptus,** which appears to have been successful, or, to speak more guardedly, after the administration of which improvement and, indeed, cure resulted. **G. R. Butler**, of Brooklyn (*New York Med. News*, April 23, 1898), reports such a case.

A male patient, aged thirty-seven, was admitted into hospital for a surgical affection in October, and whilst there developed the symptoms of pneumonia. By the middle of the month he had violent paroxysms of coughing with discharge of extremely offensive dark brown sputum. To lessen the intolerable fœtor of breath and sputum, he was ordered oil of eucalyptus (5 minims in capsules every four hours day and night) and spray inhalations of the oil three times daily. In two days the fœtor had diminished (November 8th), and the dose of oil was increased to 10 minims every four hours, and the spray inhalations every two hours. Four days of this treatment were sufficient to diminish both the cough and the fœtor; the sputum smelling only of eucalyptus. On this day, November 12th, the specific organism of actinomycosis (form not stated) was discovered in the sputum. The physical signs in the lung showed dulness of the left upper part to the nipple and tubular breathing, and also dulness at the right base posteriorly with moist râles. Under the eucalyptus treatment the patient steadily improved and in a month the cough and expectoration had entirely disappeared, and the pulse, temperature and respiration were normal. The use of the eucalyptus was discontinued and the patient was discharged cured. There was slight dulness over the left apex, with high-pitched breathing and prolonged expiration in the infra-clavicular space, and a similar dulness with a feeble respiratory murmur and prolonged expiration at the right base, but no râles in either locality.

Of course, as a rule, no reliance can be placed—so the author says, and we must agree with him—on the results of a remedy employed in one case. If, however, the diagnosis of actinomycosis was certain—and the discovery of actinomycotic elements would place that beyond dispute—there can be no question that cure resulted after the administration of large doses of eucalyptus.

It is of interest in this connection to note that the action of eucalyptus upon the lower infusoria has been shown to be very great, and generally its strong germicidal power has been definitively proved. It would certainly be worth while to try the remedy in further cases.

Karowski, in a paper read before the Berlin Medical Society (*Lancet*, March 26, 1898), states that actinomycosis appears in the lungs in two forms: (*a*) A less serious form in which the germs establish themselves in the mucous membrane of the bronchi,

producing a chronic inflammation with the characteristic actinomycotic filaments, etc., in the sputum, and (*b*) the serious form in which the germs penetrate into the lung substance, producing first of all a peribronchitis. In this form the disease at first may not be marked, but later the symptoms of phthisis are developed, but tubercle bacilli do not appear in the sputum, but, perhaps, the actinomycotic fungi. In the next stage the disease reaches the pleura and a hæmorrhagic effusion takes place. A swelling of the thoracic wall as in empyema follows in some instances, and this may point through the diaphragm or through the chest-wall. When the case can be operated upon surgically, and the affected parts can be removed, a chance of recovery is presented, as in a case related by him, but when the disease passes into the third stage (*c*) and metastatic formations take place in various parts of the body with symptoms of septicæmia, the prognosis is hopeless.

In an exhaustive treatise upon actinomycosis hominis and allied affections, by **Poncet** and **Bérard**, there is a summary of the experience of these observers in the treatment with **iodide of potassium.** The hopes which this treatment appeared to hold out as almost a specific for the disease do not seem to have been realised when the cases in which it has been used are submitted to a severe examination. In eighteen out of twenty-five cases which they have observed, the authors have demonstrated the absolute uselessness of iodide of potassium. In ten cases the patients died from local spread of the disease or from its becoming general. In the cases in which a favourable result was obtained, generally speaking, some surgical operation had been performed. The authors, however, consider iodide of potassium as a useful adjuvant, which, if administered before the operation, tends to limit the disease ; it also appears to hasten the cure and may prevent relapse if its administration is continued after the surgical operation has done its part.

THE OPEN-AIR TREATMENT OF PHTHISIS.

By F. W. Burton-Fanning, M.D., M.R.C.P.,

Physician to the Norfolk and Norwich and Jenny Lind Hospitals.

The most important events of the year 1898, medically speaking, have been the rapid growth of interest in the open-air treatment of consumption and the spreading conviction that it is both applicable and promising in Great Britain. It has been somewhat suddenly realised that Britain is tending to fall behind other countries in her struggle with this malady, and for the time being all interest is centred in this rational, if unheroic, method of combating the disease. Scarcely a week has passed without a communication on the subject being made to one of our medical journals ; and the *Practitioner* devoted its June number to the special consideration of tuberculosis. On all sides the open-air treatment has been warmly endorsed, and the foundation of a national movement for the suppression of tuberculous diseases has been firmly laid.

The curability of phthisis under certain conditions may be taken as an axiom, and failing the discovery of a specific for the disease, we must be content to influence its course more gradually by bringing to bear against it a combination of all those general measures which have been found by experience to be efficacious. The founders of the German sanatoria have made no startling discovery of a cure, but they have taught us this valuable lesson —that many cases can be benefited by dogged and systematic persistence with a line of treatment, that fail to be affected by the less methodical adoption of the same general principles. There is, of course, nothing new in the vaunting of an open-air life for consumptives, but what is new is its promotion, along with certain other measures, into a complete system. Hitherto we have failed in our management of phthisical cases through lack of insistance and perseverance. In our heart of hearts we have been inclined to regard the disease as an intractable one, and we have therefore had insufficient confidence in our treatment of it. This is the point that I especially wish to emphasise. The patient has not

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been convinced that particular rules are worth following to the letter, and that the difference between recovery and permanent ill-health may depend on whether he devotes himself absolutely to a certain mode of life or follows it in a haphazard, intermittent fashion.

Recognising the difficulty of enforcing a *régime* which is antagonistic both to the patient's prejudices and former habits, without removing him from home, so far this treatment has been mostly carried out in large sanatoria. The whole *raison d'être* of these establishments is the practice of this particular cure, and not only do patients go prepared to submit themselves to it, but the whole spirit of the place and its equipment make the adoption of the routine an easy matter. The same broad principles govern the treatment at all these Continental sanatoria for consumption. These will be briefly described, reference being made later to the small points of difference which characterise individual establishments.

The buildings themselves can be dismissed in a few lines. The essential part of the treatment is conducted outside them, and, so long as certain features are observed, a great amount of latitude is permissible in their construction. All the patients' rooms should face south, and the building should be formed so as to secure full exposure to the sun and protection from the prevalent winds. The rooms should be sufficiently airy and well provided with windows, so that free ventilation may be secured and every corner be well lighted. Stringent precautions must be taken against the harbouring of dust, so curtains and mural decorations are objectionable. The walls must be covered with washable materials, and the floors must be rendered unabsorbent by the use of polished wood, some form of stone, or (as preferred by many on account of its noiselessness) linoleum.

Most of the sanatoria are placed at a moderate elevation, often on the southern face of a hill, which continues to rise above them, and thus offers protection from the north. Further shelter is always secured by neighbouring forests; these are usually of pine, and afford attractive walks and views, while one usually finds a beautiful expanse of country stretching away to the south.

A large verandah forms a prominent feature of nearly all these buildings, and various kinds of shelters are usually dotted about the extensive grounds.

Now, coming to the "cure," the essential feature is the perpetual existence of the patient in the open air. About 9 a.m. every day the inmates adjourn to the verandah or to a "Liegehalle," and settle themselves for the day on their lounge-chairs,

where an attendant arranges their wraps and tucks them up in a way they cannot manage properly for themselves. With the exception of their dinner and supper hours, and, in the case of the more robust invalids, of the periods prescribed for exercise, they lie here until 10 at night—that is, for about eleven hours. Provided that they are sufficiently clothed and sheltered from the wind, no difficulty arises from cold, nor do rain, snow, and mist interfere with the cure, the essence of which is to inure the patient to all weathers. Attention must be drawn to the fact that none of these sanatoria enjoy exceptional climates, and it is the deliberate opinion of those qualified to speak on the subject that climatic conditions may be considered of little account in resolving to adopt the treatment in any locality. The clothing is, of course, a matter of importance. It should be loose, but of warm materials, such as wool or flannel, to encourage a healthy action of the skin. Wraps are pulled on as they are wanted, furs and sheepskin sacks are much used, and exceptional individuals require foot-warmers. The cold is better borne in the recumbent than in the sitting-up position, and it is generally considered that the consumptive should be kept lying down always, in spite of the possible objections that this hinders the drainage of cavities and allows the muscles to lose their natural tone. The same excess of air is supplied to the patient during the night, the bedroom windows being constantly open.

The occupation of these long hours of forced inactivity presents, I should say, much less difficulty than might be expected. In certain cases one notices some *ennui* and consequent demoralisation, but the remarkable power human beings have of adapting themselves to any conditions is a matter of frequent comment among the patients themselves, who soon settle down with complacency to their new lives. Reading is, of course, the great stand-by, and the opportunity is often taken of pursuing a definite study, such as a foreign language. For those less seriously inclined there are games and various forms of handiwork. At some institutions conversation is strictly limited, at others it goes on all day. While all these sanatoria keep most of their patients perpetually out of doors, a considerable divergence of opinion exists about the relative advantages of constant rest and of some amount of exercise. As regards the points of treatment in which the practice of one physician differs from that of another, an attempt will be made later to lay both sides of the question before the reader.

Next in importance to this "hyper-aëration" comes the matter of feeding. On the management of the patients' dietary, great

stress is laid by the directors of all these establishments. "*Ma cuisine c'est ma pharmacie*," says Dettweiler. The object always being to get the consumptive to eat the maximum amount of nutritious and fattening food that can be tolerated, the end is gained in slightly different ways at different places. As a rule three large meals, of several courses each, are provided, and at some sanatoria three or four pints of milk are drunk in the intervals, in addition. Alcohol is commonly prescribed in the form of wine or cognac. The ingestion of this large quantity of food is helped by force of precept and influence, but the great promoter of appetite is open air.

Thirdly, come douching and massage, which are much believed in at most of the sanatoria, it being claimed that by these means the healthy action of the skin is encouraged, the general powers of the patient are increased, and the muscles kept firm. The more robust inmates have a cold douche, followed by vigorous friction, the next class have massage with spirit, while the worst cases have only dry massage. No notice of this system would be at all complete that did not make special mention of the part played by the close supervision which the resident medical men exercise over their patients. The most trifling ailments are watched for, and appropriately treated at once; each case is closely studied in every particular, and receives minute instructions for the guidance of every action during the day. The greatest care is taken to impress upon the patients the necessity of following injunctions in regard to the disposal of their sputum, which is usually collected in pocket spittoons, and burnt every day.

Without detailing the oft-repeated figures, one may say that the results obtained by most sanatoria are nearly similar, and may be roughly summarised as follows:—About one-third of the cases recover sufficiently to resume their work in life for an indefinite number of years; another third improve, but to a less extent; while the remaining third make no material progress.

Apropos of statistics, one would like to remark that the most important factor in the obtainment of favourable results will probably always be the careful selection of cases for the treatment.

A few particulars will now be given of some of the individual Continental sanatoria that have become better known in Great Britain.

Goerbersdorf in Silesia. The first institution of the kind was founded here in 1854 by **Brehmer**, who was the originator of this method of treatment. It is 1,700 feet above the sea, and has, therefore, some of the qualities of mountain air, but nothing

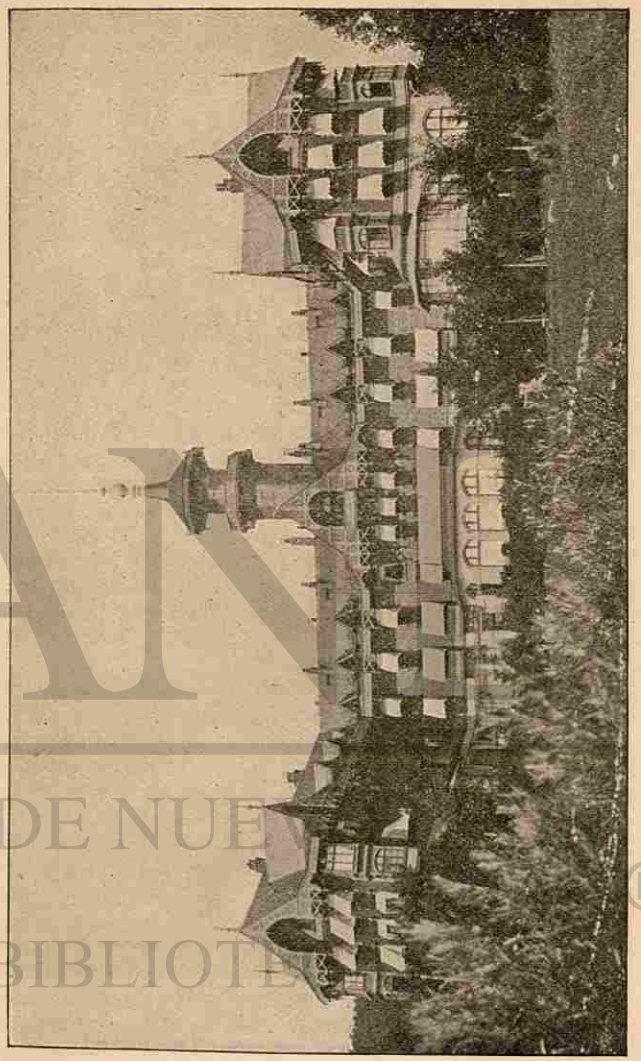

Fig. 1.—The Falkenstein Sanatorium. [*F. Schilling, Königstein.*

From a photograph.

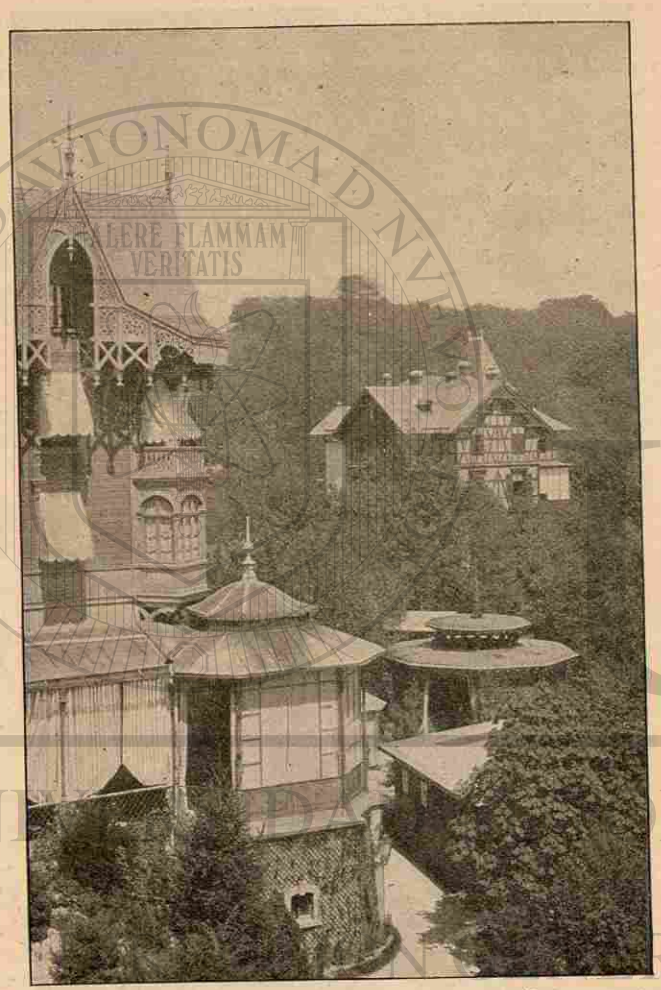

Fig. 2.—Shelters, etc., in the Grounds of the Falkenstein Sanatorium.

From a photograph. [*F. Schilling, Königstein.*

exceptional in the way of climate. Brehmer's teaching is still followed by the present superintendent, Dr. Acktermann. Febrile patients are confined to bed in their rooms, with widely opened windows, and are not found occupying shelters, as at some establishments. For non-febrile patients, walks and graduated exercises are much insisted on, for their supposed effect on the heart. About 200 patients are accommodated, and the charges are moderate, from £3 to £4 a week.

Goerbersdorf is reached by train through Cologne and Berlin to Dittersbach, from which station it is a drive of half an hour.

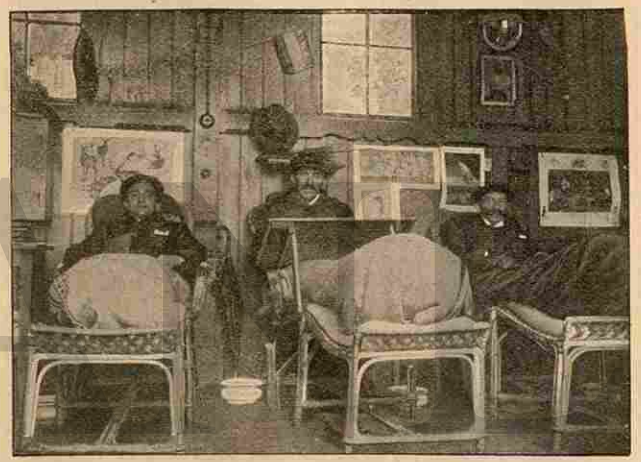

Fig. 3.—Interior of Liegehalle at the Falkenstein Sanatorium.

Falkenstein, in the Taunus (Fig. 1), has been more resorted to by English patients, though even here they are in a small minority, as compared with those of other nationalities. The site of the sanatorium is at an elevation of 1,300 feet on the southern face of a range of hills, which continues to rise, and affords beautiful shelter on all sides but the south. Its climate, again, is neither distinguished for equability of temperature nor for absence of rain and mist. It is in fact very similar to that of many parts of England, except that its winters are colder and its summers warmer. Dr. Hess now directs the treatment, but **Dr. Dettweiler** holds the position of consulting physician, and his name is particularly associated with the doctrine that most phthisical cases should be kept perpetually at rest in the recumbent

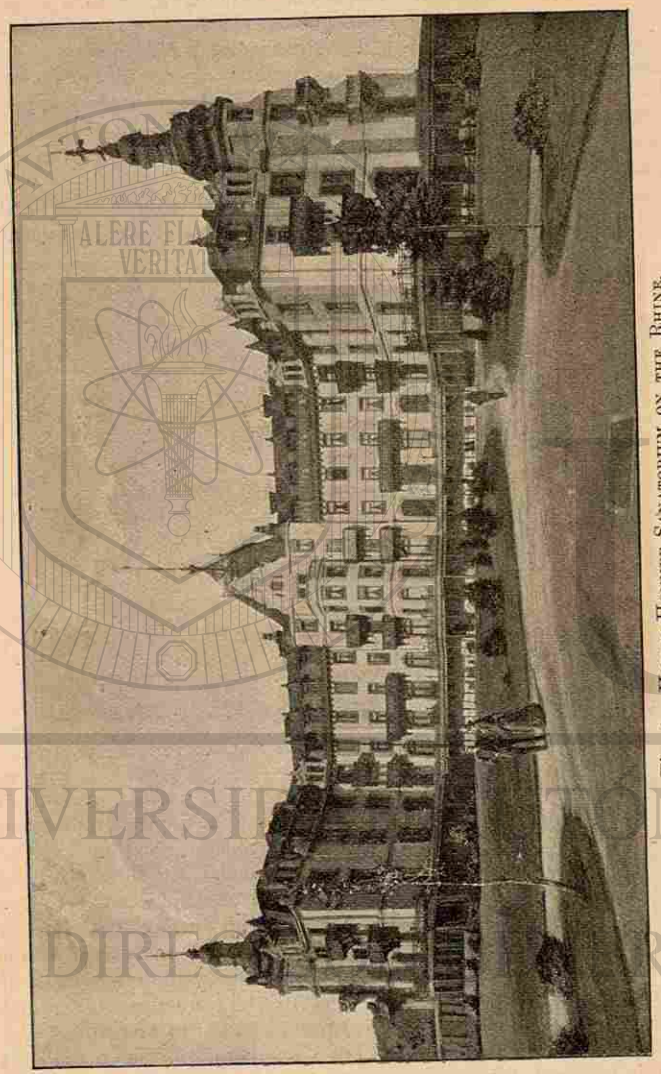

Fig. 4.—Hohen-Honnef Sanatorium on the Rhine.

position—not necessarily in the solitude of their own rooms. Here, therefore, the special feature is the provision of various "Liegehalle" (Figs. 2 and 3), which are contrived to afford shelter from any wind, and which are almost constantly occupied by patients who have *chronic* fever, and by those who have none.

The regular charges are from £3 to £5 10s. per week, but there are several extras: baths, rubbing, and stimulants, not being included in these figures.

Falkenstein is ten miles from Frankfort; it is usually reached

Fig. 5.—Part of Nordrach Sanatorium.
From a photograph. [*Dr. E. H. Douty.*

by train from the latter place to Cronberg, whence the sanatorium is within an easy half-hour's drive.

Hohen-Honnef, on the Rhine, is about 700 feet above the sea, and has a milder climate than the foregoing, though its air is always bracing. The distinctive features of this sanatorium are the luxuriousness of the building and its appointments (Fig. 4), and the charming view obtained from it over the Rhine. Dr. Meissen is the resident superintendent, and Dettweiler's teaching is followed in the treatment practised here. The charges are also about the same as at Falkenstein.

The train or steam-boat can be taken from Cologne to Honnef, or the invalid can book from London direct to Bonn, and take

another train thence to Königswinter station. From either place the sanatorium is within a very easy drive.

Nordrach, in Baden Black Forest, has lately become more widely known in England than any of the above sanatoria, largely through the writings of Dr. Mander Smyth (*Brit. Med. Journ.*, April 30, and Oct. 1, 1898). Though no statistics are published on the subject its results are said to surpass those of other sanatoria, notwithstanding that more severe cases are admitted. It is placed at an elevation of about 1,500 feet, at the blind end of a narrow valley, and is well sheltered from all quarters but the south-west. Its climate is in no way remarkable, but it owes its success to the personality of its founder and director, Dr. Walther, who apparently exercises a wonderful influence over his patients, by the force of which they are made to accomplish extraordinary stomachic feats. The special feature here, in fact, is forced feeding. There are three large meals a day, and nothing is taken between them. Otherwise the practice is based on the teaching of Brehmer; febrile patients are considered to be best in bed, in the seclusion of their private rooms, while others are sent for longer or shorter walks into the magnificent surrounding forests. The five component buildings are mostly of wood (Fig. 5), and are very simple in their finish and their furniture. No "Liegehalle" is found at Nordrach, but the patients take their hammocks with them, and sling them in the forest. The visits of friends and even conversation among the patients themselves are discouraged. Cold and damp are sublimely disregarded, and the inmates frequently pass the whole day in wet clothes, acquiring the necessary hardening without the help of the systematic douches and massage which are practised elsewhere.

Only fifty patients can be accommodated at present, and there is always difficulty in obtaining admission, on account of the excessive demand upon the beds. The charges are £3 to £3 10s. a week.

From Strassburg the train is taken on the Schwarzwald railway to Biberach-Zell, from which station the sanatorium is distant nine miles.

Davos. A few sanatoria have also been instituted in places where the particular climate has been thought to constitute an important factor in the treatment. A good example of such is Dr. Turban's establishment (Fig. 6), situated on the outskirts of Davos-Platz, and at an elevation of 5,170 feet above the sea. The well-known advantage of residence in mountain air is here combined with the general treatment, advocated by Brehmer, of Goerbersdorf,

and Dettweiler of Falkenstein. The charges vary from £3 15s. to £5 per week. The access to Davos is easy, through Bâle, Zurich and Landquart, thence by the mountain railway to Davos.

Overwhelming arguments have been adduced in favour of the feasibility of the same treatment in Great Britain, there being a general consensus of opinion that climate plays a less important *rôle* than the strict observance of the various principles of the treatment. The fact that most of the sanatoria have been placed

Fig. 6.—Dr. Turban's Sanatorium, Davos.

in localities whose climates boast of no distinguishing feature speaks for itself, to say nothing of the more or less similar results that have been obtained under the most diverse climatic conditions. **Dr. H. Weber**, and **Dr. C. T. Williams**, in their many contributions to the literature of the subject, **Dr. Walters** (*Lancet*, Aug. 14th, 1897), and others, have stated, with all possible force, their conviction that the practice of the treatment in England will yield results which will bear comparison with those obtained elsewhere. Moreover, the matter has been put to the actual test, and gratifying results have been already recorded by **Miss Jane Walker** (*Lancet*, April 9th, 1898), **Dr. A. Ransome** (*Brit. Med. Journ.*, May 28th, 1898), **Dr. Philip** (*Brit. Med. Journ.*, July 23rd, 1898), and the

writer of this article (*Lancet*, March 5th, 12th and 26th, 1898). A more detailed description will now be given of the application of this treatment in Great Britain, and reference will be made to points of difference in the teaching of various writers. **Dr. C. T. Williams** (*Brit. Med. Journ.*, May 21st, 1898) says—"It is obvious that if we want to introduce the open-air treatment largely into England, we must, if it can be done without sensibly impairing its utility, modify it to suit the spirit and habits of the people, and this is easy enough. There is no reason why it should not be carried out in country houses, or even in suburban ones."

The following conditions should be looked for before embarking on the treatment: a healthy house, with an airy south room for the patient to sleep in; the air of the locality should be pure, and according to most observers, bracing; there must be a garden with some provision for the protection of the patient, as he lies out of doors, against wind and rain; the soil should be dry; and, lastly, an attendant should be secured, who can be relied on to carry out the medical man's instructions intelligently. The best results may, of course, be expected where the conditions most closely comply with what is demanded, but comparatively good results may certainly be obtained where these fall short of our standard. While agreeing in the main with **Dr. Philip's** belief (*Brit. Med. Journ.*, July 23rd, 1898) that phthisis can "be treated with approximately equal success, or want of success, in all climates, according as the larger indications for treatment are fulfilled or overlooked," I do not think that the observed effects of particular climates on particular classes of consumptives should be altogether disregarded. Where possible, it will often be advantageous to select the locality for the adoption of the open-air treatment, according to individual characteristics. With the object of obtaining some information on this subject, I have observed closely the progress made by the same patients, while they carried out the open-air treatment in an extremely bracing air, and while they were subjected to the same treatment in a less bracing air, and have satisfied myself that the natural effect of the increased appetite and general stimulation, of which they were sensible in the former air, manifested itself by a more rapid gain of weight, and consequent mastery of various phases of their disease. Where the patient is so situated that home treatment is impossible, it will generally be wiser to send him to a special sanatorium, than to attempt the treatment in an English hotel, or in lodgings; these seldom provide the necessary means for pursuing the prescribed mode of life, and the patient follows regulations only so far as they do not clash with the customs of the place. The great point

is so to arrange everything that the patient finds the adoption of the *régime* a natural and easy matter. Returning to the directions that should be given to the patient or the attendant, one must first consider the bearing of the patient's temperature on his management, and the different opinions that are held on this point. While all agree that non-febrile patients may be allowed to spend the whole day out of doors, the teaching of Brehmer differed from that of Dettweiler in regard to febrile patients. **Brehmer** confined to bed those whose temperatures rose at all above the the normal in the mornings, or above 100·2 F. in the evenings. He considered that these cases required complete rest and seclusion, though the free admission of fresh air was always secured by open windows. **Dettweiler** and his followers, on the other hand, permit patients with chronic fever to occupy a couch out of doors. Any exacerbation of fever is treated by confinement to bed, and in cases with considerable elevation of temperature (102° or more)—even though apparently habitual—a preliminary trial of a week or two in bed is made. If, however, at the end of this time it is not reduced, the patient is allowed up and spends the day reclining in the verandah or "Liegehalle." In support of the confinement to bed of all febrile patients, it is argued that only thus can be secured perfect quietude and absence of distraction; while, against this restriction, it is urged that the air of the best ventilated room is less pure than that found outside, and pure air is considered the most reliable antipyretic. Personally, I have not confined to bed patients with chronic moderate fever, unless other points in their cases or in their temperament suggested the advisability of seclusion. According to the condition of the patient and, to some extent, of the weather, it will be laid down that from six to twelve hours are to be spent out of doors each day. Though wind and wet are absolutely disregarded by some practitioners, it is generally thought that the consumptive should be screened from them by a shelter, which at the same time is freely open to the lee side. **Dr. H. Weber** insists especially on the unfavourable influence exerted by wind on the consumptive. I have certainly observed increased discharge from bronchi and vomicæ follow free exposure to wind and other inclemencies, to say nothing of the difficulty of breathing and of keeping warm in the presence of wind. The shelter may take the form (1) of a revolving shed, (2) of one whose sides can be removed, (3) of a three-fold canvas screen painted and fixed to a light platform, or (4) of a tent (Fig. 7). In this is placed a cane or wicker lounge-chair or a couch on which the patient can recline at full length, the number of extra wraps

and rugs depending on the temperature of his surface. The acclimatisation of the patient will generally be proceeded with gradually. He must use no room whose window is not widely opened, and he must of course shun all vitiated atmospheres, but at first some caution will be exercised in exposing him to wet and cold, though in a week or two he will have learnt that these do

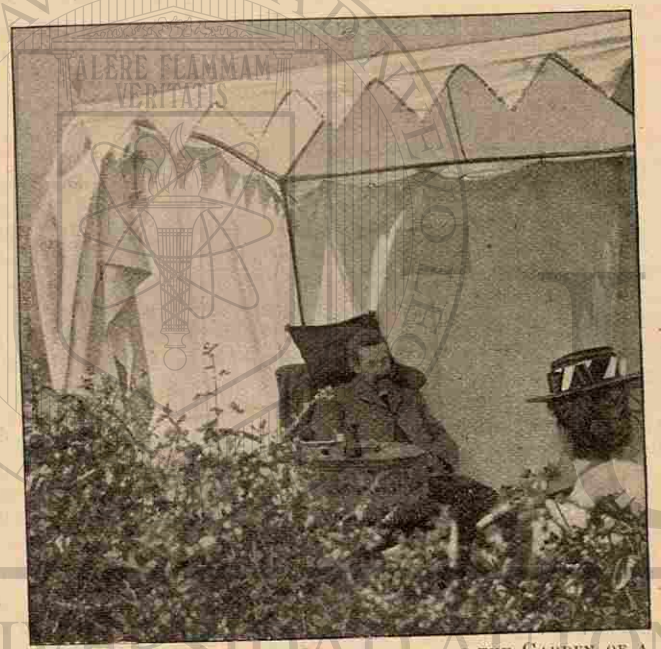

Fig. 7.—Simplest Form of Shelter, used in the Garden of a Lodging-House.

not injure him, that he is less susceptible to catarrhs than formerly, and that the outdoor life is essential for his well-being. The daily amount of exercise to be taken by the patient must also be exactly regulated according to his general strength, his temperature, and other considerations. To begin with, for example, ten minutes' stroll in the morning and afternoon may be allowed and gradually increased according to its effects; later, gentle ascents may be undertaken and instructions as to breathing may be added. The relative importance for certain non-febrile patients of perpetual

repose and of regulated exercise is a matter of discussion. On the one hand it is urged that all energy should be conserved, while on the other it is thought that the stimulus of exercise is more beneficial to the heart, the other organs and the muscles. It is agreed that the pulse and the temperature constitute our guide in the amount of exercise to prescribe. As showing how a correct decision can be formed only by studying each case separately, **Dr. Huggard** informs me that he has met with exceptional cases in which fever did not subside until the patients commenced to take walks. It is certain that consumptives with very feeble circulations or perturbed nervous systems, are much benefited by skilful massage, which can advantageously be allowed to replace exercise in a large number of cases. It cannot be claimed that hydrotherapy is an essential part of the "cure," as at one very successful establishment, at least, it is not used systematically at all; at the same time douches and baths may reasonably be expected to have some tonic effect on the skin and general system.

Without entering at length into the discussion of the important subject of dietary for these patients, I will content myself with saying that the physician should set before himself the aim of building up the organism by a very liberal supply of nutritious and digestible articles of food. The principle of "forced feeding" enters more or less into the management of all cases, but it is accomplished in different ways according to individual peculiarities. Sometimes the appetite must be coaxed by a succession of delicacies, and the digestion assisted by drugs, or a deliberate attempt may be made to excite the stomach to greater activity by increasing the nutriment that it is called upon to digest. When the patient has been fairly started on the open-air course of treatment, the doctor will find that in many cases his subsequent visits will be largely concerned with attention to the functions of the stomach and with the attempt to adjust the diet to its capabilities.

Under the heading of discipline, I will only refer to the educational possibilities of this course of treatment. Not only will the intelligent patient become instructed in the right way of living, but he should also be impressed with the necessity of caution in regard to the disposal of the sputum, about which explicit directions will be given.

The *rationale* of this treatment lies in the removal of the patient from those conditions which favour the activity of the tubercle bacillus, while at the same time his constitutional resisting powers are sought to be increased in every conceivable

way, to the end that he may successfully repel the attacks of his destroyer. In the carrying out of this object there is infinite scope for ingenuity on the part of the medical man, and I anticipate that the general adoption of the system in Great Britain will be followed by fresh developments, and by an increase of its power for good. Seeing that the greater number of sufferers from consumption cannot avail themselves of the treatment which is offered abroad, and that in the case of those more fortunately situated banishment to a foreign land often involves many unnecessary hardships, the necessity for establishing sanatoria at home is manifest. Besides this, it is held by many that a cure wrought in the consumptive's own country is more enduring than one brought about in a foreign climate. The provision of institutions for the rich may be left to private enterprise; before long the supply will doubtless become adequate to the demand. But the problem of supplying the poor with the means of recovery is a vast undertaking which has been wisely approached by a powerful association. This should command the active support of the whole medical profession; for it becomes our duty to inform the country of the best means for mitigating its scourge.

THE TREATMENT OF NERVOUS AND MENTAL DISEASES.

By Ernest Septimus Reynolds, M.D. Lond., F.R.C.P.,

Senior Physician to the Ancoats Hospital, Manchester; Physician to the Manchester Workhouse Infirmary and Lunacy Wards.

This article includes the following subjects:—

I.—Tabes Dorsalis.
II.—The Treatment of Epilepsy.
III.—Lumbar Puncture.
IV.—The Treatment of Tetanus.
V.—Paralysis Agitans.
VI.—Chorea.
VII.—Mental Diseases.
VIII.—Miscellaneous.

For the first time for many years there is no special article on insomnia or on the treatment of pain, as nothing new has been published on these subjects during 1898. It is, perhaps, as well that no new hypnotic or analgesic has been brought forward, because during the last few years there has been such a plethora of these drugs that it has been difficult to keep up with the list of them. Time can now be utilised in further and more extensive trials with those already at our service. Nothing new in the treatment of epilepsy has been produced, but fresh observations on Bechterew's and Flechzig's methods are given. Interesting experiences with lumbar puncture as a means of diagnosis and treatment will be found further on.

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A somewhat lengthy account is given below of the ætiology and symptomatology of tabes dorsalis, and an examination of the papers abstracted will show that there can be no question of the enormous importance of syphilis as a cause of tabes. It seems probable, however, that former statements that such a large proportion as 95 to 97 per cent. of tabetics have suffered from syphilis are exaggerated, and have led to the neglect of examination for other possible causes.

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The treatment of tabes seems to be now conducted on more rational lines, and instead of plans being put forward which are said to "cure" the disease, it is better to assume at once that the well-established disease is incurable, and that the most we can do is to relieve symptoms. Further investigations on all sides have shown the great value of regulated co-ordinated exercises in the relief of the ataxic symptoms.

1. The causes and symptoms of tabes dorsalis.

Homén (*Neurol. Centralbl.*, 1897, p. 1026) has carefully examined the previous history of forty-seven cases of tabes, and in only eight cases could he find no history of syphilis, and in three of these preceding syphilis was probable. In thirty-two cases there was a very definite history of syphilis, and of these ten were only treated for syphilis for a short time early in the disease. In twenty-one cases there had been a second course of treatment, and in only one case had there been repeated intermittent treatment, and then for only one year and a half. Homén thus points out that in these cases of tabes the syphilis has not been thoroughly treated originally. He thinks that in some cases of tabes, when actually established, an antisyphilitic treatment may be of service. He found the greatest benefit from the use of Frenkel's co-ordinated exercises, the pains, the intestinal and bladder troubles, the general strength and nutrition of the patient being improved, in addition to the improvement in the ataxia.

Obersteiner (*Berl. klin. Wochens.*, 1897, Oct. 18) says that the exact mode of origin of tabes is still obscure, but he rather inclines to the view that it should be classed as a tertiary manifestation of syphilis, though exposure to cold, traumatism, or poisons may call forth or help to bring about the appearance of the disease even in the absence of syphilis. He does not consider it proved that tabes is due to a disease of the centripetal proto-neuron, as degeneration in the sensory nerves is not constant, and not always in proportion to the disease in the posterior roots and columns; nor is the disease in the posterior ganglia often intense enough to explain the disease in the cord. He points out that where the posterior root enters the cord the medullary sheath of the nerves is reduced to a minimum, and thus this point is a place of low resistance, and a meningeal lesion or altered blood-vessels would suffice to cause degeneration in the roots. The cause of the degeneration of the intramedullary fibres, with or without the extramedullary, must lie in some toxic agent. A primary interstitial overgrowth or disease caused by vascular change can no longer be accepted as a sufficient explanation.

Sarbo (*Pester. med.-chir. Presse*, xxxiv., 3–5) says that in non-tabetic patients above the age of eighteen he found a history of syphilis in only 22·5 per cent., whereas in tabetics it reached 72·8 per cent., and he considers that there is a close connection between syphilis and tabes, and looks upon tabes more as a consecutive affection to syphilis, somewhat similar to the paralysis which may follow diphtheria; and just as paralysis following an obscure throat affection justifies a diagnosis of antecedent diphtheria, so tabes justifies a suspicion of antecedent syphilis. He points out that the inefficiency of treatment by mercury and iodide of potassium does not disprove the connection between syphilis and tabes, for many other syphilitic tertiary manifestations are not relieved by these drugs, and, moreover, destroyed nerve fibres could not be repaired by this treatment. He rather agrees with Edinger's theory, that those tracts in the cord which, being constantly in use (such as the tracts for muscular sense, equilibrium, etc.), undergo most waste and repair, are more readily affected by anything (such as the syphilitic toxin) that tends to interfere with such repair.

Sarbo found a history of syphilis in 50 per cent. of cases of general paralysis, and points out the frequent co-existence of tabes and general paralysis. He alludes to the large proportion of prostitutes among, and the marked sterility of, female paralytics. He does not consider all cases of general paralysis to be syphilitic, for "general paralysis" is probably a collective term for several different morbid processes, which in time it may be possible to distinguish.

Tumpowski (*Deut. Zeitsch. f. Nervenheil.*, x., 1897) has examined 257 cases of tabes, and accepts syphilis as a cause: (1) on the statement of the patient, based on a doctor's opinion; (2) on the former presence of an ulcer with secondary symptoms; (3) on the presence of an ulcer of undetermined character, but followed by secondary symptoms. Doubtful, although probable, is the history of syphilis, if an uncertain ulcer was followed by sterility, abortion, or dead children. Cases with a history of soft chancre are put into a separate group. Of the 257 cases (including three women), there was certain syphilis in 38·9 per cent., probable history in 19·8, and a history of soft chancre in 5·8. In 34·2 per cent., syphilis was the only apparent cause. Generally tabes commenced between the fifth and tenth year after infection, and fairly often between the tenth and twentieth year.

In 85·6 per cent. of the cases, the knee-jerk was affected; it was absent on one side only in 5 per cent., on both sides, in 68·4 per cent., and weakened and unequal in 11·2 per cent. In six cases there was absence of the Achilles tendon reflex on one side,

and in ninety-seven, on both sides. In the cases with normal knee-jerk, the Achilles reflex was absent in five cases on both sides, three cases on one side, and in one case it was unequal. In 54·8 per cent. the pupil reaction to light was absent, either on one or both sides; it was weak on both sides in 20·2 per cent.; in 34·2 per cent., the pupils were unequal. In 21·7 per cent. there were paralyses of the eye muscles, in 10·1 per cent. optic atrophy, in 34·2 per cent. paralysis of the bladder, and in 9·4 per cent., gastric, laryngeal, bladder, or rectal crises.

Lammers (*Centralbl. f. inner. Med.*, July 31, 1897) relates a case in which, five weeks after traumatic rupture of the thigh muscles, pains came on in the legs; in seven months the gait was uncertain, and in a year the man was suffering from typical tabes. The patient had not suffered from any symptoms of tabes before the accident. Syphilis as well as other possible causes of tabes was excluded. The injury was such as to produce considerable psychical and physical effects. Lammers seems to think that in this case an ascending neuritis was followed by the tabes.

Marinesco (*Sem. Médic.*, Oct. 13, 1897) has studied the locality of anæsthesia in fifty cases of tabes, ten of which had amaurosis. He found four principal types: (1) Thoracic, present in forty cases either as a horizontal zone in the nipple region of either side, which, if it reaches to the axillary line, may extend to the inner aspect of the arms; the nipple bands are united anteriorly; (2) in the upper limbs anæsthesia may be limited to the internal surfaces of the arms, or may extend along the inner aspect of the forearms to the little finger; (3) in most cases of tabes, the perineal, anal and genital regions, especially the latter, are anæsthetic, and particularly at the lower part of the scrotum; this is often found in the early stage of the disease. When present it is generally found in other parts as well, such as the thorax or feet; (4) in the lower limbs the position of the anæsthesia is very variable, being common in the plantar and dorsal regions of the foot, the dorsum of the toes, the outer surface of the legs, and on the anterior or posterior surfaces of the thighs. Other parts of the body where anæsthesia may be found are the epigastrium, the left hypochondrium, and the larynx. Cases of tabes with amaurosis often have normal or nearly normal tactile sensations. Subjective symptoms are related to the situation of the anæsthesia; to the first group there is often a girdle sensation, to the second numbness of the arms, to the third troubles of micturition and impotence, and to the fourth, lightning pains and "pins and needles" in the legs and feet. In three patients, gastric crises corresponded to anæsthesia of the epigastrium, and in one to anæsthesia of the left hypochondrium. In one case, laryngeal crises were present with anæsthesia of the larynx.

Ostankow (*Neurol. Centralbl.*, 1898, p. 140) investigated twenty-six cases of tabes, and found that the patellar and ankle reflexes were absent in all the cases. In eleven patients in the pre-ataxic stage, the abdominal reflexes were strongly increased, on both sides in ten, and well marked in one; in ten cases in the ataxic stage, the abdominal reflexes were much increased in three, well marked in five, very slow in one, and not present in one; in five cases in the paralytic stage, the abdominal reflexes were completely absent in four, and in one case were increased.

Bechterew (*ibid.*) also pointed out that in many early cases of tabes there was an insensibility to pain on pressure and on tapping of the popliteal nerve, and he thinks this symptom is more commonly present than Biernacki's sign of anæsthesia of the ulnar nerve.

2. Treatment of tabes by Frenkel's co-ordinated exercises.

Goldscheider (*Deut. med. Wochens.*, 1898, Nos. 4 and 5) recommends regulated exercises, especially in tabes. In the so-called paraplegic stage of tabes, slight flexion and extension of the limbs may be made when the patient is in bed. Help may be given by lightly supporting the thigh or leg. A chair may be inverted over the foot of the bed, and the patient can then exercise himself by touching the cross-bars, or by putting the feet in between them. The movements are first made with the eyes open, and afterwards with the eyes closed. Ample periods of rest must be allowed so as not to produce fatigue, or an exhaustion lasting for some days may occur. Improvement may occur even in advanced cases, and the patients may walk again. Some patients do not improve, and in some the exercises have to be given up apparently because of the pain produced by them. In less advanced cases various movements may be practised to improve the gait. The treatment must be persisted in for long periods of time. In some patients there is an atony of the muscles, and here electricity and massage must be employed as well.

The author then refers to the treatment of intention tremors by exercise. He looks upon this tremor as allied to ataxia. In chorea some improvement may also be produced. Exercises should be carried out only once in the day or once in two or three days. The good effects of this treatment in writer's cramp is well recognised. In athetosis some good effect may result. In speaking of paresis and muscular atrophies, especially due to peripheral neuritis, the author draws attention to the value of exercises, and in neuralgia passive exercises may be useful.

Hirschberg (*Arch. de Neurolog.*, 1896, vol. ii., Nos. 9 and 11) has used the method of curing ataxia by re-education of the movements in nine cases. The exercises were performed once daily for about half an hour, and later for an hour; but the latter time should never be exceeded, nor should the patient be tired. In three of the cases the ataxia was so severe that there was total inability to walk or stand; in the remaining cases the ataxia was of the middle grade. In all the cases there was an improvement, and in some a considerable improvement. There was also an improvement in sensation, which was, however, only subjective. To get good results, the general condition of the patient must be good, with no affection of the heart and no joint lesions, and if the patient is blind the treatment is useless, as it is also if psychical disturbances are present. Acute cases are not benefited until the case has reached a more stationary period.

Jacob (*Deut. med. Wochens.*, 1898, Nos. 8-10) reviews the various forms of treatment which have been used from time to time for tabes. He points out that with baths the general condition can be improved, the subjective nervous symptoms be lessened, and the sensory tracts stimulated, but the anatomical process remains as before. Electricity can influence the paræsthesia, girdle pains and anæsthesia; nerve-stretching and suspension with its modifications are useless and out of fashion. Mercury and iodide of potassium are of but little service. There is, in fact, no specific for the disease and, therefore, we must treat the symptoms, and for this purpose Frenkel's movements are recommended. These are not merely active or passive gymnastics, but the performance of carefully regulated co-ordinated movements, the co-ordination being controlled by the other senses of the patient (apart from the sensations of touch), and especially the sense of sight. The method should be carried out under the immediate supervision of an experienced physician, and Jacob recommends the use of special forms of apparatus; Goldscheider, however, thinks that so long as the movements are such as to accomplish a definite end, no special apparatus is necessary.

3. Treatment by elongation of the spinal cord.

Gilles de la Tourette and Chipault (*Progrès Médic.*, 1897, p. 278) state that by causing a sitting patient to bend forwards strongly with the hands outstretched, a true strong elongation of the spinal cord to the extent of about $\frac{3}{5}$ inch takes place, and this elongation is especially in the lumbar region. They have, therefore, constructed an apparatus so that the bending may be brought about forcibly without interfering with the breathing or circulation. They first tried the apparatus with ten healthy individuals, and

afterwards with thirty-nine men and eight women suffering from tabes. It was only tried in the second stage of the disease, and cases of very long duration were excluded as well as cases of very rapid onset, or if in the third or paralytic stage. Good results were obtained in half the cases; the sensory irritations and lightning pains were improved, retention of urine was relieved, but incontinence was less influenced. Almost always the gait improved, and ten patients were able to walk again alone; on the eyes and bulbar symptoms the stretching had very little influence. Ten patients were not benefited. Each stretching was kept up for eight to twelve minutes, and repeated fifteen to twenty times. Improvement showed itself mostly at the tenth to the fifteenth sitting. The treatment was never continued for longer than three or four months or forty to fifty sittings.

4. General treatment.

Eulenburg (*Deut. med. Wochens.*, Oct. 28th, 1897) first refers to the new conception of tabes as a disease of the sensory neuron. At first all treatment was considered useless. As regards prognosis each case must be considered on its merits. Besides pursuing at one time a more rapid and at another time a slower course, the disease may become stationary even in its earlier stages, so that a relative recovery may be spoken of. This arrest of the disease may give rise to error in estimating the value of a given treatment. Nothing is to be expected from the derivative or revulsive treatment or by giving silver. The value of antisyphilitic treatment is difficult to estimate. The author agrees that a large percentage of cases of tabes have previously had syphilis, but he does not think that syphilis is the sole or essential cause of the disease, and so antisyphilitic treatment cannot be described as a radical treatment; and relative recovery is not more common with antisyphilitics than under other methods of treatment, and, if injudiciously used, antisyphilitic treatment may do harm. Eulenburg says he has used spermin with good results in some cases. He thinks that nerve-stretching should never be used, but suspension may cause some improvement in the ataxia. Frenkel's treatment by compensatory exercises he highly recommends.

II.—THE TREATMENT OF EPILEPSY.

The articles published during 1898 on the treatment of epilepsy are but few, and these are principally concerned with Bechterew's treatment of a combination of bromides with a cardiac tonic such as adonis vernalis, either with or without codeine in addition, and Flechzig's method (recommended for old

and intractable cases) by the use of large and increasing doses of opium followed by large doses of the bromides.

1. Cardiac tonics with bromides.

Bechterew has published (*Neurolog. Centralbl.*, 1898, p. 290) a fresh article on his method. His cases were either not benefited or very slightly benefited by bromides alone. If the cases had never had bromide this was at first tried alone, and afterwards the combination with adonis vernalis (and sometimes with codeine) was given and the results were compared. The comparison showed that in many cases of epilepsy the advantage was certainly with the combined drugs. In some cases the fits were entirely controlled; in only a few cases, in which the bromides alone had been useless, was the combination also useless. Bechterew mentions one case in which this treatment has kept off the epileptic attacks for three years; before this no other treatment had been of any use. The adonis vernalis may have to be gradually increased in amount, the bromide remaining the same. A little codeine was often given to prevent the occurrence of diarrhœa which the adonis might cause; and codeine should always be added if the attacks are accompanied by severe excitement. In exceptional cases adonis and codeine do not agree, and then Bechterew gives infusion of digitalis with the bromide. He also sometimes gives it as a change in order to relieve the patient from the bitter taste which adonis leaves in the mouth. There was but little sign of accumulation with the digitalis.

Bechterew thinks that these cardiac tonics act by regulating the heart's action. In epileptic attacks, even if accompanied by very slight or even no spasms, the pulse rate is quickened, and sometimes this occurs before an attack, so that certain patients look upon the increased heart beats almost as an aura. If this increased rate is always present at the commencement of an attack, the efficacy of cardiac tonics is easily explained. But it must be remembered that these cardiac tonics also act as diuretics, and so may have a good influence in epilepsy by helping the elimination of various toxic agents. Again the influence of these drugs on the vaso-motor sphere must not be forgotten, and they may thus counteract the dilatation of the vessels of the brain which Bechterew believes to occur in epileptic attacks. Finally, it is pointed out that the same combination of drugs has often proved of service in neurasthenia and other functional disturbances, especially if accompanied by palpitation.

De Cesare (*Rif. Med.*, Aug. 13, 1897) has recorded eight cases of epilepsy treated for a period of six weeks with a mixture of potassium bromide, codeine, and adonis vernalis given twice daily.

In four cases there was a complete cessation of the fits, in three cases the fits were replaced by infrequent attacks of vertigo, and in the last case there were four attacks of vertigo and two convulsions. No bad results were observed. The digestion was not impaired, the pulse was fuller, temperature normal, diuresis increased, sleep uninterrupted and calm, and the mental condition unchanged. The author believes the results were due to the combination of drugs, and not to the bromide alone.

Tekutiew (*Neurol. Centralbl.*, Feb., 1898) relates the case of a boy, aged ten years, who had suffered from severe epilepsy for two years. The fits occurred fifteen to twenty times a day, and there was commencing mental degeneration. A mixture of infusion of adonis vernalis, codeine, and sodium bromide was given, and the dose of adonis subsequently increased. The result was most successful, the attacks of epilepsy greatly diminished, and entirely disappeared before the patient left the hospital.

2. Flechzig's treatment by opium and bromides.

Bratz (*Allgem. Zeitsch. f. Psych.*, liv., p. 208) treated forty-three cases by this method. Of these, three died of status epilepticus during the treatment. Twenty-eight patients decreased enormously in weight during the opium period of treatment, and others showed either delirium or a threatening convulsive condition at this time. Epileptic psychoses appeared during the early stage of the bromide treatment in five cases.

Kellner (*Deutsch. med. Wochens.*, 1898, No. 5) tried this treatment in twelve suitable cases in which there was no dementia, the bodily strength was good, and the usual bromide treatment had had no effect. The large doses of opium were well borne. Cure resulted in no case; five remained uninfluenced, six were unmistakably better, and the remaining case left the hospital during the treatment and was not further observed.

Warda (*Monatsh. f. Psych. u. Neurolog.*, ii., p. 257) treated forty-three patients, of whom 55 per cent. were either considerably or slightly improved. He gave adults the bromides in doses of 90 to 130 gr. per day, and children 45 gr. per day, and kept up this quantity, if no bad results occurred, for three to six months. No very marked bromism was produced. He then gradually diminished the dose, and still, after two years, the patients were taking 15 to 30 gr. of bromide daily. The patients were kept in bed for months and well nursed. Young epileptics were especially improved. If numerous attacks of *petit mal* were present, the appearance of long-lasting psychical troubles gave a bad prognosis; if the mind was intact, or nearly so, the treatment was useful. Two patients during the opium treatment went into status epilepticus,

and one of them died. In another case, taking 100 gr. of bromide per day, severe bromide poisoning, with elevation of temperature and irregular breathing, came on, which was nearly fatal.

3. Untoward effects of bromides in epilepsy.

H. A. Hare (*Therap. Gazette*, June 15, 1897) refers not to the well-known bad effects of bromides, such as the rash, mental torpor, cachexia, etc., but to more unusual effects. In 1896 Weir-Mitchell reported some instances in which the bromides had apparently given rise to great irritability of temper, moroseness, and homicidal or suicidal tendencies. Other authorities have given the following conditions as having been produced by bromides:—Erotic religious hallucinations, delusions of suspicion, irritable treacherous states, attacks of ungovernable rage, furor, delirium, difficult speech, mental weakness, staggering gait, maniacal insanity, tremors, sexual excitement, aphasia, and apyrexia. Hare says there seems no doubt that in many cases of epilepsy the bromides are capable of causing grave injury, apart from the general depressing influence which they produce in all persons if given in full doses for any length of time. He addressed a letter to several neurologists asking: (1) Do you find that the administration of the bromides in full doses ever produces mental alienation or true delusions? (2) If so, have the symptoms of the patient been those of sedation or excitement? (3) Has a single full dose ever produced such symptoms? (4) Do you think that such untoward effects are more commonly met with than is generally thought?

In reply to the first question six out of twelve had not noticed the production of mental alienation or true delusions. Dr. Allison, for instance, points out that many epilepties have delusions, and many pass into states of dementia quite irrespective of the use of bromides. Dr. Brush has seen in many instances mental confusion, ranging from simple hebitude to low muttering delirium, induced in epileptics by the administration of bromides. Other physicians have seen epileptics who were rational made violently maniacal by bromides, or have observed alienation and true delusions follow. In answer to the second question, the consensus of opinion seems to be that, as a rule, the drug has a depressant rather than an exciting effect. In answer to the third question, one physician said he had seen stupor, acute hallucinations, and emotional exaltation produced; and another had seen temporary amnesia. Answering the fourth question, five physicians thought that bromides more frequently produced untoward effects than was generally supposed. Hare concludes by producing evidence to

show that the potassium base is probably chiefly to blame for the depressant effects produced by potassium bromide, and he prefers the sodium salts for this reason.

4. Beneficial results of withdrawal of bromides.

Peterson (*New York Med. Journ.*, lxvi., 1897, No. 13) shows, with a list of examples, that, contrary to the usual opinion, more or less rapid withdrawal of bromide from an epileptic who has been well saturated with the drug for a long time has no bad effect; indeed, is often followed by considerable benefit. This should be borne in mind when trying the effect of a new remedy after bromides have been suddenly stopped.

5. Diet in epilepsy.

Bryant (*Journ. Ment. Scien.*, July, 1897) thinks that the symptoms of epilepsy point rather to a toxæmic origin than to any pathological change in the brain or cord. The following method of treatment has been used with success in the Buffalo State Hospital. The administration of bromides is given up as unnecessarily severe, and as it only adds the symptoms of bromism to an uncured epilepsy. The method recommended is a combination of milk diet with suitable exercises, and the immediate relief of constipation by cathartics and enemata. If the patient suffers from psychical manifestations, he is purged, and all nourishment is withdrawn for a sufficient time to give the digestive organs rest, and nothing but water is allowed. At the end of two days abnormal hunger disappears. After three or four days of this abstinence, even eight or ten days in the case of violent mania or status epilepticus, a small quantity of milk is allowed. This is gradually increased from one to six glasses between morning and evening, and persisted in for several weeks, if not months. The condition of the digestive system is to be the guide, and not the physical condition of the patient. After two to four months a gradual return to the regular diet is permitted. The treatment is at once to be resumed if symptoms of toxæmia reappear. Chronic idiopathic epilepsy is incurable, and only amelioration is to be hoped for.

[Although it is possible that gastro-intestinal derangements may be the immediate cause of any particular fit or series of fits, yet we can hardly imagine epilepsy to be merely a form of toxæmia, and especially as definite changes in the motor cortex in epilepsy were long ago described by Bevan Lewis. We also consider that abstinence from food for "eight or ten days" in violent epileptic mania or status epilepticus would in most cases lead to death from exhaustion.—E. S. R.]

III.—LUMBAR PUNCTURE.

Lumbar puncture as a means of diagnosing and treating certain diseases of the brain and cord and their meninges does not seem to have taken much hold in Britain. On the Continent, however, it seems to be used fairly extensively, and an interesting discussion will be found below. Provided great care is taken, there seems to be little danger in the method. As a means of diagnosis negative results appear to be worthless, but positive results such as alterations of pressure, but more particularly the presence of blood, pus, or bacteria in the fluid drawn off, certainly seem to give valuable information. As a therapeutic means little can be expected from using the method.

Stadelmann opened a discussion on lumbar puncture at the Verein für innere Medizin in Berlin (*Deut. med. Wochensch.*, Nov. 18, 1897). He based his observations on a hundred cases. He found that in tuberculous meningitis there was usually increased pressure, but not always, even when *post-mortem* examination showed that increased intracranial pressure had existed. Tubercle bacilli were found only in about 22 per cent. of the cases. In suppurative meningitis the fluid was turbid or purulent, and contained such bacteria as the meningococcus, pneumococcus, staphylococcus, and streptococcus. Occasionally in undoubted cases complicating middle-ear disease, a clear fluid with no bacteria is found. Thus purulent meningitis cannot always be distinguished from tuberculous meningitis. The distinction between cerebral abscess and suppurative meningitis is important for treatment. It is said that the escape of much clear fluid under high pressure shows that there is no complicating purulent meningitis, but the evidence is insufficent. Lumbar puncture does not assist in the diagnosis between cerebral abscess and sinus thrombosis. In some cases of pneumonia and alcoholism spinal puncture enabled the author to distinguish the condition from a suspected meningitis. In the differential diagnosis between alcoholic coma and alcoholism, combined with fracture of the skull, puncture may be of service, as if the fluid contains pathogenic microbes or is blood-stained, fracture is probable.

In cerebral tumour puncture acts unfavourably. In cerebral hæmorrhage ruptured into the ventricles or on the surface of the brain the fluid may be blood-stained. It is not possible to make a diagnosis between apoplexy embolism and softening by means of puncture. Stadelmann has never succeeded in diminishing intracranial pressure in apoplexy by puncture, and he says a fresh hæmorrhage may occur by using the method. In hydrocephalus

no good results are reported, nor in uræmia. The author has, in fact, never seen any therapeutic good effects from puncture.

Kroenig, in continuing the discussion, said the danger of lumbar puncture consists in the too rapid or too great a lessening of the cerebro-spinal pressure, and this should be avoided by using a manometer. The normal pressure in adults is in the lying position, 125 mm. of water and 410 mm. in standing, and in health these numbers are never exceeded. In the lying position the fluid comes out in drops, but in the sitting position in a small stream. As a rule, in puncturing, the normal pressure must be reached ; but the flow must be at once stopped if headache comes on ; if after long-continued pressure, or if there is optic neuritis the pressure must be gradually lowered by repeated punctures. In one case of parietal tumour the pressure sank suddenly from 600 mm. to 20 mm.

Oppenheim (*ibid.*) had a patient, a young man, with old double purulent otitis and severe acute inflammatory brain symptoms, marked choke disc, right amaurosis, considerable loss of vision of the left side, nystagmus and cerebellar ataxia, intermittent temperature, slowing of the pulse, and coma. The diagnosis was between cerebellar tumour and acquired hydrocephalus. A lumbar puncture had a good result, the symptoms disappeared except that optic atrophy came on ; it was probably a case of serous meningitis. In no other case has Oppenheim seen any good result.

Goldscheider (*ibid.*) saw good results in one case of serous meningitis and two cases of tumour of the posterior fossa. Tumours in this situation, even when small, may cause pressure symptoms by pressing on the veins of Galen. Neither in other brain tumours nor in chlorosis did he see any good effects from puncture ; in purulent meningitis he generally found no pus in the fluid drawn off.

Fürbringer (*ibid.*) found bacilli in fifty out of seventy-one cases of tuberculous meningitis. The recognition of albumen and sugar has no practical importance. He does not entirely deny the use of the method for therapeutic purposes. In chlorosis good results are mostly only transitory, and probably suggestion plays here a considerable part ; in other cases harm may even result.

V. Leyden (*ibid.*) did not see much advantage from puncture in spinal and cerebro-spinal meningitis, and he obtained no results in chlorosis. In three cases of serous meningitis and one of hydrocephalus good resulted, but there was no result in another case of hydrocephalus. He thinks that in hydrocephalus puncture should be repeated from time to time, as the temporary

lowering of pressure allows more blood to flow to the brain, and so gives the latter a chance for development.

Kroenig (*ibid.*) saw temporary good effects from puncture in a case of tumour of the parietal lobe, and lasting good result in rheumatic serous meningitis.

Fränkel (*ibid.*) did not agree with Goldscheider that purulent fluid is seldom found in purulent meningitis. In a case of uncertain diagnosis between brain tumour and acute encephalitis, the puncture brought about lasting improvement and cure.

Cassel (*ibid.*) found bacilli only in three out of nine cases of tuberculous meningitis. Repeated lumbar punctures as well as brain punctures were useless in a case of a four weeks' old child with congenital hydrocephalus and a ten months' old child with acquired hydrocephalus. No lasting benefit resulted in tuberculous meningitis.

Baumgarten (*Neurol. Centralbl.*, 1898, p. 621), from an examination of five dead bodies, thinks that the normal amount of fluid to be obtained by lumbar puncture is from 4 to 6 c.cm. As a rule the more fluid there is, the greater the pressure, but the pressure symptoms do not necessarily correspond to the pressure height; severe symptoms are often accompanied by low pressure and *vice versâ*. Negative results from an examination of the fluid do not overthrow the clinical diagnosis; they may be produced by an interruption of the connection between the subarachnoid space of the brain and that of the spinal cord. The method was used by the author therapeutically to relieve pressure twice in a day in twenty-six patients. He considers the method should always be used in acute high pressure, and also in chronic brain pressure, brain concussion, and in chlorosis. The danger lies in too rapid evacuation of the fluid, or in taking away an excessive amount. The puncture should be made in the sitting position, but the fluid should be allowed to flow when the patient is lying down. Not seldom as a result of the lessened pressure there is weakness of the heart's action, and lessening of the frequency and energy of the pulse which may last several days.

In children **Cassel** (*Jahrbuch. f. Kinderheil.*, xlvii., 1898) has used the method in fifteen cases, and found no difficulty in performing it. In nine cases of tuberculous meningitis fibrinous coagula formed in the emptied fluid. Bacilli were only found in three cases. In a child with cerebro-spinal meningitis the fluid was turbid, and contained meningococcus intracellularis. In one case of apparently traumatic meningitis there was a bacteria-free blood containing fluid; two children with chronic hydrocephalus showed completely clear fluid. In two cases no fluid was obtained.

Therapeutically there was only a transitory result at the most. The youngest child operated on was four weeks old.

Deniges and **Sabrazès** (*Rev. de Méd.*, 1896, Oct., p. 833) obtained fluid in six out of seven cases of tuberculous meningitis, and three of these contained bacilli. In a case of chronic tubercle of the brain and meningitis the puncture was negative.

Goldscheider (*Eulenburg's Real Encyklop.*, 3rd edition) thinks that lumbar puncture is a distinct addition to our means of diagnosis. In doubtful cases it allows us to ascertain the presence of an increase of fluid or of pressure. If clinically there are severe pressure symptoms, but only a small increase of pressure on puncture, an acute condition is indicated; if a converse result is obtained, then it is due to a chronic condition. Considerable increase of albumen excludes simple hydrocephalus; traces only of albumen, on the other hand, exclude an inflammatory or tuberculous affection, and make a brain tumour improbable. The presence of sugar is an indication only to be used with caution. Coagulation in the fluid indicates an inflammatory affection; absence of it, tumour or hydrocephalus. Turbid fluid rich in cells indicates purulent or chronic meningitis, but this is also not excluded if the fluid is clear. Repeated appearance of bloody fluid shows ventricular or subdural hæmorrhage; tubercle bacilli indicate tuberculous meningitis. Practically less important is the recognition of other bacteria, such as streptococci or pneumococci. Puncture renders visible the diagnosis of acute serous meningitis. As regards therapeutics, the author thinks that in many cases an improvement of the condition may result; for example, in serous meningitis and small brain tumours.

Reinhold Peters (*Neurol. Centralbl.*, 1898, p. 827) found in eleven punctures made in nine cases of tuberculous meningitis that the pressure was always low. In two cases there was a great increase of albumen in the fluid, but only traces of sugar were found in two cases; bacilli were found in four cases. No therapeutic effect was noticed. In one case of purulent meningitis there was much albumen and sugar under low pressure, with a rich sediment of polynuclear and mononuclear cells; after the first puncture there was lessening of the headache. In one case of chronic sero-purulent meningitis five punctures were performed; after each there was a transitory improvement of the subjective and objective symptoms. In one case of serous meningitis quick recovery followed the puncture. Two cases of cerebral tumour were punctured three times; the pressure was somewhat slight. After each puncture there was an improvement in certain objective symptoms. In one case the choke disc was slightly improved.

In three cases of severe anæmia with brain pressure there was much improvement after the puncture. In one case of uræmia there was a transitory improvement, but none in another case. No ill effects were noticed in any case excepting one of brain tumour, in which severe pain in the head occurred after the puncture.

V. Ranke (*Münch. med. Wochen.*, Sept. 21, 1897) has used lumbar puncture in twenty-five cases, nineteen of which were tuberculous meningitis. In no case did the puncture produce a cure, and death finally occurred in all the cases of tuberculous meningitis. In a few instances temporary improvement occurred when the disease was in the early stage. Bacilli were not always found. The differential diagnosis by puncture between tuberculous meningitis and that secondary to ear disease is not always easy. In tuberculous meningitis the fluid drawn off was clear, usually colourless, but occasionally slightly green or yellowish; the specific gravity was 1010 and the amount of albumen was from 1 to 1·5 *pro mil.* Traces of sugar were present. Usually about 20 to 30 c.cm. were drawn off, and the pressure was high—160–300 mm. of water. No bad effects were noticed.

Stoeltzner (*Berl. klin. Wochens.*, April 19, 1897) gives the case of a child, aged two and a half years, in whom meningitis was due to the meningococcus intracellularis. Fluid, turbid with pus, was drawn off by lumbar puncture, and recovery ensued. The chief symptoms were rigidity of the neck muscles, retracted abdomen, persistent vomiting, and hyperæsthesia. The puncture showed that the disease was a suppurative meningitis, and that the only form of such disease lasting thirty-three days and ending in recovery is the epidemic form. Three hot baths a day were given in this case. The diplococcus was found microscopically, and the organism was present within the cells in characteristic colonies. Artificial cerebro-spinal meningitis was produced in susceptible animals, and the micro-organisms were recovered from the lesion.

IV.—THE TREATMENT OF TETANUS.

Comparatively few cases of tetanus treated by antitoxin have been published during 1898. Those given below seem to support the view that tetanus antitoxin has a distinct value, especially in those cases which have not a very short incubation period, and where it is given as soon as possible after the symptoms have commenced.

Heddæus (*Münch. med. Wochens.*, Mar. 29, 1898) mentions one case of tetanus of moderate severity in which antitetanus serum appeared to be of service, and then he gives two cases of

severe head-tetanus, in the first of which the symptoms commenced on the fourth day after injury. The serum was at once injected into the veins of the arms, and repeated five days later, and the case recovered. In the second case the symptoms commenced on the fifth day. On the sixth day the wound was thoroughly excised, and a solution of 5 per cent. carbolic acid was applied. The tetanus antitoxin was injected on the seventh day, but the patient died on the following day. Here the serum was evidently used too late. Heddæus considers that Behring's serum is an efficacious remedy of a specific character, and should be used at the earliest possible moment. The early destruction of the infected area must not be omitted, as from it a permanent supply of toxin is provided. The symptomatic treatment with sedatives and narcotics should also be used, and other means of eliminating the poison should not be neglected.

Steiner (*Wien. klin. Wochen.*, 1897, No. 36), in mentioning a case of severe tetanus, in which the patient was apparently moribund on the sixth day after injury, and where great and immediate relief followed the use of antitoxin, says that he thinks the judicious use of antitoxin will cure cases which would not get well spontaneously. The seat of infection should first be disinfected, preferably with an iodine compound, such as iodoform; then large quantities of fluid should be given with the object of washing the toxins out of the organism; next physiological antidotes, such as chloral, morphine, and bromides, should be administered; and, finally, antitoxin should be injected.

Weischer (*Münch. med. Wochens.*, Nov. 16, 1897) reports two cases of tetanus treated with Behring's serum. In one case the symptoms came on two days after injury; the second case was apparently idiopathic. Both cases recovered. The author has collected ninety-eight cases treated with serum, and of these fifty-seven recovered.

Engelmann (*Münch. med. Wochens.*, 1897, Nos. 32, 33, 34) records three cases of tetanus, two of which were treated by Tizzoni-Cattani's antitoxin, and one by Behring's new serum. In the first case, symptoms commenced seven days after injury; in the second case, which was apparently idiopathic, the symptoms were still very severe six days after the onset; in the third case the symptoms commenced nine days after injury, and large doses of Behring's serum were used. In none of the cases was an unpleasant effect produced. The author gives a table of thirty-four cases treated by Tizzoni-Cattani's serum; in seventeen of these the incubation period was from one to ten days, and five cases died, the usual mortality in such cases being 90 per cent.; of the

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twelve which recovered, only five appeared to be unfavourable, from the rapid development of the symptoms. In cases with an incubation period of more than ten days the prognosis was more favourable, but, in several, rapid appearance of severe symptoms showed the disease to be very serious. In twenty-one cases rapid improvement followed the serum treatment, but in three cases it was only temporary. In five cases there was no improvement, and death resulted. Of thirteen cases treated by Behring's serum, six died, but of five cases treated by Behring's new serum only one died.

V.—PARALYSIS AGITANS.

1. New symptom in paralysis agitans.

Moczutkowsky (*Neurol. Centralbl.*, 1897, p. 96) draws attention to the fact that when a patient suffering from paralysis agitans is told to wrinkle the forehead, and to keep it wrinkled for one to two minutes, the folds persist for forty to sixty seconds after the muscular effort has ceased, and in spite of efforts on the part of the patient to efface them. This is due to the peculiar rigidity of the muscles in paralysis agitans, and is easily perceived in the forehead, because of the thinness of the muscular layer and its superficial position. In one case the same peculiarity was seen in the orbicularis oculi, and the patient had great difficulty in opening the eyes after they had been closed. In one case there was no tremor, but only muscular rigidity, and by means of this sign early paralysis agitans was diagnosed.

2. Ætiology and treatment.

Erb (*Zeitsch. für prakt. Aerzt.*, 1898, No. 5) points out that paralysis agitans is a disease of age, seldom coming on before fifty years. Heredity plays a moderate, but syphilis no part in the ætiology. Psychical influences are of the greatest importance in the origin of the affection. The position of the lesion must be in the brain, perhaps in the brain stem in the neighbourhood of the motor cortex. A certain and constant anatomical cause for the paralysis is not at present known. The prognosis is bad. Treatment consists in regulating the diet and mode of life, and in internal treatment by arsenic. Electricity in the form of the faradic bipolar bath and mild hydrotherapy are useful. For the tremors and stiffness, hyoscin hydrobromide in doses of about $\frac{1}{200}$ gr., once or twice daily, should be used; or duboisin in the same dose may be of service. The vibrating chair of Charcot is not recommended.

Krafft-Ebing (*Med. Chron.*, Oct. 1897, p. 24) says that cases have been recorded which tend to show that the symptoms of paralysis agitans are associated with a perivascular sclerosis, chiefly in the cervical and lumbar enlargements, and in the posterior and lateral columns of the spinal cord. He refers to the analogy between senile changes and those of paralysis agitans. In some cases tremor exists for years before the rigidity sets in; on the other hand there are cases in which rigidity appears before the tremor; sometimes fright and shock appear to play a part in the ætiology of the disease, though there must also be some predisposition. Krafft-Ebing states that he has met with many cases in which paralysis agitans suddenly followed an injury to a limb. The disease generally commences in one arm, it next extends to the leg on the same side, and then the opposite side is affected. The disease is inclined to remit, but is always progressive in the end. The tremor is slower than that of alcoholism or Graves's disease, and the deep reflexes are always increased. He believes that as a symptomatic remedy, morphine will be found to be of greatest value by checking the tremor, relieving the rigidity, inducing sleep and giving comfort to the patient. He prescribes a pill, containing arsenic, extract of cannabis indica, and opium.

3. Duboisin sulphate.

Francotte (*Neurol. Centralbl.*, 1897, p. 423) has used duboisin sulphate in four cases of paralysis agitans, with good results. He finds the drug has a real influence in checking the tremor, but the results were only of short duration, and after two or three days the effect passes away. The muscular rigidity was less influenced, and the drug had no effect on the weakness and pain. Bad effects were only observed once (after a large dose). He gave the drug in granules containing $\frac{1}{140}$ gr. three to six times a day.

VI.—CHOREA.

1. Ætiology.

Marfan (*Sem. Méd.*, July 30, 1897) found that out of seventy-six cases of chorea forty-nine had an hereditary history of neurosis, and eleven had alcoholic parents. Chorea was almost invariably a secondary disease. About half the cases were secondary to acute rheumatism, but in forty-six cases no rheumatic history could be obtained, and in twenty-eight cases the chorea had been almost immediately preceded by specific febrile diseases, tuberculosis, local suppurations, etc. In nineteen cases the neurosis appeared to be primary. He believes the condition to be a neurosis produced by various toxins or micro-organisms. He divides the cardiac affections in chorea into (*a*) ephemeral disturbances not accompanied by any lesion, in which there is hyperkinesis, arhythmia, and irregularity or inequality of the heart-beat, these being due to true

chorea of the heart muscle; and (*b*) endocarditis or pericarditis, which only occurred in fourteen out of seventy-six cases. He considers that the three great remedies are rest, arsenic, and antipyrin.

2. Belladonna and arsenic.

Overend (*Lancet*, July 31, 1897) states that belladonna appears to be most beneficial in recent cases of chorea, and its influence is sometimes very great in the severer forms. In obviously rheumatic cases arsenic in large doses may be given a trial, or may be combined with belladonna from the first. Belladonna may act by diminishing the excitability of the nerve centres, or by imparting an improved tone to their vascular supply. In hospital it is quite justifiable to give a child as much as 30 minims or more of the tincture of belladonna every four hours for ten days, or even longer; but certain precautions are necessary. The patient should be kept in bed, and the urine daily measured. Small doses of potassium acetate may be added if the urine becomes too much diminished, or if the eyelids show any puffiness. The occurrence of papular erythema, which leaves circular lumps for a time, does not necessitate any diminution of the dose. Dryness of the throat and swelling of the parotids, if they appear, are merely temporary. The influence of the belladonna makes itself felt after about four days. Should no visible improvement occur before the tenth day, it is useless to continue the belladonna. As soon as the movements become trivial, or occur only during exertion, it is better to omit the belladonna, to commence massage of the affected muscles, and administer cod-liver oil and syrup of phosphate of iron, or other tonics. The arsenic may be continued for a week or longer.

VII.—MENTAL DISEASES.

1. Mental symptoms in brain tumour.

Gianelli (*Il Policlinico*, July 15, 1897), in speaking of the mental symptoms of brain tumour, says that if hallucinations are present, they indicate irritation of the corresponding cortical sensory centre. The more prominently such psychical disorders as torpor, intellectual arrest, and weak memory assert themselves, the more likely is the growth to be in the frontal or prefrontal lobe. Tumours situated in other parts of the brain, as a rule, only give rise to psychical symptoms at a later period. Tumours of the corpus callosum are always accompanied by psychical symptoms. No clue as to the seat of the growth can be had from modifications in the patient's feelings and emotions. Cerebral growths manifesting themselves as progressive paralysis

probably have their seat in the frontal lobe, as is also true when ideas of grandeur come on in the course of the growth of the tumour. Apparently the nature of the tumour has no influence on the production of psychoses. According to the author's figures, cerebral growths are most often sarcomatous (129 cases), then gliomatous (79), and tuberculous (69). Out of a total of 323 various tumours accompanied by psychical symptoms, 77 were in the frontal lobe as against 20 out of 265 unaccompanied with psychical symptoms.

2. Syphilis and general paralysis.

Mott, in his 1898 report to the Asylums Committee of the London County Council, points out that in many cases of general paralysis there was usually a history of venereal infection, particularly in those cases of the tabetic type in which the dementia in the early stage was very slight. Lewis, of Claybury Asylum, investigated this point, and found that out of a total number of 200 males suffering from all forms of mental disease admitted to Claybury in 1897, 70 had suffered from venereal infection (including both soft and hard sores). Of these 200 cases 24 were general paralytics, and in 16 of them there were certain evidences of infection, doubtful evidence in 3, and no evidence in 5. Alcoholism was relatively infrequent as a cause. In 10 cases of juvenile general paralysis which Mott saw there were undoubted signs of congenital syphilis (Hutchinson's teeth, linear cicatrices, or interstitial keratitis) in no less than 8. Again, he found that atheroma of the aorta was comparatively frequent in general paralysis. Of 86 males dying under forty-six years of age, 24 had atheroma of the aorta; 60 of these cases were general paralytics, of whom 22 had atheroma, or 1 in 3, whereas the proportion was 1 in 13 for the other cases. Of 53 females dying under forty-six, 18 had atheroma; 18 of the cases were general paralytics, and of these 10 had atheroma, or more than half. Other statistics from Banstead Asylum also showed clearly that atheroma of the aorta is much more common in persons under forty-six who have suffered from general paralysis than from other diseases. It must, of course, be remembered that eminent authorities regard syphilis as the most important cause of atheroma of the aorta.

3. Bed treatment of insanity.

Magnan (*Rev. de Psychiatr.*, 1897), in the treatment of mania, recommends no restraint and rest in bed, except when the strong-room is absolutely necessary. Baths, bromide and chloral, may be given, but for severe excitement or great sleeplessness an injection of hyoscine is necessary. Good nourishment

should be given, but no beer, wine, or spirits. Baths at a temperature of about 33° C. were given for two to five hours as a means of quieting the patient, with cold compresses to the neck. When the excitement is very great, instead of the baths a damp sheet should be used. In the evening 45 to 75 gr. of bromide of potassium are given, and two to three hours later 30 to 45 gr. of chloral. After ten days, if the patient is quieter, the bromide is lessened and the chloral is only given occasionally, and sulphonal or trional is substituted. Where bromide and chloral are useless, laudanum in increasing doses is given. He does not recommend morphine; hyoscine was given in doses of $\frac{1}{60}$ to $\frac{1}{45}$ gr. by injection.

Trapesnikow (*Neurol. Centralbl.*, 1898, p. 142) treated twenty-nine male patients, including eight general paralytics, six cases of amentia, five of melancholia, four of paranoia, and one each of katatonia, psychosis hysterica, senile dementia, and cerebral syphilis, with complete rest in bed. The patients soon got used to being in bed, and during the time the number of sleeping hours day and night was increased, often, however, to the disadvantage of the night sleep. The weight of the patient usually at first fell, but increased again after some weeks. No influence on the pulse or breathing was noticed. A greater opportunity was given to masturbators by this method of treatment. As regards the duration or cure of the disease, the author thinks that bed treatment has no influence.

Ossipow (*ibid.*), dealing with female patients treated by rest in bed, had three cases of secondary dementia, one of chronic paranoia, two with chronic hallucinations, two with amentia, one each with maniacal exaltation, melancholia, circular insanity, periodic insanity, and organic cerebral dementia. The majority of the patients easily got used to the treatment, and the nursing was more easily performed. In some patients good resulted, but not in all. Weight was often lost, and sleep, appetite, and the action of the bowels were all prejudicially interfered with, and hypnotics had to be used just as frequently. He concludes that bed treatment is only useful for individual cases.

Sérieux (*Rev. de Psychiatr.*, 1897, No. 8) on the contrary strongly advocates bed treatment in acute psychoses, especially in melancholia, and points out that Hayem has shown that during rest there is less destruction of the red blood corpuscles.

4. Duboisin sulphate.

Skeen (*Journ. Ment. Scienc.*, July, 1897) gives duboisin sulphate, by the mouth, and also hypodermically in doses of $\frac{1}{100}$ to $\frac{1}{32}$ gr. Hypodermic administration is best, and has fewer bad consequences. Within fifteen to thirty minutes after an injection the pupils are dilated, the face is flushed, the heart's action is more rapid, the pulse is soft, the speech thick and slow, or if the dose is large, the patient is inarticulate; the mouth and throat are dry, the gait is ataxic, and the general appearance is as if drunk; the excitement soon passes off, and is followed by drowsiness and calm, and then sleep, which lasts from three to ten hours, comes on. No recurrence of excitement is seen when the patient is roused, but only dryness of the throat, impairment of vision, and slight headache. If given internally there is impairment of appetite, and a tendency to faintness and vomiting. Continuous administration is not successful, though the patient is quieter while under the influence of the drug; marked ataxia is present, and sometimes hallucinations of sight and hearing; loss of weight rapidly sets in, but is soon recovered from. Skeen used the drug in all cases of excitement; in acute mania its use was not followed by any beneficial results; single doses produced quiet for a time, but this was followed by more excitement. In delusional mania it was only used for outbursts of excitement, and was entirely satisfactory. In general paralysis the drug was used both occasionally and continuously with satisfactory results. In epilepsy it is not of much use, and its action is uncertain, as only some cases of epileptic excitement were relieved. It does not alter the frequency of the fits. In melancholia bad results were seen; in no case was there any relief, and in some cases the excitement was increased, and there was a tendency to syncope, with hallucinations of sight and hearing. Used occasionally in dementia it gave satisfactory results, with rest at night. The dangers of the drug are cardiac failure, if given continuously; in one case of acute mania, in which a large dose had been given, there was a slight convulsive seizure. It should be used only in physically healthy persons. On the whole, Skeen thinks the drug is preferable to hyoscine or hyoscyamine, as the quiescent state induced is of longer duration, and there is less prostration.

5. Hyoscine hydrobromide.

Doerner (*Therap. Monatsh.*, June, 1898) prefers the hydrobromide of hyoscine to the hydrochloride, on account of its milder action and greater freedom from unpleasant effects. It is given in doses of $\frac{1}{8}$ to $\frac{1}{70}$ gr. In cases of mental excitement with delirium and destructive tendencies, and especially in periodic mania he finds it of great value, and he confirms the statement made with regard to its value in the delirium of alcoholics. In melancholia agitata as well as in other cases of sleeplessness, hyoscine often produces quietude when all other means fail. On

the other hand it is not adapted for all cases of a hysterical nature, and especially in affections which require a constant use of sedatives. The only unpleasant effects are dryness in the throat, disturbance of vision, and more rarely a bad effect on the heart, but it is possible, if continually taken, that nutrition may somewhat fail. Marked valvular trouble and fatty heart contra-indicate hyoscine.

6. Scopolamine.

Tomasini (*Brit. Med. Journ., Epitome*, 1897, Dec. 4) points out that scopolamine is isomeric with cocaine, and has an action somewhat similar to that of hyoscyamine. In hypodermic doses of $\frac{1}{250}$ to $\frac{1}{75}$ gr., it proved a good hynotic in paroxysmal excitement, but not in habitual insomnia. It produced a calm and quiet, natural kind of sleep, and was not followed by unpleasant effects. Patients soon get accustomed to the drug and require larger doses; it has no influence in modifying attacks of epilepsy, but is especially useful in acute mania.

7. Lactophen.

Cristiani (*Rif. Med.*, June, 1898) has given lactophen for insomnia in over 200 cases, with very good results. The dose given varied from 15 to 45 gr., the drug being administered in some sweet emulsion. Sleep that had all the characters of a natural sleep, followed in a very short time, lasted for four to nine hours, and was not succeeded by any bad effects, such as stupor, morning headache, or gastric disturbances. Like most hypnotics, it loses its effect after continued use, but after a short intermission can be used again with good results. The author used the drug in all kinds of mental cases, and in different physical conditions; for example, in cardio-vascular, kidney, and other diseases. He considers it quite safe and more generally useful—in insane subjects—than opium, chloral, trional, or other hypnotics. As it has neither taste nor smell it is easy to administer.

8. Thyroid extract.

Bijl (*Neurol. Centralbl.*, 1898, p. 711), as a rule, found no benefit from the use of thyroid extract in paranoia or katatonia; yet in one case of katatonia, in a man aged forty-five, there was a quick response to the drug as regards the bodily functions, and final recovery in two months.

Gerwer (*Neurol. Centralbl.*, 1898, p. 712) gave thyroid extract to ten insane patients, commencing with doses of 2 gr. twice daily, gradually increasing to 10 gr. three or four times a day. Only two cases—namely, one of melancholia and one of paranoia with acute hallucinations—showed any improvement, and even in these Gerwer thinks that a similar improvement might have taken

place without the drug. Of the remaining eight cases, which included two of melancholia, three of acute dementia, and one each of circular insanity, dementia from organic brain disease, and epilepsy with choreic contractions of the limbs, no improvement was seen. Bad effects were, however noticed, such as increased pulse-rate, loss of weight, twitchings in the facial muscles, disturbances of the gastro-intestinal tract, and salivation.

VIII.—MISCELLANEOUS.

1. The treatment of infantile paralysis.

Larat (*Journ. de Méd.*, July 25, 1897) says that, however grave, infantile paralysis should be treated by electricity as soon as the diagnosis is made. Faradisation is not only useless, but is harmful, as it increases the tendency to atrophy of the muscles. He uses the continuous current in the following painless manner:—A disc of tin covered with chamois leather, as large as the palm of the hand, is moistened with tepid water, not salt solution, and placed over the cervico-dorsal region in the case of upper lumbar paralysis, or over the dorso-lumbar region in the case of lower lumbar paralysis; this is connected with the positive pole of the battery. The negative pole is a small disc placed in a basin of tepid water, in which the extremity of the affected limb is immersed up to the wrist or ankle, as the case may be. A current of about 10 milliampères is passed for about ten minutes. After ten minutes the current is interrupted a few times and reversed; the interruptions should not exceed 100, and should be made slowly. Later, when the disease is subsiding, the number of interruptions may be increased, and the interval between them shortened. The treatment requires great patience, and no good result will appear for some time; the slightest cases will require treatment for a year, and severe cases for several years. The author believes that side by side with the anterior horn cells which are destroyed are other cells, which by this treatment take on the work of the destroyed cells.

2. Trigeminal neuralgia and its treatment.

Böttiger (*Neurol. Centralbl.*, 1897, p. 1020) divides pains in the region of the fifth cranial nerve into neuralgic, neuritic, psychical (hysteria), and rheumatic. He especially points out the differences between the first two branches of the nerve as regards ætiology. Whilst the neuritic pains particularly come on in the course of constitutional toxic and infectious diseases, the neuralgias are chiefly due to local causes, such as cold. The cure of genuine neuralgia is principally symptomatic; he alludes to

hygienic, dietetic, medical, physical, and mechanical treatment, including electricity. He concludes that by these means recent neuralgias of the fifth nerve, when affecting young people, may be cured, but that if of long standing, or in old people, an operation is necessary.

Bruns (*ibid.*) also pointed out that genuine tic douloureux affecting old people was situated in the second and third branches of the fifth nerve, and not in the first, and that there are in these cases severe reflex spasms in the region of the seventh nerve; eating and speaking may bring on an attack. He also agrees that surgical treatment is necessary.

3. Pyramidon as an analgesic.

Donat Roth (*Wien. klin. Wochensch.*, 1897, No. 44), used this drug, which is a dimethylamidoantipyrin, for the pain of migraine, cephalalgia, neuralgia, tabes, and polyneuritis. The analgesic effect was noticed by Filehne. In five cases of migraine somewhat large doses of 7½ gr. per day, given either before or at the beginning of an attack, always were of service. In a case of neuralgia of the fifth cranial nerve, which had lasted for several weeks, and in which no treatment had been of any avail, a quick recovery was brought about by pyramidon; one patient with sciatica was relieved, but another not. In a case of tabes, weak attacks of gastric crises with pains and vomiting could be relieved. Also the calf pains in alcoholic neuritis and the headache of nephritis were relieved. It was of no use in nervous tachycardia. No bad after-effects were noticed.

4. Mercury in multiple sclerosis.

Mühsam (*Neurol. Centralbl.*, 1898, p. 666) reports ten cases of multiple sclerosis in which he used mercurial inunctions. In four cases there was a considerable improvement in the general condition, in four more cases an improvement of single symptoms, and two cases were entirely uninfluenced. Sensory disturbances, if present, as well as pain in the head and dizziness, were lessened.

5. The treatment of hemiplegia.

Huchzermeyer (*Deut. med. Wochens.*, 1898, No. 1) points out that all cases of hemiplegia show a stationary condition of the extremities with recovery of the facial and swallowing muscles, as well as considerable pain on passive movement of the affected limbs. These evil conditions are due to the fact that regular passive and active movements are not undertaken as soon as possible. The diet of these cases must be lessened if plethora exists. If the mind is unaffected, one begins with passive movements of the paralysed and active movements of the sound limb.

These movements should be performed twice daily for half an hour. Every week four or five strong salt baths at about 90° F. should be given, and as soon as possible the patient should be sent to a brine bath in which the water also contains carbon dioxide. The baths give the patient the possibility of making slight voluntary movements perceptible two or three months earlier than without them, as the heavy fluid raises and supports the paralysed limbs. A "go-cart" is also an excellent means of obtaining exercise for the paralysed limbs. The author thinks that electricity is of little service.

6. Percussion in the diagnosis of cerebral disease.

Paoli and **Mori** (*Il Policlinico*, Feb. 15, 1898) record an extensive series of observations on the value of percussion in intracranial disease, with an account of the results obtained by percussing the normal skull. If the hair is thick the head must be shaved, and it is better to practise with the finger directly on the surface. The authors recommend a division of the cranial surface into three symmetrical parts—frontal, parietal, and occipital—and in each of these regions there are constant points, so that the note of one side may be compared with the corresponding note on the other. In the case of the frontal and occipital regions there are median points as well.

They found that a dull note is obtained but seldom, the rule being a high degree of resonance with well-marked differences, according to the position percussed. The results vary with age and sex and with the density of the skull-cap, and the sense of resistance varies in different instances. Thus in boys under ten years of age there is a very notable resonance in the note, more particularly in the temporal and parietal regions, while in some portions of the frontal region (more particularly over the sinus) and in the occipital region the note is fairly dull. In boys who have rickets the note is still more resonant, and sometimes a cracked-pot sound is perceived. In women there is more resonance than in men, and in adults, as a rule, the sound is less resonant than in children. But in advanced age in women there is considerable diminution of resonance, while in old men the resonance is much more marked than earlier in life.

In disease, the first case examined was a boy suffering from epilepsy, who had fractured his frontal bone by a fall. Percussion showed marked dulness all over the portion corresponding to the fracture. The patient was trephined, and thickening of the dura mater was discovered, with a large layer of hæmorrhagic infiltration in the form of a hæmatoma, and exactly corresponding to the

area of dulness. Several other cases of fracture gave similar results. In another case, in which, after injury to the right occipital bone, there was paralysis of the right arm and hand and loss of speech, there was marked decrease of resonance over the left parietal bone, and there was an improvement in the symptoms coincident with a return of the resonance over the left motor area.

7. The localisation of cerebral tumours.

Bruns (*Wien. klin. Rundschau*, 1897, No. 46) points out the difficulties of diagnosis of cerebral tumours, and gives some supplementary means of diagnosis. Thus disturbances of equilibrium characterise tumours both of the frontal lobe and cerebellum, often causing confusion in localisation. In most cases, however, careful examination of the general and local symptoms will establish a diagnosis, these being often markedly different. Homonymous hemianopsia is of little value in the topical diagnosis of tumours; if, however, right homonymous hemianopsia is from the beginning associated with alexia and word blindness, a tumour in the white matter of the left occipital lobe can be inferred. The localising symptoms of tumours in the neighbourhood of the central convolutions, particularly in the frontal and parietal lobes, are often difficult to diagnose from those of the motor area itself. In such cases Bruns especially recommends the method of percussion of the skull, which greatly facilitates local diagnosis when the conjectured seat of the brain lesion agrees with the evidence derived from percussion. Markedly localised tenderness and tympanitic note are scarcely possible, except when the tumour is at least in the neighbourhood of the cortex.

DISEASES OF THE STOMACH, INTESTINES, AND LIVER.

By Herbert P. Hawkins, M.D., F.R.C.P.,
Physician to St. Thomas's Hospital.

The present direction of the advance in treatment.

The year 1898 has not been marked by any great innovation in the treatment of disease of stomach, intestine, or liver. Worthy of record, however, is the complete and successful removal of the stomach by **Schlatter** (*Correspondenzblatt für Schw. Aerzte*, Dec., 1897), a case which, apart from its startling novelty, has furnished some information as to the process of digestion. The operation was undertaken on account of a malignant growth, which had invaded so large a part of the wall of the stomach that gastro-enterostomy was out of the question. The œsophagus was connected to the jejunum by interrupted silk sutures in the mucosa and Lembert sutures in the peritoneal coat. The patient, a woman aged fifty-six, was fed at first by the rectum, but, as the enemata were not retained, mouth-feeding was begun on the second day. At the end of the third week she ate half a chicken. In the first two months she gained about 9 lb. in weight, and four months later she was found to be 20 lb. the heavier. **Hoffman** (*Münchener med. Wochenschr.*, 1898, May 3) reports some interesting observations on the metabolism of the patient. He shows that a nitrogenous balance can be established without the aid of the stomach, that fats are disposed of, that no intestinal putrefaction occurs (though gastric juice is absent), and that the usual decrease in the chlorides of the urine after a large meal no longer occurs. Schlatter is inclined to minimise the importance of gastric as compared with intestinal digestion, and thinks that one of the chief functions of the stomach is that of a reservoir, which prevents the intestines from being overloaded. At any rate, it is now clear that intestinal digestion is by itself sufficient for the maintenance of nutrition.

Though no great advance in treatment can be recorded apart from this noteworthy example of modern surgery, there are certain subjects which occupy a prominent position in the

area of dulness. Several other cases of fracture gave similar results. In another case, in which, after injury to the right occipital bone, there was paralysis of the right arm and hand and loss of speech, there was marked decrease of resonance over the left parietal bone, and there was an improvement in the symptoms coincident with a return of the resonance over the left motor area.

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Though no great advance in treatment can be recorded apart from this noteworthy example of modern surgery, there are certain subjects which occupy a prominent position in the

literature of the year. In the first place much has been written about the large group of inflammatory conditions of the colon. They are exceedingly common, but our knowledge of the various causes on which they depend is so scanty that treatment at present remains purely empirical. Closely connected with this is the subject of intestinal disinfection. The question of the common so-called functional disorders of the stomach also comes to the front. These three matters are of great importance in every-day practice. They cause a vast amount of ill-health and suffering, and any approach to a rational method of treatment will be welcome.

As regards the liver nothing in the way of therapeutic improvement has been recorded in 1898. **Adami** (*Lancet*, Aug. 13, 1898) describes the association of a peculiar micro-organism with cirrhosis of the liver. In at least a very large number of well-marked cases of progressive cirrhosis in man he finds in the liver-cells, and also in the lymph-spaces in the new connective tissue, a very minute micro-organism, appearing as a diplococcus or as an ovoid bacterium. This is very similar to the organism found in the cirrhotic livers of cattle in "Pictou" disease occurring in Nova Scotia. No estimation of the importance of this discovery can yet be made, and it cannot yet give origin to any alteration in our treatment of the disease.

Inflammation of the colon and its treatment.

The term "colitis" is used in medical literature with increasing frequency. It is made to include a large range of cases, varying from a diarrhœa of a few days' duration to a rapidly fatal attack associated with necrosis of the bowel-wall. Any attempt to lay down rules of treatment for this condition must be based on some classification of the different forms which occur, and no permanent classification can as yet be made.

Delafield (*American Journal of the Medical Sciences*, Oct., 1897) describes the different forms of colitis which he has observed in the city of New York and its suburbs. The general truth of the picture can be recognised, but it is admittedly only a record of one man's experience. The article contains an outline of the treatment which he employs. Among others he describes three important forms :—

(1) Acute catarrhal colitis, the most common kind, characterised (*a*) by increased production of mucus or (*b*) by an exudation of serum without structural alteration in the wall of the colon. As regards the "mucous" form, if the lower end of the colon only is affected, there is pain in the rectum with irritability and the frequent passage of small quantities of blood and mucus with little fæcal matter. There is moderate pyrexia, and the patient is usually well within a week. If, however, a large part of the colon is affected, the patient is more seriously ill, and young children often die. In the treatment of such cases he employs rest in bed, a fluid diet, castor oil or sulphate of magnesia, and then combinations of bismuth and opium. An alternative plan is to irrigate the rectum every day with one or two quarts of infusion of flaxseed and give no medicine. This form is apt to be followed by a chronic condition, which may last for years, and two types of chronic case are to be recognised. In the first type the disease is limited to the rectum. It is attended with gradual thickening of glandular, connective, and muscular coats, and is characterised by frequent small passages of mucus and blood with loss of flesh and strength. The condition is very intractable and many patients do not get well, in spite of local applications to the rectum and residence in a dry inland climate. In the second type of chronic case any part or the whole of the colon is affected. Mucus is passed in varying quantity and at varying intervals, while the stools are sometimes formed and sometimes fluid. There is more or less abdominal pain with loss of nutrition, and many patients become hypochondriacs. Treatment should be directed quite as much to the general health and surroundings as to the bowel. The "serous" form of catarrhal colitis which is characterised by serous exudation is well defined. The patient has at first a feeling of discomfort in the abdomen or colicky pain, a moderate amount of prostration and sometimes nausea. Then comes the feeling of necessity for emptying the bowels, and a large quantity of fluid is discharged without any effort of expulsion The fluid consists of fluid fæces, serum, and mucus. It sometimes amounts to two quarts. There are a number of such discharges daily. The patient is weak and miserable, but not necessarily confined to bed. Such an attack may last for a few days only, or it may continue for weeks or months. It may recur year after year, especially in the summer. He finds that it is very intractable, but he recommends as the best plan of treatment, a milk diet, except for one solid meal a day, a quarter of a grain of codeia after each action of the bowels, and 5 minims of castor oil with 5 grains of salol to be taken together four times a day.

(2) Acute, productive, and necrotic colitis, involving the glandular coat usually of the upper part of the colon. The mucosa shows the appearance of an acute catarrhal inflammation, but there are also numerous small superficial ulcers. The symptoms resemble those of the catarrhal form or of amœbic

colitis. Some cases are fatal, some run on for months, and some favourable cases cease in three or four weeks. Treatment must be applied in an early stage if it is to be efficient. The patient should be put to bed and the diet should consist mainly of milk at first, but chronic cases should get out of doors, and do best in dry, elevated, inland climates. In an early stage always, and occasionally in chronic cases, irrigation of the bowel is useful. He has obtained the best results with a combination of opium, salol, and castor oil.

(3) Croupous or diphtheritic colitis, a very severe lesion belonging to autumn months. There is nearly constant rectal pain, irritability and tenesmus; occasionally also colicky pains and strangury. There are numerous small painful passages of blood and mucus, and if a large extent of bowel is affected, large quantities of brownish fluid are passed. The main general symptoms are extreme prostration with rapid feeble heart, often passing into delirium and stupor. There is usually pyrexia, except in very severe cases. It is often fatal. Bed and a fluid diet with the use of opium and alcohol are essential. He recommends irrigation with at least two quarts of solution of corrosive sublimate (1-10,000), and if a large part of the bowel is affected he gives also ipecac. gr. 20 once or twice a day, with salol gr. 5 every hour. Chloride of zinc or formalin are alternative solutions for injection.

In connection with this subject, it may be worth while to call attention to the frequent association of some form of colitis with a catarrhal appendicitis, and to the difficulty of treatment. **Treves** (Allbutt's "System of Medicine," vol. iii., p. 923) notes that colitis may present some resemblance to perityphlitis, especially when the cæcum and ascending colon are conspicuously affected. There can be little doubt that the two conditions not uncommonly occur together. A young patient will give a history of many slight attacks of abdominal pain, each occurring with no apparent exciting cause, and lasting perhaps for a week. If these attacks have been observed, it will have been found that the onset is rather gradual, developing in the course of twenty-four hours, and usually attended with slight pyrexia and occasionally vomiting. The tongue becomes furred, and the bowels are either confined or one or two loose offensive stools are passed. Further, on examination, it may be found that in one or more of these attacks there is pain, tenderness, definite resistance, and even a defined inflammatory mass in the right iliac fossa, while in other attacks which have the same general symptoms the pain and tenderness are more diffused, and may be present at any part of the course of the colon, even over the sigmoid flexure, while the right iliac fossa is free. Such patients seldom acquire the habit of a regular daily action of the bowels: the stools are often offensive and loose, or they contain mucus. The sufferers are usually of the neurotic type, and can quickly become hypochondriacs. It is an open question whether such cases should be treated by general measures, relating to diet, residence, and habits, coupled with the administration of such drugs as salol and salicylate of bismuth, or whether the appendix should be excised in an interval of comparatively good health. Although the removal of a catarrhal appendix can presumably have but little effect on the general condition of the colon, yet there is evidence to show that, when the symptoms of catarrhal colitis are conjoined with those of a similar condition of the appendix, excision may be followed by considerable improvement.

Mucous colitis.

This form of disorder of the colon is very common in private practice. Our clinical knowledge of it has increased greatly in the last few years, so that a description of its symptoms can now be written with probable accuracy, and it is easily recognised (Cf. Hale White, Allbutt's "System of Medicine," vol. iii., where it is termed "membranous colitis"). As to its causation and pathology we know little or nothing, and it is very rarely fatal. **Mathieu** (*Revue de Thérap.*, 1897, No. 14) writes about its relations, and describes the treatment which he employs. He notes the well-known fact of its occurrence more particularly in neurotic individuals. He finds, also, that it is especially common in persons suffering from uterine or pelvic trouble. He characterises the condition as an irritation of the colon, which results sometimes in an over-secretion of mucus, and sometimes in the development of hyperæsthesia and spasmodic contraction of parts of the bowel. This, though it is pure guess-work, at any rate comprises the main symptoms, viz.: the excessive production of mucus, the constipation, and the capricious pains in different parts of the abdomen. As regards the constipation, he agrees with all writers that no drastic purgative is permissible. He recommends castor oil (30 to 60 minims) in capsules, ten minutes before breakfast on alternate days, if necessary. Liquid extract of cascara sagrada with magnesia and bicarbonate of soda, may also be used. Further, he is in favour of large irrigations of the bowel, with the idea of reducing the irritation of the part, and also of producing a disinfectant action. He irrigates with two quarts of marsh-mallow decoction at a temperature of 104° F., the irrigator being at a height of one or two feet. If much mucus or so-called "membrane" is appearing at the time, he adds a drachm of sodium

biborate or 15 gr. of sodium salicylate. Either hot or cold applications to the abdomen every morning he thinks are of use. When the pain is severe, occurring as it does sometimes in regular intestinal crises, he recommends belladonna, one-sixth of a grain in the form of a pill. The diet should be plain but varied. It need not necessarily consist only of milk, but it should be unirritating, and it should leave as little indigestible residue as possible. In case of great wasting, a diet of raw meat may be used with advantage. Finally he lays stress on the general surroundings of the patient. And there can be no doubt that great help towards a cure is afforded by a healthy outdoor life, with abundance of outside interests and cheerfulness, and with avoidance of all opportunity for brooding and morbid introspection.

Disinfection of the bowel.

The conditions of the bowel which demand some attempt at disinfection are very numerous, but we are still in the dark as to the best drug to be used for the purpose. Something can doubtless be done in this direction, but it is probable that so-called disinfection of the bowel can at the best amount to no more than the exercise of some degree of control over a superabundant and unnatural growth of the micro-organisms of putrefaction which are naturally and perhaps usefully present. **Lieut.-Col. Quill, R.A.M.C.** (*Brit. Med. Journ.*, May 14, 1898), gives an account of the practice which his experience of enteric fever in India has led him to adopt.

The cases reported are not very numerous, but his mortality is no more than 4·3 per cent. Apart from the care taken to suit the diet in amount to the capacity of the patient and the exactness of the nursing directions, his main point is the administration of a disinfectant mixture at frequent intervals. His prescription is as follows:—Ac. carbol. purissimi (Calvert's No. 1) ♏ 36, tinct. chlorof. co. ʒij, tinct. card. co. ʒij, syrup. aurant. ʒj, aq. chlorof. ad ʒxij.

Of this mixture he gives one ounce, with an equal quantity of iced water, every second or third hour immediately after food. In mild cases five or six doses are given in the twenty-four hours, while in severe cases ten such doses are used. The mixture is palatable and efficient. The author has never observed any harm from its use, and no patient has made any objection to taking it. The stools under its use almost invariably lose their unpleasant odour, and are maintained in that condition if the treatment be persisted in. One of his patients took from first to last over two ounces of carbolic acid with an equal quantity of chloroform, yet there was no obvious appearance of the drug in the urine.

The author has also used eucalyptus oil with apparently good results. Many people, however, have a decided objection to its flavour. He makes the following mixture:—Ol. eucalypti ʒj, mucil. acac. ʒj, spt. ammon. arom. ʒss, glycerine ʒij, spt. chlorof. ʒij, aq. chlorof. ad. ʒxij. Of this he gives an ounce every third or fourth hour.

Similar testimony is afforded to carbolic acid by **Capt. Thacker, R.A.M.C.** (*Brit. Med. Journ.*, Sept. 24, 1898). He used much the same mixture in 79 cases of enteric fever, the mortality being at the rate of 13·9 per cent. It was administered fresh from an ice-box. "Without any exception it was well tolerated by the stomach, caused no unpleasant symptoms, and was thoroughly liked by the patients as a palatable medicine." He attributes to its use the following favourable signs:—Rapid cleansing of the tongue, lowering of the temperature with a well-marked morning remission in many cases, marked improvement in the unpleasant odour of the stools, which in a few days become practically deodorised, control of tympanites, diarrhœa, and delirium, favourable convalescence with sound recovery.

A discussion on auto-intoxication and disinfection of the bowel took place at the Medical Congress at Wiesbaden (*Münchener med. Wochenschr.*, 1898, No. 17). It showed, on the one hand, how little positive knowledge we have as to the possibility of self-poisoning by substances generated in the bowel, and, on the other hand, how great is the difference of opinion on the question of combating such a condition by bactericidal drugs. Many speakers brought forward instances of ill-defined disease, which they interpreted on the theory of auto-intoxication, and everyone has seen cases of a similar kind. **Müller** spoke favourably of energetic emptying of the alimentary canal by washing out the stomach and administering purgatives, with a change of diet. Calomel he considered rather as a purgative than as an antiseptic. **Quincke** recommended the internal administration of yeast, up to 150 c.c. in amount. **Stern**, on the other hand, spoke rather enthusiastically of calomel. **Strauss** stated that by investigation of the influence of various antiseptics on fermentation processes in stools, the following order of value was established:—In the first place, chinosol, thymol, actol; in the second place, bismuth, β-naphthol, menthol, bismuth salicylate, and resorcin.

Treatment of hyperacidity.

A paper by **Joslin** (*Boston Med. and Surg. Journ.*, April 28, 1898) presents us with a very clear and scientific exposition of the current views as to this common malady. It is certainly common enough in Britain, but it may be that it is still more

common in America, where among certain classes of hardly-pressed busy men irregularities in the hygiene of eating are the rule rather than the exception. Hyperacidity of the stomach is a symptom, not a disease. But our knowledge of the conditions which give rise to it is so scanty, and the symptom is in itself so marked, that at the present time our treatment is almost entirely directed to its immediate relief.

The diagnosis is not difficult. Speaking here only of that form, which is by far the most common, consisting of an excessive secretion of hydrochloric acid (often called hyperchlorhydria), it is found to occur more particularly in neurotic individuals, often in association with definite manifestations of neurasthenia. It is common in men whose occupation leads to haste and worry, and irregular habits as regards rest and meals. It may, however, be met with in the apparently healthy and leisured class, but the individual so affected is usually of a highly neurotic temperament. Joslin points out its frequent association with migraine, a functional nervous derangement with which it has much in common. It may perhaps arise in some cases from the excessive use of such gastric stimulants as spices, pepper, salt, mustard; but there is considerable room for doubt on this point, and it is noteworthy that hyperacidity is not a common result of the abuse of alcohol. As regards gross organic disease, as associated with hyperacidity, ulcer of the stomach comes first in order of frequency. It is uncertain here whether the ulcer is cause or effect. Joslin takes the view that the excessive secretion of acid follows the irritation of nerves exposed in the floor of the ulcer. A very important association is that of tabes, in which hyperacidity is common. Moreover, the differential diagnosis between a gastric crisis and a certain severely painful type of hyperacidity, probably attended with pyloric spasm, is often difficult and at times impossible.

Further, it is pointed out that we can safely make these two postulates:—(1) In the overwhelming majority of cases of hyperacidity we have an atonic or dilated stomach, such as can usually be recognised by physical signs; (2) hyperacidity can cause a stenosis of the pylorus through a spasm of its muscles, and so lead to dilatation of the stomach and stasis. "But whether the dilated stomach appears first, and through its stagnant contents leads to stimulation of the mucosa and increases the amount of hydrochloric acid, or whether the increased acid is the primary factor, and through the pyloric spasm so-caused dilatation arises, it is very hard to decide." Joslin takes the former view, on the ground that if the dilatation is removed by medicinal or surgical treatment the hyperacidity disappears.

Finally, the picture of the condition is not difficult to recognise. The main complaint is pain, usually dull and heavy, in the epigastrium or in the neighbourhood of the pylorus. The pain begins only when digestion is in full swing, seldom, that is, during the first hour after a meal. It is apt to increase from this time up to the next meal, whereby it is generally relieved. In some cases the patient, before he comes under observation, has discovered for himself that the pain is relieved by food, and sometimes he has acquired the habit of taking bicarbonate of soda for the same purpose. The appetite is good. Vomiting is rare, except in cases where there is some underlying condition, such as ulcer or great dilatation. Wind is frequently brought up. Thirst is present in the severe, but absent in the mild cases. While this description covers the usual type of case, it must be remembered that sometimes the pain is exceedingly severe—so severe, in fact, that, by overshadowing the other symptoms, it may lead to a mistake in diagnosis. As Joslin states, it has happened that in some cases morphia alone can give relief, and that by its injudicious use the patient has been allowed to acquire a morphia-habit. At times the pain may extend even up to the shoulders like the pain of gall-stones. It may be so low down as to simulate appendicitis. As has been already stated, it may closely resemble the gastric crisis of tabes. I have on two occasions known the pain to occur in great severity under the left costal margin, so as to arouse at first some suspicion of angina pectoris. From the character and severity of the pain in such cases as these, it is difficult to attribute it to anything else than the spasm of some part of the muscular wall of the stomach; most probably in the neighbourhood of the pylorus.

Though hyperacidity is commonly easy of recognition from the patient's description of his symptoms, actual examination of the contents of the stomach should always be practised as far as possible. "The knowledge derived from such examination imparts confidence to the physician and the patient." The usual test-meal consists of 2½ oz. of white bread, and 10 fluid oz. of weak tea given in the morning on an empty stomach, and the contents are removed after the lapse of an hour. Joslin recommends the quantitative test of **Mintz** (Allbutt's "System of Medicine," vol. iii., p. 290).

As regards treatment, Joslin deals first with measures which aim at strengthening the motor power of the stomach. He advocates rowing and golf. Massage may be of value at the hands of a skilful operator. Electricity he has discarded as useless. He is impressed with the value of nux vomica, which he administers

thus : 10 drops of the tincture three times a day, the dose being increased daily by 1 drop until 20 or 30 drops are being taken thrice a day. When great and obstinate dilatation is met with, the stomach-tube must be used, though it should be avoided when possible. Failing relief, he advocates resort to surgery in accordance with the recommendations of **Leube** and **Mikulicz**. Thirst is best relieved by enemata of normal salt solution, and the patient should not be allowed to take large quantities of fluid by the mouth.

As regards the hyperacid condition itself, some simple methods of treatment were described in the "Year-Book of Treatment for 1898," p. 103. **Joslin** recommends that food should be given in small bulk, and the pain may be relieved by malted milk tablets, which, in addition to some neutralising power, give rise, like Bergmann's tabloids ("Year-Book of Treatment, 1898," p. 104) to an increase in flow of alkaline saliva. The alkalies proper, though temporarily of great use, he thinks lose their power later.

If they are used he recommends large doses of them combined with bismuth.

As to food, the results of experimental observation and clinical experience are not in agreement in regard to the choice of an albuminous or a carbohydrate diet. He is himself inclined to favour the former, and this view will be generally accepted at the present moment. At the same time there is much still to be learnt on this point of diet. Theoretically and experimentally, an albuminous diet should prove irritating, and should tend to aggravate the condition, nitrogenous food being a stimulant to the secretion of acid. Hence some have been led to prescribe a diet rich in carbohydrates. On the other hand, practical experience indicates that a carbohydrate diet does not produce good results, and that a diet mainly nitrogenous coincides with relief to the patient. **Strauss** and **Aldor** (*Zeitschr. f. diät. und phys. Therapie*, Bd. 1, Heft. 2, p. 117) report some experimental work, as a result of which they maintain that the diet should be partly nitrogenous, but that carbohydrates should be reduced, while a considerable amount of fat is introduced. They show that in most cases the addition of oil to the diet is followed by a diminution in the free hydrochloric acid. They show that under such a diet the patient's weight may remain constant or even increase, which is an important point when we remember how imperfect is nutrition in these cases of hyperacidity. The fat used by them was obtained from milk, butter, cream, and oil. They recommend cream more particularly, and their suggestions are well worthy of extended trial.

At the Medical Congress in Berlin in 1893, **Fleiner** published his method of treating hyperchlorhydria (whether associated or not with gastric ulcer) by means of heroic doses of subnitrate of bismuth, administered through a tube. In three cases of ulcer near the pylorus, with pyloric stenosis and dilatation of the stomach, he thus reduced the hydrochloric acid from 4·0 to 1·0 per cent., from 3·0 to ·98 per cent., and from 2·9 per cent. to normal. This method has not met with general acceptance, and is open to criticism, especially as regards the passage of a tube. **Olivetti** (*Therap. Monatsh.*, April, 1898) has recently tried it in four cases. He administered the bismuth suspended in water through a tube, in the morning when the stomach is presumably empty. The dose varied between 10 and 20 grm., and each patient received during the period of treatment a total amount varying from 275 to 320 grm., roughly from 9 to 10 oz. He estimated the amount of acid before treatment, and three times during the treatment. In two of the cases the hyperacidity was associated with gastric ulcer and hæmorrhage, in the other two it was uncomplicated. The actual results are given in figures, and are interesting. He concludes that by this method there is produced marked improvement as regards pain and subjective symptoms, and that this improvement lasts for some time afterwards. It is not, however, permanent, though it lasts longer in the case of ulcer than when the hyperchlorhydria is uncomplicated. He considers that a daily dose of from 10 to 15 grm. is best calculated to produce this effect. He finds that bismuth as thus administered has no pronounced influence either on the amount of gastric juice or on the motility of the stomach, and that the diminution in the amount of hydrochloric acid which is produced is so slight that the improvement in such symptoms as heartburn, pain, and vomiting, in the case of gastric ulcer, cannot be attributed to it. He is inclined, therefore, to fall back on the old hypothesis that the value of bismuth in the treatment of gastric ulcer, which is universally admitted, lies in the mechanical protection afforded to certain hyperalgetic spots in the mucous membrane, rather than in any influence exercised upon gastric secretion.

In connection with this subject, we may learn from Fleiner's method of treatment that bismuth subnitrate, an undoubtedly valuable drug in many conditions, may be used safely in far larger doses than the British Pharmacopœia indicates. There are many cases where good results will be obtained by a dose of 30 gr., and even 50 or 60 gr. are easily and safely administered in suspension.

Hæmatemesis.

In a clinical lecture **Robin** of Paris (reported in *Med. Press and Circular*, Dec. 22, 1897) details the treatment which he recommends on being summoned to a patient who is vomiting blood in large quantity, whether as the result of a gastric ulcer or of other causation. The patient should be put to bed at once with his head low, lying on his back; ergotine should be injected hypodermically over the epigastrium, and ice applied to the same region. One or two grains of extract of opium should be given at once, and then every two hours one tablespoonful of the following mixture:—Ext. ergotæ liq., 3 dr.; ac. gallici, 30 gr.; ext. opii liq., 40 minims; syrup. terebinth., ½ oz.; aq. flor. aurant., ad 6 oz. This mixture should be continued until the hæmorrhage has entirely ceased. If syncope occurs, he has recourse to injections of ether, mustard plasters to the legs, amyl nitrite, and transfusion. If obstinate vomiting continues, which may tend to keep up or increase the hæmorrhage, he recommends from 8 to 10 drops of the following mixture in a little water:—Picrotoxin and morph. hydrochlor., of each 1 gr.; atropin. sulphatis, 1 gr.; ergotin, 15 gr.; aq. dest., 4 dr.; and spt. vini rect., sufficient to make solution. He further points out that the blood which has been shed, but is not vomited, is apt to undergo decomposition in stomach or bowel, especially if the patient is constipated. An auto-intoxication may thereby be set up, and, as is often observed, the tongue becomes furred and the breath offensive. This condition may be dealt with by cleaning out the bowels by enemata (glycerine or a tablespoonful of sodium hypochlorite) and by purgatives. The debility and anæmia which remain require iron, inasmuch as a generous diet can hardly be allowed so soon after severe hæmatemesis. Robin prefers the perchloride of iron, as being both hæmostatic and tonic.

The use of calcium chloride to arrest hæmorrhage, internal or external, has often been urged by Prof. Wright, of Netley. **Parry** (*Lancet*, July 16, 1898) describes a case of gastro-intestinal hæmorrhage in a newly-born child, an event of obscure pathology which is commonly fatal. On the second day of the bleeding eight doses of 5 gr. of calcium chloride were administered, the same amount was given on the third day, and during the fourth day it was given every two hours. Altogether the child took 160 gr. in three days. The hæmorrhage began to lessen twenty-four hours after its exhibition, and ceased completely in forty-eight hours, the child recovering. If it is to be of any use, the drug must be given freely, and it is clear from this case that it has no harmful effects.

Artificial food preparations.

Some account of "eucasin" was given in the "Year-Book of Treatment, 1898," p. 102. **Weiss** (*Therap. Wochenschr.*, 1897, No. 51) writes in praise of this food. It contains 95 per cent. of albumin, it is very easily absorbed, and it can be given with advantage by the rectum. Further, it contains no nuclein, and so does not increase the production of uric acid.

Yet another preparation has seen the light in 1898. "Tropon" is reported on by **Finkler** (*Deutsch. med. Wochenschr.*, 1898, No. 17), and **Strauss** (*Therap. Monatsh.*, May, 1898) has examined it carefully. It is made from animal albumen of various origins and from vegetable albumen (cereal and leguminous). It is a finely-powdered greyish-brown substance, insoluble in water, almost devoid of smell and taste. It is easily digested in artificial and natural gastric juice. Its analysis shows 90–97 per cent. of albumen, 0·5 to 1·0 per cent. of ash, and traces of æthereal extractives. It has the advantage of being exceedingly cheap. Owing to its consisting of a fine powder, it is found to be particularly useful in stricture of the œsophagus, and experience shows that it has no irritant effect on stomach or bowel. It may be given in warm milk, a teaspoonful in a pint of milk, or in soup or chocolate or cocoa. Twenty to sixty grammes may be given per diem.

Treatment of ascites by oxygen.

In the "Year-Book of Treatment for 1898," p. 95, some account of the current treatment of peritoneal tuberculosis was given. In France trial has been made of the injection of sterilised air into the peritoneal cavity. Evidence is given by **Maignot** (*Thèse de Lyon*, 1898) to show that it is better to use oxygen rather than air in the treatment of ascites by this method of intraperitoneal gaseous injection. He believes, in fact, that when air is used it is the oxygen which has effect by reason of the irritation set up; and, further, that this method of treatment is of use when the ascites is due to cirrhosis, as well as in cases of peritoneal tuberculosis. The injection of large volumes of gas up to 5 or 6 litres is followed by abdominal pain, and experience points to 1 or 2 litres as being a suitable amount. The gas must, of course, be sterilised. Its injection is followed by slight abdominal pain and slight rise of temperature, but both these results disappear in a day or so. The period in which the injected gas can be absorbed varies in different cases, but the mixture of gas and fluid in the abdomen can be detected with the hand for eight, ten, or even fifteen days after injection.

Treatment of dysentery.

This subject was under discussion at the meeting of the British Medical Association in 1898, and considerable difference of opinion was elicited. The different results obtained may plausibly be explained on the hypothesis that there are many different forms of the disease, and, as **Major Davidson, R.A.M.C.**, suggested, it is likewise probable that in the worst forms the action of septic organisms is superadded to that of the specific virus, a process which we know occurs in tuberculous disease of the lung.

Sandwith (*Brit. Med. Journal*, Sept. 24, 1898), as the result of experience at Cairo, is inclined to discard the use of ipecacuanha, even when used in the de-emetinised form. He prefers to use magnesium sulphate in doses of 1 dr. every hour until the bowels are well emptied. Latterly he has trusted largely to enemata, especially containing sulphate of copper, and he uses these even in acute cases.

Major Davidson, on the other hand, is of opinion that ipecacuanha is useful in checking the disease in its early stage by causing exudation from the mucous membrane, and thus allaying tension and inflammation. **Lt.-Col. Crombie** also believes that ipecacuanha is of great service in true acute dysentery. He gives it in large doses, having previously administered chloral.

Captain Johnston (*Brit. Med. Journal*, April 16, 1898) testifies, on the other hand, from his Indian experience, that ipecacuanha has not the effect with which it was formerly credited. He, like many others, strongly recommends magnesium sulphate. He says that patients may come in passing fifteen stools a day containing blood and slime, and under this treatment, even on field service, the average duration of the attack is only two or three days. The patient is at once put on a purely milk diet, and is given 2 dr. of magnesium sulphate every four hours, combined with aromatic sulphuric acid, 5 minims (to counteract any severe griping that may be caused), till the flow of bile is well established, as seen in the stools.

In Great Britain, however, where chronic dysentery alone comes under observation, the general consensus of opinion points to absolute rest, a milk diet, and treatment by large, slow irrigation with boracic, quinine, or silver nitrate solutions, with or without the internal administration of bismuth salicylate, and salol.

Attention was drawn in the "Year-Book of Treatment for 1898" (p. 99) to the use of Monsonia in dysentery, recommended by **Maberley**. Further information is supplied by him (*Lancet*, July 16, 1898), and he has sent specimens of Monsonia and some unnamed species of Pelargonia from South Africa to London for the preparation of tinctures. The latter, he thinks, are more suitable than Monsonia for ulceration of the stomach and upper part of the intestinal tract, and he quotes a case illustrating the use of the drug.

Acute intussusception in young children.

There is a growing tendency to give up all the so-called medical means of dealing with intussusception and to hand such cases over to the surgeon at the earliest opportunity. Many cases recover no doubt, by means of inflation or injection, but it is equally true that many lives are lost by depending too much on such means and by delaying operation. Under certain conditions, especially in country practice, the milder measures only may perhaps be applicable, but where both medical and surgical aid is available, as in hospitals, it is probable that the best results are obtained if inflation or injection be tried by a surgeon who is prepared to operate at once, if they fail. **Packard** (*Therapeutic Gazette*, March 15, 1898) has written an article in this sense, founded on a case under his care which impressed him with the danger of what he calls "non-operative mechanical interference." Reduction by inflation or injection would have been impossible in this case, not only because of the adhesions between the serous layers, but also by reason of the presence of an enlarged mesenteric gland which interfered with the return of the invagination. At the same time reduction, if it had been possible, could not have saved life, owing to the presence of deep ulceration in the ascending colon. His experience is to the effect that all mechanical attempts at reduction should be performed with the greatest care and gentleness, that they should be employed at as early a time as possible, and that after the third day they promise but little success, and are capable of doing great damage. Further discussing the method of attempting reduction without operation, he decides in favour of injection of fluid rather than inflation, for the obvious reason that in the former alone can the force used be estimated. He recommends normal salt solution for use, as not being irritating and as causing no disturbance by osmosis, and he is inclined to use it at a temperature of 100° to 105° F., and to use it by an irrigator rather than by any form of syringe. The height above the rectum at which the irrigator can be safely held has formed the subject of many experiments. It has been found that a pressure of two and a half pounds on the square inch (irrigator at five feet elevation) could cause cracking of the peritoneum, and that an elevation of six feet may produce complete rupture of the bowel. Rupture has, however, occurred

with the irrigator raised only four feet above the bowel, and it is probable that three feet is very near the limit of safety.

D'Arcy Power ("Some Points in the Anatomy, Pathology, and Surgery of Intussusception," 1898) recommends that in all cases of the common form of intussusception the routine treatment should be to irrigate the colon with salt solution at 100° F. under a pressure of not more than three feet of water, the liquid being allowed to act for at least ten minutes, while the patient is under chloroform. When this fails, the surgeon must at once proceed to open the abdomen. Similarly laparotomy is necessary, when, as sometimes happens, the invagination can be reduced by injection, but quickly returns. He does not consider that inversion of the patient renders irrigation more successful, and he is satisfied that long-continued distension under a low pressure is of more avail than rapid dilatation under a high pressure. The surgeon should keep one hand flat upon the abdomen whilst irrigation is being performed, and he must carefully avoid great variations of pressure. A sudden and uniform enlargement of the whole abdomen during irrigation raises the suspicion that rupture of the bowel has occurred, and the abdomen should in any case at once be opened. The length of the intussusception is no bar to its reduction by irrigation, and success may be obtained even when the ilio-cæcal valve is beyond the anus.

He shows further that the capacity of the colon is very variable. In a child of five months it was distended with ten ounces, while in a child two months older thirty ounces were required.

DISEASES OF THE KIDNEYS, DIABETES, ETC.

By Francis D. Boyd, M.D., F.R.C.P. Edin.,
Physician to the Deaconess Hospital, Edinburgh, etc.

A good deal of work has been done during 1898 on urinary pathology and treatment. At the Edinburgh meeting of the British Medical Association an important discussion (an abstract of which is given) took place in the Pharmaceutical Section, on the treatment of chronic renal disease. The general tendency of the discussion was to deprecate efforts to cure the disease by means of drugs, but to enhance the value of general hygiene and diet in preventing the progress of the disease. Professor Ewald, of Berlin, described his method of drawing effusions from the limbs and cavities, and advocated more frequent tapping. Papers on nephritis are fairly numerous. Senator discusses the pathogenesis of chronic nephritis, while Bradford describes what he considers as a new form of Bright's disease occurring in young women. Considerable attention has been paid by the French school of physicians to the question of "renal permeability," as shown by the subcutaneous injection of aniline colours.

Pavy, in the supplementary Croonian Lecture, restates and expands his views on the pathology and treatment of diabetes. However much some physiologists may disagree with Pavy, still any statement or theory coming from one of so wide and varied an experience of diabetes, must be received with attention and interest by physicians. A considerable number of drugs have been used in diabetes by different observers, and their results are recorded. Abstracts of a number of articles on different urinary questions are given.

I.—NEPHRITIS AND ALBUMINURIA.

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cussion of hygiene and diet. Could we, he asked, by any hygienic change or by any dietetic measures, modify the course of these conditions? Could we by these means retard the disease, or was it possible to exert any curative effects? Or, on the other hand, were our efforts to be limited solely to the relief of prominent symptoms as they arose?

In chronic nephritis there was a tendency to the occurrence of subacute attacks with but small provocation. Hygienic treatment must be directed towards diminishing the risks and frequency of those attacks. Sudden alternations of temperature must be avoided. If the patient could not winter abroad, care should be taken that he was clad in woollen garments, and that a woollen "cholera belt" was worn. In both types of chronic renal disease the prejudicial influence of over-exertion and mental strain must be carefully avoided. A life of idleness was not called for, however, and was likely to be deleterious on account of the tendency in those cases to mental depression. As regards the question of diet, chronic nephritis probably called for greater care than renal cirrhosis, since the drain of albumin was greater, and carelessness, more particularly in regard to alcohol, was likely to favour the supervention of subacute attacks. In both forms it was possible to prejudice the well-being of the patient by undue restrictions. If the albuminous excretion in the urine was fairly constant, there was no advantage to be gained from a strictly non-albuminous diet; while, on the other hand, there might be considerable disadvantage in endeavouring to force the patient to exist on a distasteful dietary. The liability in such cases to dyspeptic troubles must always be borne in mind. With regard to the use of alcohol, the speaker thought it better not to interfere with the ordinary habits of the individual, provided those habits did not lead to the excessive consumption of stimulants. A little alcohol with meals might encourage the appetite and aid digestion; it was best taken in the form of pure spirits well diluted. Dietary, then, in chronic nephritis and renal cirrhosis, must be planned to avoid further extension of the disease, the utmost that could be hoped being arrest rather than cure.

With regard to medicinal treatment, there was little to be hoped from the treatment of the disease as an entity; symptoms must be treated as they arose. Apart from uræmia, three conditions had to be coped with: diminution in the urinary secretion, albuminuria, and dropsy. The first and last, being closely associated, could be treated simultaneously. If the condition was due to a subacute attack, it must be treated like an acute nephritis. When there was no active engorgement diuretics, such as digitalis and

strophanthus, might be of great service—preferably digitalis. Of all diuretics, water was the best, and could be given freely, unless it was found that the dropsy increased while the elimination of urine showed no change. With regard to loss of albumin, the drugs most in use to reduce the albumin excretion belonged to the class of astringents. The salts of iron perhaps gave the best results, but all the drugs in use had the disadvantage of favouring indigestion. It was more desirable to watch the general condition of the patient than to fix the attention on the albuminuria. The treatment of dropsy was carried out by diaphoretics, diuretics, and hydragogue purgatives, and in extreme cases by surgical means. The skin should be encouraged by wet packs, hot water or hot air baths, combined with copious draughts of water. Pilocarpine, if used at all, must be used with great care on account of its toxic effects. Of diuretics which favour the removal of dropsy, the salts of sodium, potassium and lithium, seemed to give the best results. With cirrhosis of the kidney, treatment must be purely symptomatic. One of the most prominent symptoms is persistent headache. For the relief of this, nitroglycerine, trinitrine, or nitrite of sodium should be employed, or erythrol tetranitrate, which had a more permanent power in lowering the arterial tension. Sleeplessness was sometimes a prominent feature, and for its relief the use of hypnotic drugs demanded considerable caution. Much difference of opinion prevailed with regard to the use of opium. The speaker himself was averse from its employment for the relief of insomnia due to renal cirrhosis. Much benefit might be derived from hyoscine in very small doses. Sulphonal and paraldehyde also gave good results, and in the case of sulphonal, the dose could be reduced after the habit of sleeplessness had been overcome. Passing next to the consideration of uræmia, the speaker discussed first the treatment of gastric and intestinal symptoms, and then passed on to the consideration of acute uræmia. In the acute attack, nitrite of amyl and the nitrites had not been found of much value. Chloroform had been used, but required considerable caution on account of the weakened cardiac action. The treatment by purgatives and diaphoretics was more hopeful, and of those remedies croton oil was the most useful.

Professor Dr. C. A. Ewald, Berlin, discussed the question of the removal of transudates by mechanical means, by scarification, puncture, etc., and considered that none of the usual methods were carried out energetically enough, and too many inconveniences were attached to them. Puncture for ascites and pleural effusion was done too seldom. Several weeks were allowed to elapse

between the punctures, the fluid collected again, there was danger to the patient, and reabsorption of the fluid was rendered extremely difficult by pressure exerted upon the blood- and lymph-vessels of the pleura and peritoneum by the presence of the fluid. The endothelium of the serous membranes suffered in its nutrition, and the organs contained in the cavities were compressed and their functions disturbed. Under these circumstances puncture should be carried out as often as there was enough fluid present to make it possible; in this way, combined with proper treatment of the œdema, the "cure" of nephritis could be brought about in a number of cases. The drainage of the œdema could be effected by inserting long needles into the subcutaneous tissues as far as possible parallel to the skin, the part that projected being covered with salicylic wool and iodoform collodion. To the end of the cannula a rubber tube should be attached, which could hang down alongside the bed into a vessel to receive the fluid. By means of a safety-pin the rubber tube should be attached to the mattress to avoid pulling upon the needle. Into each leg one or more needles were inserted, and thus 3 to 5 litres could be drawn off in a day from the legs, abdominal wall, and scrotum. Antiseptic precautions must, of course, be observed. In only one case had the speaker seen any serious accident occur. Erythematous conditions sometimes set in, but disappeared promptly under an alcoholic bandage. In this way enormous amounts of fluid could be drawn off, and the drain of albumin was but insignificant. Discussing uræmia and uræmic convulsions, the speaker thought that the use of venesection was too much neglected.

Dr. Barr, Liverpool, gave it as his opinion that the albumin and urea excreted were not to be regarded as of importance. It was not what was excreted, but what was retained which was to be considered. It was of importance to give the kidneys rest. The question was mainly one of dietetics, and was best answered by a carbohydrate diet pure and simple. Referring to the use of pilocarpine, he regarded it as a very dangerous drug. The amount of water eliminated from the system might prove decidedly harmful, and in cases where the patient was unconscious and could not get rid of the poison, so great was the increase of the various secretions that the patient was practically drowned in them. The necessity of improving the vascular condition of the patient should be insisted upon.

Professor Saundby, Birmingham, agreed with Professor Ewald as to the need of early tapping in the case of dropsy in renal disease. He had found much benefit from careful elevation of the limb, massage, and the application of a bandage, in ridding the

part of chronic œdema. Though he did not reject venesection in the treatment of uræmia, he seldom employed it. The injection of water into the rectum produced beneficial results in diminishing the intoxication. With regard to alcohol he advocated abstinence.

Dr. Ewart, London, in discussing the treatment of dropsy advocated the gravitation of the fluid by raising the head of the patient's bed 6 to 8 inches. Deep incisions should then be made near the ankle with due antiseptic precautions, and the drainage kept up as long as possible with the help of a liberal supply of beverage. An exclusively milk diet should be adopted at first, but this could soon be exchanged for a liberal and varied dietary, under which the albuminous character of the serum was gradually restored, and the patient's strength improved. As long as free drainage was kept up the feeding might be maintained without any risk, and the urinary flow was increased.

2. The pathogenesis of chronic nephritis.

Senator (*Berlin. klin. Wochenschr.*, 1897, No. 38), discussing the pathogenesis of chronic nephritis, concludes that chronic nephritis results as a rule from an error in the constitution of the blood, which error depends upon different causes and varies in nature. Chronic inflammation can result from an acute nephritis and have a similar origin. Acute nephritis, however, improves as the cause subsides, while the chronic progresses from the beginning, more or less gently passing from the acute to the subacute, subchronic and chronic. The causes of the acute and the chronic may be identical save that their action in the chronic variety is less powerful, slower, and more insidious. The commencement of the acute and subacute inflammation is either in the parenchyma alone, on the subsidence of which a secondary interstitial inflammation with increased fibrous formation manifests itself, or else parenchyma and interstitial tissue are from the first affected together. In either case the condition ends in the so-called granular contracted kidney. In chronic interstitial nephritis or genuine primary contracted kidney, it is possible that the inflammatory process begins first in the interstitial tissue, and that the parenchyma is affected secondarily. A very common form of chronic nephritis leading to induration and shrinking, formerly looked upon as a primary kidney cirrhosis, depends upon a primary arterio-sclerosis from which the inflammatory changes in the tissues result, or else there is an arterio-sclerosis, with at the same time a parenchymatous change. This arterio-sclerotic form of contracted kidney depends not so much upon an error in the composition of the blood as upon a deficiency in

the blood supply. This is the type of the senile kidney, and should not be classed with the pure hæmatogenous chronic nephritis.

3. On a form of Bright's disease occurring in young women.

Bradford (*The Practitioner*, April, 1898, p. 359) discusses what he considers an anomalous form of Bright's disease, of which a series of cases have come under his notice during five years of hospital work. The kidneys in these cases were small, usually averaging some 3 oz. apiece, occasionally less. The capsule was considerably thickened, but stripped off readily without tearing the kidney substance, offering in this respect a marked contrast to what is seen in the granular kidney. The surface of the kidney was, however, extremely irregular, the granulations being approximately $\frac{1}{16}$ in. in diameter. The cortex was greatly diminished, and the distinction between the cortex and medulla was frequently lost. The surface of the kidney and the section of the cortex both presented a mottled appearance. The medulla was congested. An account of six cases is given. In all the six cases the patient at first sought advice for comparatively trivial symptoms, but death ensued very rapidly from various forms of acute uræmia. In all but one albuminuric retinitis was present. In all dropsy was absent during the last illness, and in only one of the six was there any history of dropsy. In five of the cases the onset of the disease was so gradual that the patient could not date it. The characters of the urine were peculiar. A quantity equal to, or even considerably greater than, the normal was passed, containing a high percentage of albumin. The specific gravity was low, and the quantities of urea excreted were moderate, considering the vomiting, diarrhœa, etc. The author considers that the fact that the abundant dilute urine contained a large quantity of albumin separates these cases from granular kidney, inasmuch as their history lent no support to the view that they were cases of renal cirrhosis complicated by an intercurrent attack of acute nephritis; and further, the *post-mortem* characteristics of the kidney were quite different from those of the granular kidney. The *post-mortem* characteristics of the kidney and the characters of the urine secreted during life justify the cases being placed in a distinct class of Bright's disease—a chronic and insidious malady rather than the sequel of an acute nephritis that has not been recognised. All the cases had well-marked albuminuric retinitis. All the cases terminated with acute uræmia, and in only one was there any considerable suppression of urine. The author thinks that they form a distinct clinical variety, which can be recognised

and separated from the granular kidney on the one hand and the so-called chronic Bright's disease (either large white or small white kidney) on the other.

4. The elimination of urinary potash in nephritis.

Charrier (*Comptes Rendus Hebdomadaires de la Soc. de Biolog.*, 1897, vol. iv., p. 972) gives an account of an interesting research carried out in the laboratory of Professor Guyon, on the elimination of potash salts in nephritis. The analyses were done on the urine of twenty-four hours, over a period of eight days. Ten patients were under observation. In three cases there was marked retention of potash. In one of the three, where the elimination was markedly diminished, a notable proportion of potash salts was found in the vomited matter. In three cases there was an increased elimination; one, indeed, eliminated during three days 6 grm. of potash. Some time afterwards the amount of potash eliminated by this patient fell below the normal. In this case the period of increased elimination coincided with an amelioration in the symptoms, and was possibly due to a rigid milk diet. An interesting observation was made on the comparative elimination by a healthy kidney and by a kidney affected with pyonephritis. The diseased kidney eliminated two and a half times less potash than the sound one.

The author concludes that in most cases of nephritis there is a slow and progressive poisoning of the organism by potash salts. Potash seems to play an important part in the complications of nephritis. Discharge of the potash seems to take place under the influence of milk diet. The ordinary dietary of a case of nephritis bears out the view that potash has a deleterious effect. Those articles of food containing little potash and having a diuretic action, such as milk, are allowed. The articles forbidden by experience are found to contain a large proportion of potash. Observations on the potash elimination in health are given.

5. Chronic nephritis and albuminuria in infants.

Heubner (*Gazette Hebdomadaire*, No. 70, 1897) finds that, as an ætiological factor in chronic nephritis in children, the infectious diseases play an important part. Out of thirty-eight cases, twenty-five followed scarlatina; the others diphtheria, influenza, measles, and other forms of infection. The symptoms of chronic nephritis in children are little accentuated. It is rare to find headache, insomnia, or vomiting. The sufferer shows general malnutrition and anæmia. In no case was there œdema, or retinitis, or manifest hypertrophy of the heart, with increased vascular tension. The diagnosis must be made by examining the urine. The quantity of urine remains about normal, the specific gravity is diminished,

the reaction is always acid. The quantity of albumin does not usually exceed 1 part per 1,000. Casts are present, hyaline and a few waxy, never granular nor epithelial. The albuminuria is sometimes cyclic, sometimes intermittent in character. The course of the disease is essentially chronic. **Auffrecht** has published a case where the nephritis acquired when nine years of age was verified by *post-mortem* examination nineteen years subsequently. **Mann** had a case, scarlatinal in origin, acquired at fourteen years of age; death resulted from uræmia at forty-two. Recovery is possible; in one case it occurred after the albuminuria had persisted for seven years. The treatment, **Heubner** considers, should consist simply in attention to general hygienic considerations and the avoidance of cold. It is inadvisable to change the diet and the life of the child. Drugs, he considers, have no influence on the nephritis.

6. Methylen blue in nephritis.

Kramer (*St. Petersburger med. Wochenschr.*, No. 20, 1898) quotes some cases of hæmorrhagic nephritis, and strongly advocates the use of methylen blue. In his hands it proved very efficacious, the blood and albumin rapidly disappearing from the urine.

[The drug has previously been employed by French physicians ("Year-Book, 1896," p. 110). Its action is principally of a diuretic nature. It may be prescribed in capsules, 5 grains in each, given thrice daily. No unpleasant effects have been noted from its use.]

7. Diet in cyclical albuminuria.

Von Keller (*Jahrb. für Kinderheilk.*, 1897), investigating the value of diet in cases of cyclical albuminuria, discusses the value of a purely milk regimen, and the influence of diet on the albumin excretion. Five patients were under observation. They were kept for a period on a purely milk diet, and then for a second period on a mixed diet, the general conditions being identical during the two periods. The quantity of the urine, its specific gravity, and the amount of albumin excreted in the 24 hours were noted. It was found that milk diet had no marked influence either on the albumin excretion or on the amount of urine. The author concludes that in cyclical albuminuria a mixed diet is to be advised.

[The present tendency is to regard cases of cyclical albuminuria as in reality a nephritis of a mild character, in which a cure may be hoped for. To place such cases on a purely milk diet is to demand an unnecessary sacrifice from the patient, and may have a deleterious effect upon general nutrition,

and thus be hurtful rather than beneficial to the kidney condition. Even in cases where a more grave inflammation is present in the kidney, a strict milk diet is by no means always advisable, for, as **Hale White** has shown (*Med.-Chirurg. Trans.*, vol. lxxvi.), in many cases a liberal diet is beneficial and does not increase the liability to uræmia, if the diet be kept within reasonable bounds.]

8. Nucleo-albuminuria.

Haushalter and **Guérin** (*Comptes Rendus de la Soc. de Biologie*, 1898, No. 20) recount an interesting case of nucleo-albuminuria. The patient, a child four years of age, was brought to the clinic on account of a cough. Some consolidation of the right apex was discovered. The urine was abundant, clear, at times pale, at times highly-coloured. No tube casts or formed elements could be found. Boiling gave no precipitate. On the addition of a little acetic acid in the cold a distinct cloud was produced, which was not increased by heat. The cautious addition of hydrochloric acid produced a slight cloud, which rapidly disappeared on the slightest excess of the acid. The addition of trichloracetic acid and picrocitric acid produced a distinct precipitate. During the course of observation the amount of nucleo-albumin reached 3 grammes per litre. When the child improved under suitable hygiene and rest the proteid disappeared rapidly. The authors consider that the presence of transitory nucleo-albuminuria points to the existence of tuberculosis.

9. Albumosuria.

Bradshaw (Royal Medical and Chirurgical Society, April, 1898) recounts a peculiar case of albumosuria in which the albumose was spontaneously precipitated. The patient, a man 70 years of age, had a good personal history. For nearly a year he had passed, two or three times a week, turbid urine of a milky appearance, which deposited a copious amorphous sediment, giving the reactions of a proteid body. At other times the clear urine contained a proteid of the nature of an albumose, which appeared to be the same body as was precipitated in the turbid specimens. The spontaneous precipitation was coincident with an increase in the acidity of the urine. The albumose seemed to coincide with the body described first by **Bence Jones**, and since described in some five cases. The patient, as in other cases described, showed signs of bone disease.

Rosin (*Berlin. klin. Wochenschr.*, No. 48, 1897) records an interesting case of albumosuria. The patient was admitted for cough, pain in the back, and general weakness. On examining the urine an albuminous body was found, which, on further investigation, proved to be albumose. The urine contained numerous casts

and epithelial cells from the kidney. On *post-mortem* examination changes were found in the kidney which appeared to be more of a degenerative than of an inflammatory nature. The condition in the thorax was of interest. In several of the ribs a new growth was found, which proved to be of a myeloid sarcomatous nature. Was the sarcoma of the thorax to be looked upon as the cause of the albumosuria? The author thinks so, and finds confirmation in the record of similar cases in the literature of the subject. He concludes that the presence of albumose in the urine may prove a sign of diagnostic value in cases where sarcoma of the thoracic bones is suspected.

10. A new method for the demonstration of albumose in the urine.

Bang (*Deutsche med. Wochenschr.*, 1898, No. 2) recommends the following procedure for the recognition of albumose in the urine: Take 10 c.cm. of urine, mix in glass with 8 grm. ammonium sulphate, and heat till all the salt is dissolved. Centrifuge. The precipitate thus obtained contains albumin, albumose, urobilin, some uric acid and urinary salts. Wash with alcohol, to remove the urobilin. Dissolve the remaining precipitate as far as possible in a little water, filter, and the filtrate contains the albumose, which can be demonstrated by the biuret reaction. The author claims that in this way albumose can be demonstrated when present in a quantity as small as 1 in 4,000 to 1 in 5,000.

[There is nothing new in the procedure, save the adaptation of the centrifuge to the ordinary procedure for separating albumoses by saturation with ammonium sulphate and heat.]

11. Renal permeability.

Considerable attention has been devoted during 1898 to renal permeability in different diseases. **Bard** (*Lyon Médical*, No. 1, 1898), using the subcutaneous injection of methylen blue and iodide of potash, finds that in healthy individuals the drugs appear in the urine in about half an hour, and the excretion continues for thirty-six to forty-eight hours. In cases where there is disease of the renal epithelium with secondary interstitial changes the excretion begins earlier, and does not last so long. In primary interstitial nephritis, the excretion is delayed and is irregular. Iodide of potash can only be injected in small quantities, for iodism is easily set up.

Lépine (*Lyon Médical*, No. 8, 1898) advises the use of rosaniline trisulphonate of soda, an intense red pigment, in hypodermic doses of 0·01 grm. In cases of Bright's disease there is not only delayed excretion, but also deficient excretion of the colouring matter. He considers that the results obtained by Bard in

parenchymatous nephritis, where the excretion of methylen blue was rapid and of short duration, are not due to increased permeability of the kidneys, but to diminished elective power of the cells, that is to say, that the cells of the convoluted tubes are no more able to reabsorb non-excremental products from the fluid coming from the glomerulus. In the healthy condition, part of the colouring matter is reabsorbed by the tubular epithelium. In support of this is the fact that all the colouring matter injected cannot, in a healthy individual, be recovered from the urine.

Dreyfus (*Lyon Médical*, No. 19, 1898) advocates the use of rosaniline as possessing many advantages over methylen blue for subcutaneous injection.

Fränkel (*Presse Médicale*, May, 1898) gives observations on forty-two cases of cataract, and finds there is considerable variation in the renal permeability, even when there is no apparent kidney lesion.

Castaigne (*Gazette des Hôpitaux*, No. 66, 1898) goes fully into the literature and technique of the procedure, and gives extensive observations in different morbid conditions. Intermittent elimination was never found in patients suffering from nephritis, but was present when there were signs of "hepatic insufficiency." Prolonged elimination (five to six days), with passage of the blue during the first hour, points to a partial alteration of the kidneys, part, however, retaining a normal permeability. Delayed appearance of the colour points to a deficient power of elimination on the part of the kidneys. It is a physiological proof that the kidneys are no longer carrying out their normal excretory functions efficiently.

12. Renal tuberculosis.

King (*Medical News*, II., 1897) reports an interesting case of genito-urinary tuberculosis. The patient, a girl thirteen years of age, had been treated by several medical men for emaciation, pain in the abdomen, and incontinence of urine. When seen, a large, round, soft and fluctuating tumour was found filling the right side of the abdomen. The external genitals were swollen and exquisitely sensitive, and eroded patches were present on the walls of the vagina, and about the meatus. The urine contained pus, epithelial and granular casts, and large numbers of tubercle bacilli. The patient rapidly sank and died. *Post-mortem*, no tuberculous foci were discovered in the thoracic organs. The mesenteric glands were enlarged and tuberculous. On the right side, the tumour which occupied almost the entire cavity of the abdomen, displacing other organs, proved to be the distorted remnant of the right kidney. All trace of kidney structure proper was lost,

and the mass was simply a fibrous pus-secreting capsule, about six inches long by four inches wide, filled with pus, communicating with the bladder by a thickened ureter. The pus contained tubercle bacilli, bacilli coli communis, and streptococci. The left kidney presented evidences of subacute parenchymatous nephritis, but not of tuberculosis. The bladder wall was thickened, the mucous membrane eroded, at several points showing ulcers with raised and overhanging edges. The author considers that the case shows (1) that renal tuberculosis may be idiopathic; (2) that it may be confined to the kidney; (3) that the golden opportunity for cure is lost in the failure to recognise the disease in its early stages before the bladder is involved, and when a nephrectomy would promise the best results.

II.—DIABETES.

13. Pathology and treatment of diabetes.

Pavy, in a Supplementary Croonian Lecture (*British Medical Journal*, II., 1897, p. 1494), reiterates and expands his views on points in connection with the pathology and treatment of diabetes. The questions first presented for solution are: How does carbohydrate normally become disposed of in the system? What is it that gives rise to its unnatural escape in the urine?

It has hitherto been believed that the carbohydrates undergo oxidation in a direct manner in the system; that the liver was endowed with a glycogenic function, which provided a supply of sugar to be conveyed to the tissues for oxidation when carbohydrate matter is lacking in the food. The systemic blood conveying the sugar must pass through the kidneys in part, and it was believed that the capacity for tolerating a certain amount of sugar in the blood existed, but if the sugar rose above a certain proportion it was excreted in the urine. No such toleration can be admitted to exist; if sugar is present in the blood it will be eliminated by the kidneys. For freedom from diabetes, carbohydrate matter must be prevented from reaching the general circulation as sugar. Conversion of the carbohydrate matter must take place between the alimentary canal and the point where the portal blood-stream obtains entrance into the general circulation. Most physiologists believe that the alimentary sugar is converted by the liver into glycogen. The author cannot agree with this view. He considers that the first influence exerted on the ingested carbohydrate is by the ferments of the alimentary canal, which hydrolise and convert the insoluble into a soluble form, and thus prepare for absorption. On being absorbed, the carbohydrate is brought within the sphere of influence of living matter. In the

villi, which constitute the seat of absorption, there are active cells with which the absorbed carbohydrate falls into close relation, and subsequently it permeates the cellular structure of the liver, which thus, as it were, stands in a position to exert a supplementary action, and to complete, before the general circulation is reached, whatever may have escaped completion in the villi. If the disposal of carbohydrate by the exercise of protoplasmic power should not be properly effected—if, in other words, the circumstances be such as lead to the faulty accomplishment of protoplasmic action; or, if even with a natural state existing, as far as the system is concerned, it should happen that the system is unduly taxed by the ingestion of an exceptionally large amount of carbohydrate in a readily absorbable form, especially at a period of fasting, sugar will be permitted to reach the general circulation, and in proportion as this occurs, sugar will be found in the urine. Carbohydrate which escapes being transformed into fat or synthesised into proteid by the villi of the intestine is carried to the liver, there to be transformed into glycogen, and stored up to be gradually transformed into fat or synthesised into proteid. That it should be retransformed into sugar, to be discharged into the general circulation and conveyed, as such, to the tissues for oxidation is, Pavy considers, incompatible with the condition of the urine in health. The conversion of carbohydrate into fat is illustrated in the rabbit, after a full meal of oats, when the lacteals can be seen to be engorged with milky chyle, the fat in the oats being quite insufficient to account for the phenomena, the carbohydrate, according to the author, having been converted into fat by the villi of the intestine. The villi of the intestine are thus of great importance in relation to the assimilation of food. Within the villi an extensive building-up of proteid goes on, through the instrumentality of protoplasmic action, and a synthesis of carbohydrate into proteid matter, and the proteid-carbohydrate matter is then placed in a position to be susceptible of transport through the body. In the graver form of human diabetes, as well as in experimental pancreatic and phloridzin diabetes, sugar is drawn from a source other than the food, from the locked-up store of carbohydrate which exists, ready to be set free when the requisite agent for effecting the purpose is present. After every meal it has been shown that there is an increased amount of sugar in the portal vein. If no further provision for conversion of this sugar existed, glycosuria must be produced. The liver, however, intervenes, and a supplementary action checks the flow of sugar into the general circulation. If the supplementary action is incomplete, the blood and urine are

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influenced, and glycosuria is produced. The entry of sugar into the general circulation constitutes the unnatural and not the natural occurrence.

In diabetes sugar gets into the urine from the food by a diminished assimilative power on the part of the individual. This is well exemplified in some individuals in whom any excess of carbohydrate in the food will result in glycosuria, while if the carbohydrate be kept within a certain limit the urine may remain sugar-free. The capacity for assimilating carbohydrate varies notably in different individuals, but each individual has a more or less fixed capacity. In restricting the diet in a case of diabetes the object is to bring the carbohydrate within the limit of the individual's power of assimilation. The author warns medical men of the need of care in selecting the artificial foods prescribed for diabetes as so many are valueless, and in their use only lead to disappointment. Much reliable information on the suitability of the dietary prescribed can be got from the careful examination both of the day and night urine. The removal of sugar from the urine by reduction of the carbohydrate in the food does not mean the cure of the disease. What is wanted to cure is restoration of the assimilative power; if this were restored the patient would be able to take ordinary diet without its leading to the appearance of sugar in the urine. It is not the mere waste occurring in the discharge of sugar which constitutes the great source of trouble in diabetes; it is the state of the system. The blood containing sugar has circulated through the system, and its constitution being altered interferes with the nutritive and other processes of life. When the elimination of sugar in the urine is not under control, showing the presence of a large quantity in the blood, the danger to be feared is coma. When, however, the excretion is under control coma need not be feared. To control the excretion by means of the diet cannot be otherwise than right. Food is the great factor in the treatment of diabetes. By an intelligent regulation of the diet the excretion of sugar and the progressive loss of weight may be controlled in the milder forms of diabetes. These forms of diabetes are more or less of alimentary type. In the graver forms, where regulation of diet does not control the carbohydrate excretion, the sugar is derived from the tissues as well as from the food. The glucoside constitution of the nitrogenous principles of the body supplies an intelligible source for sugar, all that is wanted being a pathologically-developed ferment possessing the power of breaking them up and liberating their sugar molecule.

14. Treatment of diabetes.

Murdock (*Medical Record*, New York, Oct., 1897) advocates the treatment of diabetes by limited diet. The beneficial effects of very limited diet were noticeable in the siege of Paris when, according to **Bouchardat**, sugar entirely disappeared from the urine of diabetics under the restricted siege diet when, up to the time of the siege, the glycosuria had been persistent. Murdock records the case of a lad who was passing six pints of urine daily loaded with sugar and with a specific gravity of 1040. During three months of ordinary diabetic treatment the patient lost ground. The diet was then greatly curtailed in quantity, and rapid improvement followed. On any increase of diet relapse took place. A still greater reduction in the quantity of food was then made, the patient being always kept ravenously hungry. Improvement was steady and marked. At first under the treatment there was slight loss of weight, but the loss was soon regained, and then followed marked general improvement. The appetite became keen, but the patient lost the insatiable craving for food, and the thirst disappeared. The amount of urine fell to 40 oz. daily, with a specific gravity of 1020. Murdock's observations are supported by **Hirschfeld** (*Medical News*, New York, January, 1898), who calls attention to the relation between obesity and diabetes. Very stout people will often show glycosuria after a meal containing a fairly large quantity of carbohydrate. If these fleshy diabetics be treated for obesity the sugar will often disappear from the urine without any strict diabetic diet. The author throws out the suggestion that the diabetes which so often follows traumatic neurosis may result from excessive diet, combined with lack of exercise.

15. Treatment of diabetic coma with saline infusions.

Oliver (*Lancet*, Aug. 13, 1898) quotes a case of diabetic coma successfully treated with saline infusions. The patient, a man 30 years of age, had suffered from diabetes for eight months. Coma supervened somewhat suddenly. Two and a half pints of a saline solution was transfused slowly into the median basilic vein. Consciousness gradually returned. For three days the urinary secretion remained scanty, but thereafter it rapidly increased. Three weeks afterwards there had been no recurrence of the coma.

Lépine (*Lyon Médical*, No. 31, 1898) records another case where the treatment was followed by rapid amelioration of the symptoms.

[The rationale and technique of the treatment were fully dis-

cussed in "The Year-Book, 1897," p. 114. The injections, preferably into the cellular tissues, have, in the hands of numerous observers, proved of great value in the immediate treatment of diabetic coma.]

16. Permanganate of potash in diabetes.

Stark (*Medical Record*, New York, December, 1897), in discussing the treatment of diabetes, gives his experience of the use of permanganate of potash as recommended by **Monin**, of Paris. Fifty cases of diabetes were under observation. The patients were kept on a uniform moderately anti-diabetic diet. Stark finds that, with the exception of a very few cases, no benefit results from the exhibition of the drug. In most cases a mild drug gastritis supervened, rendering the further exhibition of the drug undesirable. The favourable results observed by Monin were never obtained. The author enters a protest against the indiscriminate resort to drugs combined with a sudden stoppage of all carbohydrate foods. In diabetes with rapid emaciation, the sudden stoppage of all carbohydrates may result in disaster. Most good will result from regulation of the carbohydrate in the diet. The best guide to the amount of carbohydrate permissible is to be found in a comparison of the body weight and the sugar elimination. If the body weight increases or remains stationary while the glycosuria remains fixed or nearly so, the amylaceous food is doing no harm; conversely, if the body weight diminishes while the glycosuria increases, carbohydrates are severely contra-indicated.

17. Methylen blue in diabetes.

Some attention has been given to the use of methylen blue during 1898.

Estay (*Bulletin Général de Thérapeutique*, vol. cxxxv., 1898) gives his experience of the drug in several cases of diabetes. The first patient, a man of fifty-three, suffered from glycosuria and albuminuria. Half a gramme (7½ grains) of methylen blue was prescribed, and under the treatment the albumin diminished and the sugar, which was present to the amount of 6 per cent., lessened, and after eight weeks' treatment had almost entirely disappeared; there was no thirst, and the urine was normal in amount. The second patient, an officer, had suffered since 1872 from excessive thirst, glycosuria, etc. At the end of 1882, in spite of a yearly visit to Vichy and a strict diet, the sugar varied between 28 and 30 grm. per litre. When seen, he suffered from diabetic dystrophia, which entirely prevented him from using his hands, and caused great suffering. Methylen blue was ordered. Under the treatment the sugar diminished, and by the end of five

weeks was a negligible quantity, and the general condition had improved. The author claims for methylen blue an anti-nervine, analgesic and antiglycosuric action.

Pierre Marie and **Le Goff** (*Gazette Hebdomadaire*, No. 38, 1897) recount the case of a man who had suffered from diabetes for eight years. The urine contained 38 to 40 grm. of sugar per litre. Methylen blue was given by the mouth in doses of 7 to 15 gr. The amount of sugar gradually diminished, and at the end of six weeks had entirely disappeared, and there was marked improvement in the general condition.

18. Jambul in diabetes.

Wilcox (*Medical Record*, New York, 1898, p. 13) points out that jambul has been in use for twelve centuries in India. Outside India it has been but little used, and, when used, administered in insufficient quantities. The disadvantage of the drug given in considerable quantities is the liability to produce constipation. A case of diabetes is quoted where sugar, present to the amount of 5¼ per cent., under the use of the drug diminished, and by the end of five months disappeared. The diet during this time was moderately regulated. During the course of the treatment the patient passed through an attack of broncho-pneumonia without any evil results. Experiment has shown that jambul has a distinct inhibitory action on the diastasic conversion of starch, and on the excretion of sugar in experimental diabetes in dogs.

The drug can be administered in 5-gr. to 10-gr. doses thrice daily, and gradually increased, if necessary. **Britto** (*Indian Medical Record*, 1892) advises as much as a drachm of the fluid extract or powder three times a day; more is liable to give rise to nausea and depression.

[There is still considerable difference of opinion as regards the value of jambul in diabetes. Wilcox thinks that the drug has not had a fair trial, and has not been given in sufficient doses; but observations have been published in Great Britain where 1½ oz. of the extract was given daily without any appreciable diminution in the sugar excretion. In Minkowski's observations the drug was found useless in pancreatic diabetes induced experimentally.]

19. Pancreatic extract in diabetes.

Deguy (*Lyon Médical*, lxxxvi., 1897) notes a case in which the administration of pancreatic extract caused a notable rise in the excretion of sugar, while on ordinary diabetic treatment the excretion of sugar could be controlled. After a period the pancreatic extract was again tried, but its administration was always followed by a marked increase in the glucose excretion.

[It is a little difficult to accept Deguy's results, as other observers have obtained no results by the administration of pancreatic extract by the mouth, the ferment being apparently destroyed by the hydrochloric acid of the gastric secretion. Good results have been obtained, however, by the hypodermic use of the extract (" Year-Book, 1897," p. 114).]

20. Glycosuria as the result of the administration of thyreoidea.

Some years ago **Strauss** found that the administration of thyreoidea had but a slight influence in the production of glycosuria. **Bettman**, however, came to an opposite conclusion, finding alimentary glycosuria in a large percentage of cases after the administration of thyreoidea, and instanced observations upon himself. **Mawin** (*Berlin. klin. Wochenschr.*, 1897, No. 52) has investigated the question again, working with twenty-five healthy individuals. He finds that the occurrence of alimentary glycosuria under the administration of large and rapidly increasing doses of thyreoidea is a relatively rare occurrence. It cannot therefore be considered that the presence of glycosuria is evidence of the intensity of the action of thyreoidea, as might have been supposed on theoretical grounds, had glycosuria been a frequent symptom. Other injurious influences may produce glycosuria in individuals in whom thyreoidea does not. Thus glycosuria was present in a case of pneumonia two days after the crisis, while the administration of thyreoidea on the sixth day produced no glycosuria. Even in patients whose disease has a natural tendency to show glycosuria as a symptom, a negative result was got with thyreoidea, as, for example, in obesity and Basedow's disease. The author therefore concludes that the symptom is not common, and that it only occurs where there is a natural disposition to the production of glycosuria.

21. Necrosis of glandular epithelium in diabetes.

Ludwig (*Centr. für innere Med.*, 1897, No. 43) reports a case where necrosis was found in the glandular epithelium of the intestine. The patient was a woman, thirty-six years of age, whose family history was bad; the father having died of cirrhosis of the liver, one brother of diabetes, another of pulmonary disorder, and a sister of erysipelas. She herself had repeatedly suffered from attacks of facial erysipelas. For a period of five weeks there had been noticed increased thirst, increased hunger, and increased elimination of urine. There was rapid emaciation, loss of strength, languor, headache, and vertigo. The knee-jerks were preserved. There were physical signs of consolidation at the left apex, with some scanty sputum but no tubercle bacilli. The urine contained albumin, sugar, and acetone. The patient became gradually worse and died. *Post mortem* the epithelium of the upper portion of the ileum was found discoloured in small areas, readily detachable, and in some places actually wanting. Further down the intestine there were transverse losses of substance, with distinct limitation and a hæmorrhagic necrotic base. A number of areas with a similar appearance were also present in the large intestine. Microscopically the lesions were seen to be in the cylindrical epithelium of the tubular glands. There was deep-seated cellular and purulent inflammation of the glandular epithelium, together with necrosis. It was concluded that the lesion was the result of toxic influences related to the primary disorder.

22. The blood tests in diabetes with aniline colours.

Bremer (*Medical Journal*, New York, Dec., 1897) gives an account of a method for the diagnosis of diabetes by examination of the blood. Briefly stated, the method is as under:—

(1) Prepare thick films of blood on cover slip or slide.

(2) Fix by exposure to heat for ten minutes, the temperature in the hot chamber being raised to 135° C.

(3) Place the film in 1 per cent. aqueous solution of Congo red or methylen blue for two to five minutes.

In the case of diabetic blood the film does not take on the stain. Check observations should be made with healthy blood, when the film will be found to stain deeply.

If Biebrich scarlet be used as the stain, the films from healthy blood will be found unstained, while diabetic films have taken the stain deeply.

23. Aniline colour test for the urine in diabetes.

Bremner (*Medical Journal*, New York, 1897) discusses the chemical behaviour of eosin and gentian violet toward normal and diabetic urines. In the *Centralblatt für innere Medicin*, No. 13, 1898, he returns to the question, and describes a simpler method of procedure. Two clean reagent glasses are taken, with 10 c.cm. normal and 10 c.cm. diabetic urine. To each a small quantity (0·5 mgr. or less) of finely powdered gentian violet is added, so that the colouring matter lies in the central part of the surface of the fluid. In non-diabetic urine the powder floats on the surface, and forms a light violet cloud, which disappears on gentle shaking, to form an insoluble dust-like precipitate, which falls to the foot of the glass. The urine remains unstained, or, at most, but faintly tinged with colour. The behaviour of diabetic urine is quite different. The upper part of the fluid becomes rapidly

coloured, more or less deeply, blue or blue violet. On shaking, the colour does not disappear, but diffuses through the fluid. The more grave the glycosuria, the more intense and rapid the reaction. When this colour reaction is present in a urine of high specific gravity, it is a certain indication of glycosuria.

[The reaction does not seem to offer many advantages over the ordinary sugar tests, save that with practice the test can be rapidly applied. The possibility of fallacy must be remembered, for an abnormal solubility of colouring matter may be present in urine which contains an increased proportion of the products of metabolism.]

24. Levulosuria.

Sekeyan (*Thèse de la Faculté de Paris*, 1897–8), writing on the different forms of diabetes, describes a form of levulosuria attended by marked general symptoms. There is mental depression and tendency to suicide, insomnia, and marked general weakness. The urine contains a levorotatory sugar, and reduces copper in alkaline solutions. The condition is not fatal, and readily yields to treatment, which consists in a diabetic diet, the administration of arsenic and alkalies, with suitable hydropathy.

III.—MISCELLANEOUS.

25. The genital phenomena of renal calculi.

Abrahams (*New York Medical Journal*, 1897, p. 349), writing on the genital phenomena of renal calculi, records several cases in which genital phenomena were the only indications of the presence of renal calculus and its most painful manifestation—colic. In the first case the patient, a male, was suddenly attacked with intense pain in the testicle, nausea and collapse. The testicle was intensely tender, and there was some swelling of the epididymis. The symptoms were entirely relieved some days afterwards by the passage of bloody urine, with the *débris* of a calculus. The second patient complained of pain and swelling of the testicle. Under treatment he made little progress till one day he was seized with a definite attack of renal colic with intense testicular pain. On passage of a calculus the pain and orchitis entirely disappeared. Two patients were women who complained of intense pain in the stomach, vomiting, and tenderness over the ovarian region. On examination in both cases the left ovary was enlarged and tender. In both the condition was considered acute oöphoritis. On the passage of a large quantity of bloody urine, containing broken calculi, the symptoms vanished and the ovarian swelling rapidly disappeared. The author accentuates the necessity of remembering the possibility of a renal condition as the cause of an acute attack of pain and swelling in the ovary or testicle when attended by no history of sepsis or trauma. He records a similar case met with in a child, and advances the view that possibly some of the obscure cases of orchitis seen in children may be due to renal calculi, which are known to be common at that time of life.

26. Alkaptonuria.

This rare and peculiar condition first described by Bödeker in 1861 (*Ann. Chem. u. Pharm.*, 1861) has received lately some attention. **Hirsch** (*Berlin. klin. Wochenschr.*, No. 40, 1897) describes the case of a young woman, 17 years of age, who was admitted to the hospital for a feverish gastric catarrh. From this she recovered in two days. On the morning of admission the specimen of urine obtained was noticed to be of a dark brown colour. The colour appeared to be darker than in carboluria, and to be of a brownish, not a greenish, tinge. The patient had not been taking any drugs of the phenol group. The urine was dark in colour when passed, and the colour deepened on standing. There was a slight reduction of Fehling's solution. An acid was extracted from the urine which (1) in alkaline solution gave a dark brown colour, (2) reduced an ammoniacal silver solution in the cold, (3) reduced Fehling's solution in the presence of heat, (4) with very dilute iron chloride solution gave a blue colour. The substance was present in the urine for two days, and then disappeared.

Futcher (*New York Medical Journal*, January, 1898) gives a full *résumé* of the literature of the subject, and recounts a case which had come under his observation. The patient was a robust, healthy-looking man, 57 years of age. He had repeatedly made application to insurance companies for policies, but had always been rejected owing to the alleged presence of sugar in his urine. He consulted several specialists, who assured him that he was suffering from diabetes. He went to Carlsbad, where he was treated for the disease, though he had had none of the usual symptoms of diabetes such as thirst, emaciation, large appetite, and polyuria. The urine showed a peculiar, deeply-pigmented, reddish-brown colour, and had a slightly aromatic odour. The specific gravity was 1023, the reaction acid. There was no albumin present. On the addition of a few drops of the urine to boiling Fehling's solution, the mixture immediately became of an inky-brownish colour, and on further boiling there was distinct copper reduction. The fermentation test and Bötger's test were negative, and no osazon was formed with phenyl-hydrazin. The urine was optically inactive; it deflected neither to right nor left. The addition of an alkali to the urine caused a marked deepening of the colour. On standing exposed to the air in a test-tube the

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upper layers of the urine became deeply pigmented, and the colour gradually spread down the layer of urine. Reduction took place in an ammoniacal silver solution on addition of the urine. A solution of chloride of iron was turned a bluish-green, the colour, however, rapidly disappearing. The author considers that the condition cannot be described as a disease, and apparently has no pathological significance, and is without influence on the health of the individual. The condition is of importance from its liability to be mistaken for glycosuria.

[The property of urine of darkening by exposure to the air from the taking up of oxygen seems to be common to many hydroxyl derivatives of benzene. According to **Smith** (*Practitioner*, May, 1898, p. 477) it has been definitely associated with the presence of pyrocatechin, homogentisic acid, and uroleucic acid.]

27. Cystinuria.

Smith (*Practitioner*, May, 1898) recounts two cases of cystinuria. The first, a boy aged 8 years, enjoyed excellent health. The urine deposited a greenish sediment, and had a fragrant odour. The microscope showed the presence of cystin crystals. The deposit was transitory. The second, a stout lady, in fair general health, sought advice for rheumatic pains in the leg. The urine contained a white sediment almost entirely composed of cystin. The deposit was transitory. The author thus summarises the present knowledge of the subject :—

1. Cystin is a product of proteid metabolism, probably the result of a synthetic process.
2. It has no relation to uric acid or to gout or rheumatism.
3. It is in no way connected with taurin, which is a sulphuric acid.
4. Its probable forerunner in the body is cysteïn, which is a strong base soluble in water.
5. Traces of cystin or of a body closely related to it occur normally in urine.
6. The sulphur of the cystin is, as a rule, oxidised into SO_4 (ordinary and ethereal).
7. Under certain unknown conditions cysteïn escapes full oxidation, and is partly excreted as cystin.
8. Cystinuria has been found to be associated with diaminuria by several observers.
9. Cystinuria may be intermittent or occasional.
10. Cystinuria and diaminuria are possibly due to a common cause, viz. peculiar intestinal micro-organisms.
11. Therapeutically the indication is to disinfect the intestine.

28. The influence of calcium carbonate of the metabolism in man.

Von Straufs (*Zeitschr. für klin. Med.*, 1897, xxxi., p. 493), working in Von Noorden's clinic on the metabolism of two normal individuals and a number of patients suffering from nephrolithiasis and gout, came to the following conclusions as regards the influence of calcium carbonate on metabolism :—

1. The total excretion of P_2O_5 in the urine was markedly reduced by calcium carbonate.
2. The diminution occurred mostly at the cost of the monophosphate of soda. An alkaline reaction was never obtained.
3. A diuretic action from the calcium was never noticed.
4. A progressive increase in the calcium excretion did not follow the increased exhibition.
5. The nitrogen excretion was not markedly influenced ; and the same might be said of the uric acid and alloxuran bases.
6. The urine under the influence of the calcium carbonate was found to possess uric acid solvent properties.
7. There was no noticeable increased putrefaction in the alimentary canal in spite of the large proportion of ethereal sulphates in the urine.

The calcium carbonate proved useful in patients with nephrolithiasis. The acidity of the urine diminished though it did not become alkaline. The calcium carbonate should be taken in water an hour to an hour and a half after meals.

29. A new method for the estimation of indican in the urine.

Amann (*Rev. méd. de la Suisse Rom.*, 1897) describes a new method for the estimation of indican in the urine. Twenty c.cm. urine are taken in a reagent glass and about 5 c.cm. chloroform and 5 c.cm. of a 10 per cent. potassium supersulphate solution are added. The glass is gently agitated to mix the chloroform without forming an emulsion. The mixture is then placed at rest that the ozone of the atmosphere may oxidise the indoxyl contained in the urine. Indigo is formed, which is dissolved in the chloroform, and a more or less deep blue colour is produced. By comparison with a standard solution the amount of indigo present may be estimated. As by more or less complete oxidation of skatoxyl a red or violet pigment is formed which is insoluble in chloroform, the fluid above the chloroform is coloured and an approximate estimate of the amount of skatol in the urine can be obtained. The advantage of the reaction is that the alkaline sulphate does not cause the precipitation of proteid bodies, therefore they do not require to be removed from the urine.

30. Rhus aromatica in incontinence of urine.

Freyberger ("Treatment, 1898," No. V.) strongly advocates the use of Rhus aromatica in the incontinence of urine in children when resulting from an atonic condition of the bladder. The drug is best prescribed in solution with an aromatic syrup to disguise the taste. The dosage advised is 5 to 10 ♏ in children from two to five years, 10 to 15 ♏ for children five to ten years, and 15 to 20 ♏ in older children. The author claims that the drug is as efficacious as belladonna, and can be given without the slightest ill-effects, and that good results can be obtained when belladonna proves inefficient.

GOUT, RHEUMATISM, AND RHEUMATOID ARTHRITIS.

By Archibald E. Garrod, M.A., M.D., F.R.C.P.,

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Gout.

In the "Year-Book for 1898" (p. 130) some papers by **Mordhorst** were referred to, in which he describes the granular form in which urates are deposited from saturated solutions under certain conditions (*Kugelurate*).

In a more recent publication (*Centralblatt. f. innere Medicin*, 1898, xix., p. 409) the same observer discusses the action of sodium carbonate and salicylate in gout and rheumatism.

He believes rheumatism to be but a preliminary stage of gout and ascribes the pains and swellings of the former disease to the formation in the affected parts of uratic granules. When the urate retains its granular form for a longer or shorter time we have rheumatism, but when it becomes converted into crystalline sodium biurate gout is developed.

On this theory he ascribes the action of sodium salicylate in rheumatism to a solvent action exerted by this salt upon the granular urate, and, with the view of testing this theory, he instituted a series of experiments.

Mordhorst found that neutral phosphate, acetate, bicarbonate. sulphate, tartarate, or lactate of sodium, as also common salt, when added to weak solutions of sodium carbonate saturated with uric acid, caused precipitation of granular urate, and that the granules formed retained their spherical shape for months.

He next found that the addition of sodium salicylate delayed the granule formation, and that the addition of salicylate after the granules were formed was capable of causing them to be redissolved. In two to five hours acicular crystals fell.

He next argues that the fluids of connective tissues and cartilage, and synovia, owe their alkalinity to sodium carbonate, and not to the bicarbonate and di-sodium phosphate, as is usually taught. He bases this conclusion on the fact that whereas the addition of uric acid to a dilute solution of sodium bicarbonate

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He next argues that the fluids of connective tissues and cartilage, and synovia, owe their alkalinity to sodium carbonate, and not to the bicarbonate and di-sodium phosphate, as is usually taught. He bases this conclusion on the fact that whereas the addition of uric acid to a dilute solution of sodium bicarbonate

causes the evolution of bubbles of carbon dioxide, no gas is evolved when uric acid is dissolved in sodium carbonate solutions, or in the body fluids above mentioned, unless the acid be added in large excess.

He further finds that nothing favours the precipitation of granules of urate more than the addition of acids, and nothing hinders this change more than the addition of salicylate carbonate or bicarbonate of soda.

On the other hand, sodium salicylate hastens the change of the granules into uratic needles and cuts short the inflammatory stage, but the presence of the needles may readily give rise to relapses and to actual gout. In this way the rapid subsidence of the inflammatory symptoms, and the frequent relapses in gout and rheumatism after the administration of salicylate of soda, are easily explained.

Mordhorst agrees with Haig in thinking that the increased excretion of uric acid which follows the administration of these drugs is due to the elimination of urates stored up in the tissues, and not to any increased production of that substance. He holds that of the uric acid formed part is at once excreted by the kidneys, part is oxidised and so destroyed, and that part again is held back and stored in the tissues.

The granular urate is susceptible of oxidation, whereas the crystalline biurate is not.

Administration of sodium carbonate or bicarbonate does not directly favour the solution of the crystalline biurate, but does so indirectly by encouraging the oxidation of uric acid as it is formed, the crystals being the more readily dissolved the less the amount of uric acid present in the body fluids.

Lastly, he considers that the best way of administering the bicarbonate is in the form of mineral waters containing carbonic acid and common salt, and as free as possible from lime.

In a paper on the pathology and treatment of gout (*Lancet*, 1898, i., p. 147), **Luff** (see "Year-Book, 1898," p. 129) discusses the treatment of gouty conditions under the following headings :—

1. The treatment of acute paroxysms and especially the relief of pain.

2. That of subacute and chronic conditions and the prevention of recurrences (*a*) by promoting the elimination of uric acid ; (*b*) by limiting its formation.

3. That of the affected joints, directed to the removal of uratic deposits, and the remedy of deformities.

1. During the acute paroxysm he advises, amongst other measures, the application of a lotion consisting of sodii carb. ʒiij, lin. belladonnæ ʒij, tinct. opii ʒj, and water to an ounce. A small quantity of this lotion should be mixed with an equal bulk of hot water and poured upon cotton wool previously arranged around the joint, and lightly covered with oil silk.

He advises a large dose of colchicum (vini colchici ♏ 30 to 40) at the commencement, and afterwards smaller doses with citrate of potash.

2. In more chronic cases elimination of uric acid is to be promoted by drugs, diet, and hygiene. Citrate of potash may be given, and a considerable amount of water. Common salt should be avoided because of its power of diminishing the solubility of sodium biurate.

Excessive formation is to be checked by diet and general hygienic measures. Occasional doses of blue pill followed by Epsom salts are useful, and colchicum and guaiacum, the efficacy of which he attributed to stimulation of the hepatic metabolism.

A rational mixed diet should be given, but animal food, being rich in proteids, is to be strictly limited, one reason for this limitation being the effect of the mineral constituents of meat in diminishing the solvency of gouty deposits.

The benefit derived from visits to mineral springs he attributes mainly to the free taking of water, much additional aid being derived from the strict regimen enjoined during the course. Where removal of deposits is aimed at, springs impregnated with sodium salts are to be avoided, although such waters prove useful in many visceral gouty affections.

3. In chronic gout with painful affections of joints or subcutaneous tissues, he recommends a mixture with gr. x of potassium iodide and ♏ v to x of tincture of iodine, but such treatment is contra-indicated when advanced kidney disease is present.

Exercise in moderation and short of causing fatigue is of benefit during convalescence.

In a paper read before the Royal Medical and Chirurgical Society Luff gives a further account (see "Year-Book, 1898," p. 130) of experiments on the action of vegetable ashes upon the solubility of sodium biurate, etc., and suggests that a table salt prepared from the ashes of certain vegetables might prove a valuable substitute for common salt in the dietary of gouty patients.

Elsewhere (*Lancet*, 1898, i., 1606, and *Practitioner*, vol. xl., 1898, p. 235) Luff discusses the treatment of gout by alkalies and salicylates, and his conclusions stand in curious contrast to those of Mordhorst already quoted.

After recapitulating the grounds upon which he bases his

conviction that the kidneys are the seat of the formation of uric acid, he gives reasons for the belief that the treatment of the disease by drugs of the kinds referred to is based upon false premises.

In a series of experiments with blood serum to which various alkalies had been added, including potassium bicarbonate, sodium bicarbonate, lithium carbonate, sodium phosphate, piperazine and lysidine, he has found that none of these substances have the slightest effect in delaying the conversion of the quadriurate into biurate even when present in much larger quantities than could possibly be introduced into the blood by their administration as drugs. Hence he concludes that treatment by alkalies does not delay the conversion of quadriurate in biurate. None of these drugs when added to serum had any effect in increasing the solubility of sodium biurate.

A third assumption that in gout there is a general acidity of the system causing a diminished alkalinity of the blood receives no support from careful experiments by Klemperer, and a diminution of the alkalinity of serum containing uric acid in solution does not hasten the deposition of sodium biurate, or diminish its solvent power for that substance.

Luff differs from Haig as regards the cause of the undoubted increase of uric acid excretion which follows the administration of salicylates, attributing it to increased formation rather than to the elimination of ready-formed uric acid. This increased formation he attributes to the fact that salicylic acid readily unites with glycocine to form salicyluric acid and thus brings an increased amount of glycocine to the kidneys, where it combines with urea to form uric acid. His experiments show that blood serum containing uric acid in much larger quantities than could be introduced by its administration as a drug has not its solvent power for sodium biurate at all increased, and it is as biurate that uric acid is deposited in the tissues.

George W. Balfour (*Edinburgh Medical Journal*, 1898, iii., p. 561) contends that an acute attack of gout is not inflammatory at all, but is due to thrombosis of the small vessels around the affected joint. This event accounts for the sudden onset of acute pain in the joint. He maintains that the events which follow are precisely those which would follow the formation of an anæmic area in and around the joint, viz.: early visible turgidity of the veins leading from the affected area, followed by swelling due to accumulation of plasma within the anæmic area; lastly, the skin becomes tense and glistening. The surface temperature in the neighbourhood of the joint is not raised. Urate of soda being always present in the serum of gouty patients, slowly crystallises out of the extravascular fluid, and is left behind when the serous part of the effusion becomes reabsorbed as the circulation becomes restored.

He quotes, as affording further support to his hypothesis, that many sufferers from gout have been able to ward off an attack by active exercise, and that Dr. William Balfour, who practised in Edinburgh in the first half of the century, was in the habit of successfully treating the acute attacks by compression, friction and percussion of the part.

Walter (*Münch. med. Wochenschr.*, 1898, xlv., p. 302) speaks very highly of two new drugs, saligenin and aminoform (urotropin), in the treatment of gouty conditions.

He finds that in all attacks of acute arthritis, whether rheumatic or gouty, saligenin very rapidly arrests the inflammatory process, removes pain and reduces the temperature. The drug proves more active than salicylic acid, and its effects were more lasting, whilst the unpleasant after-effects of the latter are almost completely absent when saligenin is employed.

Saligenin (Lederer) occurs in plates with a pearly lustre, and melts at 86° C. It has a somewhat bitter taste. One gramme requires five to ten minutes to dissolve in 100 cc. of water. About 3 grm. are administered daily. Sweating and slight noise in the ears may follow its use.

Aminoform is a finely crystalline powder, very soluble in water, devoid of smell, and with a sweetish flavour, followed by a slightly bitter after-taste. When heated with dilute mineral acids it gives off formaldehyde. This drug is especially useful in warding off attacks of gout, and Walter has observed this effect in several cases of persons liable to frequent attacks, who have enjoyed long periods of immunity whilst taking it. A coffeespoonful may be taken in a tumblerful of water in the morning.

There are no unpleasant after-effects, but some relaxation of the bowels may follow its use, which is perhaps rather due to the water so taken. Slight scalding is sometimes noticed at the first micturition after too large a dose has been taken, *i.e.* if the spoon be heaped too high.

R. Newman (*New York Med. Record*, 1897, p. 848) advocates the claims of statical electricity in the treatment of gout. In chronic cases he has found it of value in warding off acute attacks. In a case in which the urine was analysed, the application of statical electricity on several days in succession, was followed by a conspicuous decrease of the uric acid excretion.

Alfred C. Wood (*Annals of Surgery*, 1897, xxv., p. 633) describes

the removal of several large tophi from the backs of the hands of a gouty man. The operation was rendered difficult by the tendons, and in one instance a tendon ran through the tophus, and necessitated piecemeal removal. The masses had no firm adhesions to the neighbouring structures. The wounds healed well, and there was no fresh formation in the scabs of the deposits five months after their removal.

G. Baccelli (*Gazzetta degli Ospedali*, 1898, p. 619), in the course of an article upon the treatment of gout by diet, medicines, and mineral waters, states his belief in oxygen as the sovereign remedy in this disease, and considers that it acts by favouring the complete oxidation of uric acid into urea, and so facilitating its elimination. He has tried it in not a few cases, and always with much benefit. One may commence with the inhalation of 20 to 30 litres daily, the dose being gradually increased to 60 to 80 litres. Analyses of the urine during the period of administration, show a diminished excretion of uric acid, and an increase of urea.

He assigns the second place to alkaline remedies.

T. Savill (*Lancet*, 1897, ii., p. 380) discusses the factors which are concerned in producing the injurious effects of certain alcoholic beverages upon gouty subjects. The factors considered are sweetness, amount of alcohol, and acidity. From personal experience and from observations upon infirmary and private patients, he is led to the conclusion that alcohol *per se* is not injurious to gouty people, and is sometimes distinctly beneficial when taken at meal times, and properly diluted. He also holds that the acidity of wines plays no such important part in this connection as has been assigned to it. He believes that it is sugar which is the injurious ingredient, and that the evil effects of alcoholic beverages in gouty cases vary in proportion to the amounts of sugar which they contain. He points out that non-alcoholic sweetstuffs and beverages have not an equally injurious action, and is inclined to ascribe the evil effects to the combination of sugar and alcohol. He suggests that, possibly the sugar, by disturbing the digestive processes, prevents the alimentary system, including the liver, from adequately dealing with the alcohol simultaneously introduced.

Rheumatism.

The results obtained by the various investigators who have of late been occupied with the bacteriological investigation of cases of acute rheumatism, by no means agree with each other, and it is not proposed to do more than refer to them very briefly in this place. (See *Practitioner*, Sept. 1898.)

The large immobile bacillus first obtained by **Achalme** ("Year-Book," 1898, p. 135) has been observed by several other investigators, and **Thiroloix** (*C. R. de la Soc. de Biologie*, 1897, iv., p. 268) has succeeded in cultivating it upon milk, and by injection into rabbits has produced endocardial and articular lesions.

Triboulet and **Coyon** (*ibid.* 1898, v., p. 214, and *Bull. et Mém. Soc. Méd. des Hôp.*, 1898, p. 93) have met with this bacillus in two out of six cases; they have found in some cases a small segmented bacillus; and in all cases a diplococcus, which they are inclined to regard as the true rheumatic micro-organism. This has also been found by **Apert** (*C. R. de la Soc. de Biologie*, 1898, v., p. 128) in a case of chorea.

The diplococcus when injected into the veins of rabbits caused endocardial lesions, and was obtained in pure cultures from the organs after the death of the animal.

Riva (*Centralbl. f. innere Med.*, 1897, xviii., 825) has obtained some interesting results by using as a culture medium a broth the basis of which was the fresh joints of horses. In all instances cultures were obtained from the synovia of the knee-joints of rheumatic patients, eight in number, whereas in only one or two instances was any growth obtained on ordinary media.

In the early stages of growth pseudospores were seen, but were in time replaced by two distinct forms of bacilli, both of which were sporogenous.

Chvostek (*Verhandlungen des Cong. f. innere Med.*, 1897, p. 99) obtained negative results. In only one case were bacilli obtained from the articular fluid, and no organisms were found in the synovial membrane of the affected joints. Chvostek believes that the symptoms of acute rheumatism are due to the toxins diffused from the foci of infection, such as the tonsils, and, perhaps, the alimentary canal.

After reviewing the results hitherto obtained by himself and other observers, he concludes that these do not show that acute rheumatism is due to a specific micro-organism, or to organisms as yet known, nor do they justify us in looking upon this disease as a variety of pyæmia.

Gustav Singer has made an elaborate bacteriological examination of a number of cases of rheumatic fever, and his results are set out briefly in the *Verhandlungen des Cong. f. innere Med.*, 1897, p. 116, and at length in a monograph more recently published, entitled "Aetiologie und Klinik des acuten Gelenkrheumatismus." The original accounts must be referred to for the description of the methods employed. It is sufficient here to say that his results were negative as to the occurrence of any

specific micro-organism, whereas the ordinary pyogenic micrococci were met with in a large number of cases. Hence he is led to the conclusion that acute rheumatism is not a specific disease, but a special variety of pyæmia, and, like other pyæmic conditions, owes its origin to staphylococcal and streptococcal infection.

With a view to combating the organisms to which he believes acute rheumatism to be due, Singer has tried the direct intravenous injection of perchloride of mercury in eleven cases of that disease (*Centralb. f. d. ges. Therapie*, 1898, Heft 1).

The following solution was employed :—

Hydrarg. perchlor. } āā 0·1 or 0·2 grm.
Sodii chloratis }
Aq. destill. ad 10·0 c.c.

The proceeding entails a strict attention to details and a certain amount of practice. Singer usually made the injections into the veins about the elbow, the upper arm being surrounded by a compress not sufficiently tight to interfere with the arterial circulation. The skin should be thoroughly disinfected; a dry-sterilised Pravaz syringe, with an asbestos piston, is then filled with the solution, and the point of the needle is introduced through the tense skin into the vein in the direction of the blood-flow.

The needle being evidently in the lumen of the vein, the bandage is removed and the contents of the syringe are very gradually emptied into the vessel. The finger is pressed upon the point of entry, and the needle is gradually withdrawn under the finger. The wound is then dressed with iodoform gauze, held by a cross of strapping and a few turns of bandage.

Injections of the 1 per cent. solution—*i.e.* 0·01 grm.—were given daily, or of the 2 per cent. solution on alternate days.

In one case diarrhœa and some blood in the stools followed the first injection, but no further bad results followed.

In two cases albuminuria followed a few hours after the injection, but no renal elements were found in the urine. The albuminuria was transitory, and its occurrence may be taken as an indication for temporary suspension of the treatment.

As to results, the pains were in all cases quickly relieved; the swelling of the joints diminished, and this in a short time. The effect upon temperature was favourable, but not conspicuous. The author was not in a position to judge definitely of the influence upon cardiac implications.

It may be objected to this plan that as soon as the sublimate comes in contact with proteids of the blood it must be precipitated, and must lose its active powers; but this applies equally to mercurial treatment of all kinds, and such treatment is certainly not ineffectual.

Parenchymatous injections have not the same subjective or objective effects as intravenous.

In two cases in which salicylate had failed to give relief the injections of perchloride proved very efficacious.

Singer assigns the following limits to the utility of the treatment :—

Injections of perchloride of mercury may be employed with advantage in place of salicylic treatment in cases of acute rheumatism when the means of properly carrying it out are at hand.

It is especially to be recommended in cases in which, from the infective character of the initial symptoms, or from the special features of their course, a pyæmic origin is specially evident.

In cases in which surgical treatment of the primary focus (opening of abscesses) can be undertaken, the simultaneous use of the injection treatment affords a chance of a rapid arrest of the process.

In cases of acute rheumatism, when salicylic treatment fails, or in which the inflammatory process becomes localised in a single joint, the intravenous injections are indicated.

In all cases a lasting result is only to be expected from repeated injections at definite intervals.

The proceeding is contra-indicated in the case of very feeble individuals; when severe renal disease is present, or when intense toxic symptoms follow its employment.

Slight toxic symptoms, which rapidly disappear, merely call for an occasional suspension of the treatment.

S. Sterling (*Münchener med. Wochenschr.*, 1898, p. 303) calls renewed attention to certain advantages of the external application of salicylic acid in the treatment of acute rheumatism. Individual peculiarities in the thickness and delicacy of the skin exert an influence upon the efficacy of the method. Women, young and fair persons, are more suitable than older people and those of darker complexion. Area for area, the skin over the knee absorbs more of the ointments than that of the back, flanks, or abdomen.

The amount absorbed by the skin is conspicuously less than the quantities given by the mouth, but this is, if anything, an advantage, seeing that a favourable effect is obtained with less of the drug.

Following Bourget, he employs an ointment containing turpentine as a corrosive of the epidermis, but discontinues the

turpentine when, after several applications, the epidermis appears sufficiently destroyed, thus avoiding the risk of eczema and renal irritation. Sterling holds that the sweat of rheumatic patients, being retained by an impermeable dressing, also favours the absorption of the drug. As a rule, a thick layer of unbleached wool is applied, and held by a flannel bandage. A sheet of gutta-percha tissue may be placed between the wool and the bandage.

He has employed this treatment for several years in cases of acute rheumatism, sodium salicylate being usually simultaneously given in the earlier stages of the attack.

The advantages claimed for the treatment are: That a smaller dose is given, often with as good an effect as when larger doses are given by the mouth; the gastric disturbance is avoided; patients, and especially those belonging to the less intelligent classes, appreciate the direct application of the remedy to the seat of pain, and have more confidence in its efficacy.

Giuseppe Ducci (*Il Morgagni*, 1898, xl., p. 551), after trying salophen in three cases of acute rheumatism, states that, as far as this limited experience of its use enables him to judge, salophen is the best substitute for sodium salicylate, and that on account of the rapidity of its action, and the manner in which it is tolerated even by the most delicate patient, it is preferable to other salicylic preparations in the treatment of this disease.

Galliard, on the other hand (*Presse Méd.*, Paris, 1897, ii., 13), thinks that in acute rheumatism the results obtained with salophen are not equal to those produced by corresponding doses of sodium salicylate.

Catrin (*Bull. et Mém. Soc. Méd. des Hôp.*, 1898, xv., p. 479), after trying the external application of salicylate of methyl (see "Year-Book, 1898," p. 136) in a series of cases of acute rheumatism and other articular diseases, finds that the value of this treatment is incontestable, but that it proves most efficacious in subacute and chronic cases, and perhaps in gout.

In acute rheumatism salicylate of methyl calms the pain more rapidly and better than salicylate of soda, but appears to have no effect upon the fever. He therefore advises the simultaneous administration of salicylate of soda by the mouth, where this can be tolerated. Under such circumstances a smaller dose of sodium salicylate is necessary than when that drug is given alone. In subacute and chronic cases the external application will alone be required. In the cases treated by Catrin relapses of acute rheumatism have occurred more frequently than usual,

and he is in doubt whether this is to be ascribed to the mode of treatment or to his having had obstinate cases to deal with.

M. Blech (*Journ. American Med. Assoc.*, 1897, xxix., p. 723) speaks highly, and in part from personal experience, of the value of local hot-air baths in the treatment of subacute and chronic rheumatic conditions, including muscular rheumatism.

J. O'Conor, of Buenos Ayres (*Glasgow Med. Journal*, 1898, xlviii., p. 269) advocates a most heroic line of treatment in cases of acute rheumatism. He ascribes the disease to any infection which, entering by the tonsils or other channels, lodges in the joints, "where the poison is elaborated and poured into the system," and by this latter agency is conveyed to fresh articulations and to the heart.

He therefore holds that in this disease, and in gonorrhœal arthritis also, the affected joints should be opened, irrigated, and drained. A case is quoted in which the knee-joints were successively subjected to such treatment, and 4 and 6 oz. respectively of greenish, turbid serum were removed, together with masses of lymph. In this case, which was that of a young man, the heart was not affected, and the treatment was resorted to after the failure of salicylate and alkalies to afford relief. He also records cases of acute epiphysitis and of gonorrhœal rheumatism successfully treated on the same plan. He advises operation as soon as possible after the disease has declared itself by causing swelling or effusion in a joint; affection of other joints or of the heart should not be waited for to confirm the diagnosis, as, if operation is to be curative, the sooner it is performed the better. When more than one joint is found to be affected, operation should be at once undertaken, even if the heart has already been attacked.

Rheumatoid arthritis.

This disease was among the subjects discussed at the fifteenth meeting of the Congress für innere Medicin in Berlin and at the meeting of the British Medical Association in Montreal.

The discussion in Montreal (*Brit. Med. Journal*, 1897, ii., p. 1225) was introduced by **J. Stewart**. He considers that the nervous theory of its pathology rests upon very meagre evidence, and manifests a strong leaning to the view that no sharp line can be drawn between chronic rheumatism and the earlier stages of rheumatoid arthritis, which latter is specially prone to occur in persons of rheumatic tendency who have previously suffered from subacute attacks. He further considers that there is strong evidence of an infectious origin of rheumatoid arthritis, which in its polyarticular form has the features of an infectious disease.

He considers treatment by baths of various kinds to be the

most efficacious in the early stages, and speaks with strong approval of the Tallerman local hot-air baths. He has employed this method in twenty cases with much relief of pain and some improvement of nutrition and gain to weight. Increased mobility of the affected joints usually followed their use. **Gibney** also spoke favourably of the hot-air treatment.

In his opening address at the German Congress (*Verhandlungen des XVte Congress. f. innere Med.*, p. 27) **Bäumler** discussed the differential diagnosis and clinical, and pathological features of this disease, the evidence for and against its relationship to rheumatism and other affections, and the several views of its pathology which have been advanced.

He also showed a leaning towards that view which ascribes to the polyarticular form of the disease an infective origin.

Ott, who followed, devoted his remarks to the subject of treatment, and gave an admirable and exhaustive summary of the entire subject, dealing with all the various remedies which have from time to time been recommended, and considering in detail the prophylactic, medicinal, local, and other measures employed for the relief of the patients. To an address of this kind it is obviously impossible to do any justice in a brief abstract, and we must refer those interested in the question to the original discourse.

In the course of the discussion, **Max Schüller**, who was the first to observe micro-organisms in certain cases usually included under the name of "arthritis deformans," called renewed attention to this subject, and maintained that these cases constitute in reality a distinct morbid condition, which requires to be differentiated from the ordinary examples of rheumatoid arthritis.

The joint affection of which he speaks occurs in two forms, which may, however, co-exist in the same patient. Cases of the first variety are characterised by chronic inflammatory swelling of the synovial membrane, with inflammatory hyperplasia of the synovial fringes, dilatation of the articular capsule and deformity of the joint. In cases of the second variety, there is, on the other hand, a process of shrinking which results in the growing together of part of the joint, whilst in other parts there is a bulging out of the capsule by the thickened synovia and hypertrophied fringes.

If a joint affected in the first manner be opened during life, the articular cartilage is found to be smooth and normal, and the bones are unaffected, whereas in arthritis deformans the deformities are chiefly due to changes in the bones and cartilages. Joints opened during life contain little or no fluid, and never pus. It was in such cases that Schüller discovered the bacillus which he

described in 1892. Micrococci are not infrequently present also, especially in the ankylosing form, and may have some relation to the development of this particular variety. He does not regard the cocci as the cause of the disease, the bacilli being in his opinion the true pathogenic organisms. He believes that the points of entry are the mucous membranes of the nose, air-passages, and of the urinary and genital organs.

Max Schüller believes that the disease under consideration is a distinct infective malady which has its principal localisation in the joints; which has no relation to acute rheumatism, and for which he proposes the name of *polyarthritis chronica villosa*. He recommends surgical measures for the treatment of the more seriously affected joints, and describes two forms of procedure which he has adopted with success in a number of cases.

The first of these is injection into the diseased joint, and especially into the inflamed synovial membrane, of a fluid composed as follows:—5 grm. of purest and finest iodoform powder, 60–100 grm. of pure glycerine free from acid, 20 drops of guaiacol puriss. For a knee-joint, five or six injections each of 10–15 grm. of the fluid are necessary.

Of twenty-nine joints so treated, complete recession of the inflammatory process and absorption of the polypoid mass resulted in sixteen, six showed improvement, and seven remained uncured. The injection was usually followed by severe pain and rarely febrile disturbances, which passed off in a day or two. More rapid and certain results were obtained by operation, and removal of the fringes and diseased portions of the synovial membrane. This proceeding, which is described in detail, always resulted in marked improvement, and the results were better the sooner movement was allowed after the operation. In his more recent cases, in which the patients were allowed to walk after as short a time as ten or twelve days, almost normal mobility of the joints resulted.

G. A. Bannatyne (*Edin. Med. Journal*, 1898, n.s. iii., p. 65), whose researches on the bacteriology of rheumatoid arthritis are well known, has obtained very satisfactory results by the treatment of this disease with certain drugs of the phenol group.

With a view to avoiding the intestinal irritation caused by creosotes and guaiacol, he has employed the following substances:—

1. Creosotal, or creosote carbonate, an oily, almost odourless liquid, which was given in doses of 5 to 20 minims daily, in capsules or in emulsion with white of egg.

2. Guaiacol carbonate, an insoluble, tasteless, and odourless crystalline powder, which yields guaiacol slowly in the intestine.

Guaiacol may be detected in the urine half an hour after its ingestion. The drug is given in the form of powder, cachet, or pill, in doses of 5 to 15 grains three to six times daily.

3. Benzosal.—Benzoyl guaiacol is tasteless and odourless. In the digestive tract it is split up into guaiacol and benzoic acid. Four grains may be given three to six times daily.

Of the above Bannatyne considers guaiacol carbonate the best and most reliable drug, and he has seen remarkable improvement follow its use. The only contra-indication is the presence of nephritis. As an external application he employs a mixture of pure guaiacol and olive oil in various proportions, but usually in equal parts, and has found it efficient for the relief of pain. The odour may be masked by oil of cloves.

INFECTIOUS FEVERS.

By Sidney Phillips, M.D. Lond., F.R.C.P.,

Senior Physician London Fever Hospital; Physician and Joint-Lecturer on Medicine, St. Mary's Hospital.

1. Treatment of typhoid fever by asaprol.

Asaprol is naphthol monosulphate of calcium. It is highly recommended by **Dr. Clement Ferreira** (*Bulletin Général de Thérap.*, Oct. 23, 1898). He gives 30 to 45 grains daily. It cleans the tongue, and lessens tympanites and diarrhœa. The substance is an antiseptic, but Dr. Ferreira recommends its use partly because it exercises an agglutinating action on the bacilli of cultures, and therefore possibly exercises a beneficial influence on the malady.

2. Compound tincture of benzoin in typhoid fever.

Dr. J. C. Potter (*Brit. Med. Journ.*, Nov. 27, 1897), recommends minims v. of this tincture every two hours in typhoid fever; after twenty-four hours diarrhœa decreases and the temperature falls. If diarrhœa is not controlled, the dose should be doubled.

3. Treatment of typhoid fever by salol.

Dr. Bramwell (*Brit. Med. Journ*, vol. ii., 1897, p. 1214) advocates the use of salol in the powdered form, not in tabloids, in doses of 5 to 10 grains (according to age) every four hours until the urine is tinged, when the dose is diminished, giving only sufficient to maintain the faint coloration of the urine. During the first few days of the treatment cold packs and sponging are usually required in severe cases. Dr. Bramwell believes that in several mild cases the disease has been aborted by salol, and cases of greater severity have passed through a mild and uncomplicated course under salol treatment. Dr. Bramwell bases his statements on ten years' use of the drug.

[In the "Year-Book" for 1893 (p. 175) salol was advocated by Mr. Howard Fussel in *Bulletin de Thérap.*, July 8, 1892, and it no doubt is a useful intestinal antiseptic, but there is no proof that abortion of the disease can be attributed to it.—S. P.]

4. Olive oil in typhoid fever.

Dr. O. F. Paget (*Lancet*, vol. ii., 1897, p. 1383) writes that while in Fremantle, Western Australia, over 100 cases of typhoid fever came under his care, and no patient died. He attributes this, in

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1. Treatment of typhoid fever by asaprol.

Asaprol is naphthol monosulphate of calcium. It is highly recommended by **Dr. Clement Ferreira** (*Bulletin Général de Thérap.*, Oct. 23, 1898). He gives 30 to 45 grains daily. It cleans the tongue, and lessens tympanites and diarrhœa. The substance is an antiseptic, but Dr. Ferreira recommends its use partly because it exercises an agglutinating action on the bacilli of cultures, and therefore possibly exercises a beneficial influence on the malady.

2. Compound tincture of benzoin in typhoid fever.

Dr. J. C. Potter (*Brit. Med. Journ.*, Nov. 27, 1897), recommends minims v. of this tincture every two hours in typhoid fever; after twenty-four hours diarrhœa decreases and the temperature falls. If diarrhœa is not controlled, the dose should be doubled.

3. Treatment of typhoid fever by salol.

Dr. Bramwell (*Brit. Med. Journ*, vol. ii., 1897, p. 1214) advocates the use of salol in the powdered form, not in tabloids, in doses of 5 to 10 grains (according to age) every four hours until the urine is tinged, when the dose is diminished, giving only sufficient to maintain the faint coloration of the urine. During the first few days of the treatment cold packs and sponging are usually required in severe cases. Dr. Bramwell believes that in several mild cases the disease has been aborted by salol, and cases of greater severity have passed through a mild and uncomplicated course under salol treatment. Dr. Bramwell bases his statements on ten years' use of the drug.

[In the "Year-Book" for 1893 (p. 175) salol was advocated by Mr. Howard Fussel in *Bulletin de Thérap.*, July 8, 1892, and it no doubt is a useful intestinal antiseptic, but there is no proof that abortion of the disease can be attributed to it.—S. P.]

4. Olive oil in typhoid fever.

Dr. O. F. Paget (*Lancet*, vol. ii., 1897, p. 1383) writes that while in Fremantle, Western Australia, over 100 cases of typhoid fever came under his care, and no patient died. He attributes this, in

great part, to his plan of giving 5 to 10 ounces of salad oil as an enema at intervals of twelve to twenty-four hours during the first four or five days. Its benefits are distinct from the first; the temperature almost always falls 1° F., and the patient's restlessness ceases. After the fifth day the enemata may be discontinued, or given every second day. He writes that, "There is a certain proportion of cases which do not respond to injections; nothing comes away, and the bowel is apparently empty; but it is in these very cases that the accumulation is worst: suddenly the temperature runs up, and the patient is seriously ill. Now, it is the very virulence of the accumulation which paralyses the gut, and prevents the accumulation coming away. The remedy is simple: give salad oil by the mouth, a large breakfast cup at a time" . . . "the bowels will almost certainly respond, and the injections are now able to manage the rest. If the first dose is without effect, repeat after twelve hours."

5. Treatment of typhoid fever by carbolic acid.

Brigade Surgeon Lieut.-Colonel Quill (*Brit. Med. Journ.*, May, 1898), recommends the internal administration of the following mixture: Acid. carbolic. purissim., mxxxvj (Calvert's No. 1); tinct. chloroformi, Co ʒii; tinct. cardamomi, Co ʒii; syrup. aurant., ʒj; aq. chlorof. ad. ʒxii. One ounce, with an equal quantity of iced water, to be taken every second or third hour, immediately after food. "In mild cases of enteric fever five or six doses of the above mixture are given in the twenty-four hours, while in severe cases ten doses are given. It is advisable to continue its use in from three to five doses daily for at least a week after the temperature has fallen to normal."

6. Treatment of typhoid fever.

Dr. Sidney Phillips (*Brit. Med. Journ.*, Nov., 1898) calls attention to the alteration in type in typhoid fever in England of late years. The intestinal ulceration is much less frequent and less severe than formerly, and with this change is a corresponding decrease in the severity of the abdominal symptoms; diarrhœa, hæmorrhage, excessive tympanites being all less frequent than heretofore. Nevertheless, the mortality is not much diminished, but the deaths occur more from general causes—toxæmia, asthenia—than from local abdominal lesions. In cases where the intestinal symptoms, and, presumably, the intestinal ulceration have never been severe, solid food may be commenced tentatively earlier than in other cases, but with care, as occasionally a deep ulcer may exist with few indications of its presence. For hæmorrhage no drug is so efficacious as tincture of hamamelis. The ice-bag, if used, should not be kept on for days after melæna has ceased, as

it tends to freeze up the abdominal wall and impair the vitality of subjacent viscera. Diarrhœa is an accompaniment, as statistics show, of the most severe cases, and should be checked from the first, preferably by enemata.

Many deaths occur from bloodlessness, resulting from the drain from diarrhœa and fever, and from the specific affection of the spleen and other blood-making organs, as well as from the impeded absorption of nutriment due to the swelling of mesenteric and retro-peritoneal glands. It is essential to feed up the patient as much as possible (regard being had to the digestive powers of the individual patient) as soon as convalescence commences. Intravenous saline injections often give improvement, but in most cases it is temporary only.

7. Treatment of scarlatinal nephritis.

Dr. F. Detlefsen, of Chicago (*Pediatrics*, Jan. 15, 1898, p. 47) writes that the first requirement is absolute rest in bed, in a well-aired room, between 70° and 75° F. Diaphoresis should be moderate, and followed by the ingestion of plentiful fluids, for a favourable excretion by means of the sweat glands is not void of danger, because the loss of fluid is too great in comparison to the amount of excreted urea. The diaphoretic preferred is a warm bath of 98° to 100° F. for 15 or 20 minutes, or less. During the bathing cold compresses are applied to the head, and the child is afterwards put into bed in a warm blanket. If perspiration is not free, hot drinks or an infusion of jaborandi, or pilocarpine, may be given, though the latter is very depressing. Baths as hot as 95° to 106°, as recommended by Liebermeister, may lead to collapse. If warm baths are not well borne, the child may be wrapped in a sheet wrung out of hot water. Poultices over the renal region are useful. Laxatives are useful. An absolutely milk diet is too rich in nitrogen, and gruel or soups of barley and other farinacea and cooked fruits may be given. Dr. Detlefsen declaims against the use of diuretics as irritating, but gives pure spring water or mineral water, such as Vichy. Digitalis has probably no direct effect on the kidneys, and he much prefers tincture of strophanthus.

[The temperature of the room, 70° to 75°, appears 10° F. too high. Digitalis, in my experience, is often of much use as a diuretic, and citrate of potash has never given indications of injurious irritation. Leeches over the renal region in an acute attack are very useful.—S. P.]

8. The hot acid bath in scarlet fever.

The Medical Officer of Health for Leicester, **Dr. Munk** (*Brit. Med. Journ.*, vol. ii., 1897, p. 1435), gave this treatment a trial

at the Borough Fever Hospital of that town. The acid bath treatment consists in bathing the scarlatinal patient in water at 102° F., containing half an ounce of commercial sulphuric acid to every 10 gallons of water. The patient is kept in this bath and sponged for about 20 minutes, and then enveloped in flannel in bed. Usually he perspires freely and is then sponged with tepid water every 3 or 4 hours, as long as the temperature remains above normal. Dr. Munk concludes that the statement made that under this treatment there is no desquamation is not correct, but that there is considerable improvement in the mode and rapidity of shedding the dead epithelial scales. There does not appear, however, to be any ground for believing the infectivity of the case is shortened in duration, for 3·6 of the cases were followed by "return" cases, and there is no convincing evidence that the mortality was lessened compared with the mortality of patients of the same age treated in other ways.

9. Treatment of diphtheria by tincture of myrrh.

Ströll (*Allgemeine medicin. centr. Zeitung*) recommends tincture of myrrh 4 parts, glycerine 8 parts, and distilled water to 200 parts, given internally every hour in the day and every two hours at night. This is continued until the membrane nearly disappears, when its frequency is gradually reduced: fever and lassitude disappear in twenty-four hours. Where the larynx is involved, the mixture is prescribed in an inhaler or spray.

10. Intravenous injections of mercuric chloride in diphtheria.

W. J. Pyle (*Med. News*, July 18, and *Epit., Brit. Med. Journ.*, 1897), recommends injecting into the veins of the arm repeatedly a fluid composed as follows: Mercuric chloride, gr. xv.; sodium chloride, gr. xlv.; water, ʒxxiv.: 15 minims of this solution is at first used, and the dose is raised gradually to 60 minims. This treatment is similar to that of Baccelli for syphilis, but Pyle gives no experience of his own as to its success in diphtheria.

11. Treatment of diphtheria by chlorine.

Dr. Bracelin (*New York Med. Journ.*, March 5, 1898) writes: "Chlorine has been found one of the most useful remedies for diphtheria. Solutions of chlorine cannot be made powerful enough to obtain the full effects of the remedy, and the vapour could not be inhaled except in minute doses, as it excites cough and a sense of suffocation." Dr. Bracelin, after numerous experiments, claims to have succeeded in discovering a combination which does not lessen the antiseptic properties of chlorine, yet completely corrects its irritating qualities. Being used by inhalation, the

remedy has a general as well as a local effect, as the vapour enters the lungs and "assists nature to destroy the systemic poison." The formula of chlorine bactericide is as follows:—

Solution I.

Solution of zinc chloride	20 parts
Solution of arsenic chloride	30 „
Hydrochloric acid pure	1 „
Water	40 „

M.

Solution II.

Solution chlorinated soda, standardised to 2·6 per cent. available chlorine	70 parts
"Corrective"	30 „

The corrective consists of menthol, camphor, eucalyptus, and salicylate of methyl dissolved in alcohol and water.

Dr. Bracelin (*New York Med. Journ.*, Nov. 19, 1898) cannot at present publish exact directions for the preparation of this corrective, but has placed the directions in the hands of the New York Board of Health.

Directions: Five teaspoonfuls of No. 1 and one teaspoonful of No. 2 are put into the inhaler and inhaled four or five minutes at a time, once an hour, in diphtheria. One teaspoonful of No. 2 should be added every four hours. Every twelve hours the inhaler is emptied and refilled. The inhaler should be slightly warmed before using.

12. Creosoted oil in diphtheria.

In the Canada *Lancet* (Feb., 1898, p. 297), **Dr. Macfarlane** and **Dr. Ewart** record a case of a child, of two and a half years old, with laryngeal diphtheria, on whom tracheotomy was performed within twenty-four hours of the onset, and antitoxin injected. Creosoted oil (1 in 20) was ordered to be dropped into the tracheotomy tube, but, by mistake, olive oil was used instead, without any relief. After a time, however, membrane was coughed up; four days later, creosoted oil was substituted for the olive oil, a large drop of the oil being introduced through the tube every half-hour. After this the child improved and recovered.

Dr. Ewart believes the creosoted oil led to the coughing and bringing up of much membrane, which the olive oil had failed to do.

MEDICAL DISEASES OF CHILDREN.

By Dawson Williams, M.D., F.R.C.P.,

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1. The health of the milk yielder.

O. Klemm has published (*Jahrb. f. Kinderheilk*, 1898, Bd. xlvii., p. 1) a very thoughtful, if rather wordy, address on what he calls the "ground principles" of infant feeding. His thesis is that the whole secret of feeding infants successfully lies in seeing that the yielder of the milk (whether mother or cow) upon which the child lives is in thoroughly good health. If an infant at the breast does not thrive, has dyspeptic symptoms, or shows a tendency to become rickety, the first thought of the physician should be not to prescribe cow's milk or some patent preparation, but to ascertain whether the milk yielded by its mother may not be at fault, owing to her bad health, bad habits, or nervous temperament. As he very truly says, the contrast between the good condition of an infant who is dragged up by its mother without any great care, and the failing health of another infant whose mother is most careful and most anxious, is often very striking. He explains, with some rather metaphysical discussion as to the influence of the *psyche* on the nutrition in general and the secretion of milk in particular, that the mother's anxiety to do well by her infant may itself be the cause why it does not get on. He quotes with approval, though he is too polite to subscribe to it altogether, the saying, "Die Amme soll wie eine Kuh sein"—"The wet-nurse should be like a cow." He took some pains to verify these *à priori* views by analysing a number of specimens of milk. In the case of thirty-seven women, of whom some had healthy, others rickety infants, others infants who were below the normal in development without obvious evidence of disease, he always found, if the infant were becoming rickety or were otherwise not doing well, that the milk in some way departed from the normal standard. As a rule, the proportion of proteids was too low and that of milk-sugar too high. The most original point in his paper is the observation that the proportion of iron present in the milk of women whose infants were not doing well was always below the normal. The proportion even in the milk of a healthy

woman in the earliest months of lactation, at which period it is highest, is very small (0·0005 per 100 milk); and it apparently tends to decrease as lactation advances, for in the sixteenth to the eighteenth month of lactation he found it only one-fifth of the amount present in the earliest milk. It must be remembered, however, that an infant over the age of three or four months drinks about three times as much as an infant under one month, so that the total dose of iron would be not very much below that received during the first months. In the milk of mothers who have infants who are weakly or rickety the proportion of iron may fall as low as one-tenth of the normal, independently of the stage of lactation reached. The indication then, in many cases in which advice is sought for the infant, is to treat the mother, her body or mind, and, in particular, to treat anæmia, if present in her. If the infant is being fed artificially, a change of milk will probably be advisable, although the proportion of iron in cow's milk does not, it would seem, vary so much as in the human species.

2. Tuberculosis and milk.

The importance of tuberculosis as a factor in the causation of the high mortality of infancy and early childhood seems at length about to receive the attention which it deserves. Sir Richard Thorne recently (*Brit. Med. Journ.*, Nov. 12, 1898) dwelt on the fact that during the last half-century there had been an immense reduction in the death-rate from many forms of tuberculosis, notably phthisis, in connection with great sanitary improvements that had been effected; and he pointed out that infants and children ought, according to all experience, to have benefited correspondingly. But when the death-rates from tabes mesenterica—a form of tuberculosis in which the infection is received into the alimentary canal instead of the lungs—was examined, it was found not only that all the gain attained at other ages had been lost in the case of children and infants, but that, in addition to this, there had been a very heavy increase in deaths under one year of age from this cause. This increase had gone hand in hand with a steady increase in the consumption of cow's milk as a food in England. English people were almost the only civilised nation in the world who habitually consumed uncooked milk. He showed from official returns how large was the amount of tuberculosis amongst milch cows, and, quoting the report of the Royal Commission on which he had served, he explained that the artificial conditions under which milk was now produced in cow-houses—which the animals sometimes never left for a moment during a period at times reaching a whole year—were precisely those most certain to produce that increase of this

disease in cows which had been going on. Fortunately, the immediate danger to man was limited to the existence of tuberculosis in the cow's udder; but the early stages of this affection were most difficult to detect, and it was a form of tuberculosis which tended at times to spread with great rapidity. The danger to man, and especially to the infant population, was one of real gravity, and the loss of child life due to this disease in milch cows was appalling. He urged that English people should be educated to cook milk before using it, since if milk were boiled for a single instant the danger of tuberculosis would be gone. **Delépine** (*Lancet*, 1898, vol. ii., p. 735) has recorded the interesting observation that, on examination by inoculation of the bodies of thirteen infants dying of marasmus, and specially selected because they afforded no naked-eye evidence of tuberculosis, nevertheless tuberculosis existed certainly in two, and probably in seven.

The municipality of Paris appointed some time ago a very strong Commission to investigate the subject of the milk supply. Its report has now been issued, and contains a special section by **MM. Budin, Comby, Miquel, Roux,** and **P. Strauss** on the artificial feeding of infants. It is pointed out (*Arch. de Méd. des Enf.*, Aug., 1898) that microbes may reach cow's milk either from the cow itself, if it be suffering from tuberculosis or aphthous fever, or with dust or dirt in the vessels, or with the water used to wash them. To insure that the milk shall be free from dangerous qualities, it is necessary to destroy the microbes that it contains, and the Commission express the opinion that the only practical and efficacious means of doing this is by heat. Further, the opinion is expressed that "methods of preserving milk by the addition of chemical substances are fraudulent practices, and often dangerous to the health of the consumer. They ought to be rejected." Refrigeration is useful to check changes in the milk during transport, but is not in itself a means of sterilisation. Pasteurisation—that is to say, heating the milk once to a temperature of about 60° C.—they condemn as insufficient to destroy the dangerous germs in the milk, though the process may be properly utilised under favourable conditions to facilitate transport. When circumstances permit the milk to be consumed within twenty-four hours, heating to 100° C. affords sufficient security. The milk should not be taken out of the vessel in which it has been heated, and should be kept in a cool place. If the milk is boiled in an open vessel, the cover should not be replaced until after it has cooled, as vapour of water rising from the hot milk condenses on the cold cover and forms drops, which carry down into the milk germs

and other impurities. If it is thought desirable to cover the milk while still hot, the lid ought first of all to be placed in boiling water. It is necessary to keep the milk in a cool place, because, though boiling kills nearly all microbes, there are some which resist that temperature, and will develop in the milk, and so produce changes in it, if the temperature of the air is sufficiently high, as may be the case during summer or in a warm room. The Commission, after expressing the pious opinion that human milk is always to be preferred for infants, goes on to recommend that cow's milk destined for the use of infants ought to be sent out in closed bottles containing enough for one meal. The bottles should be put into cold water, which is then brought to the boil and kept at that temperature for three-quarters of an hour. When the infant is to be fed, the bottle of milk is to be warmed in water. If it be considered desirable to dilute the milk, this must be done before the milk is sterilised in the bottles in the manner above described. Milk remaining in a bottle should not be kept and given to the child later. After use, the bottles should be cleaned with soda or soap and water to remove the fatty particles, and then rinsed at the tap. Great importance is attached to this cleansing. If one or more unopened bottles remain over from the previous day's supply, they must be heated again for three-quarters of an hour in boiling water. Much importance is attached by the Commission to the following clause in its report: "When the milk must be kept for more than twenty-four hours before it is consumed (preserved milk), it ought not to contain any living microbe. In practice this result can be obtained by a single heating to 110° C. (230° F.) for a sufficiently long time, or by discontinuous heating at a lower temperature. Milk heated under these conditions does not lose its nutritious qualities." Milk preserved in this way may be given to children and infants, but before doing so it is necessary on every occasion to make sure (1) that its appearance is good—that is to say, that its colour is not too dark, that it is not clotted, and that it has the normal appearance of milk; (2) that when the bottle is opened no gas or bad odour is given out; and (3) that it has not any disagreeable taste. If the cream has risen to the surface, it must be redistributed by shaking the bottle after it has been warmed. Milk thus preserved should be poured directly into the feeding-bottle, which should previously have been thoroughly cleansed and treated with boiling water. If it be necessary to dilute the milk, boiled water should be used for this purpose.

3. The nutritive value of artificial foods.

Lamtling, of Lille (*Arch. de Méd. des Enf.*, Sept., 1898), in the

course of an elaborate study of diet and nutrition at various ages, expresses the opinion that, after weaning, the food of a child should be modified progressively, by diminishing the amount of the fats and increasing the amount of the carbohydrates. In discussing various patent foods, which are now so largely employed, he states that they are, as a rule, much too poor in albumin and in fats to be considered complete foods, or even to form the preponderating part of the diet. Without taking into account their deficiencies in salts, they do not supply the minimum quantity of albumin required by the infant, which is proportionately high, and the three categories of a perfect diet—albumins, fats, and carbohydrates—are imperfectly combined. The body is constantly losing both matter and energy, the expenditure of energy in the child is about thrice that of the adult in proportion to its weight; for instance, a child weighing 18 kilos. loses 1,490 calories per square metre of surface, whereas an adult weighing 67 kilos. loses 1,550 calories per square metre of surface, so that, in proportion to its weight, the infant loses two to three times as much heat as the adult. The infant needs a larger proportion of albumin. He gives the following table, showing the mode in which an infant fed on the following foods obtains its energy. For every 100 calories it obtains :—

	From the albumins.	From the fats.	From the carbohydrates.
With human milk	18·7	52·9	28·4
„ Nestlé's food	10·6	10·6	78·8
„ Morton's food	10·4	14·2	75·3
„ le Racahout	2·9	14·3	82·8
„ la phosphatine Falières	2·2	4·2	93·6
„ la farine Dutaut	2·9	0·2	96·9

He considers that these various powders are "too poor in albumin, and still more too poor in fat; they are of value only for the carbohydrates; some of them are not, in fact, anything more than a mixture of sugar and starch"; as an addition to diet they have one advantage which is not to be despised, namely, that they introduce some variety into the dietary of the infant and young child.

4. The digestive ferments.

The activity of the digestive ferments in various diseases of infants and children is a question of a good deal of importance in treatment, but it is not one as to which very much is known. Considerable interest, therefore, attaches to a paper by **Jakubowitch**, of St. Petersburg (*Jahrb. f. Kinderheilk.*, Bd. xlvii., p. 195), who made a detailed examination in fifty-three children, of ages varying

from five days to twelve years. The patients died of various diseases, acute and chronic, and the glandular tissue was in all cases obtained not more than two hours after death. The experiments were directed to ascertain the degree of activity of the peptic digestion of the mucous membrane of the stomach, and of the action of the pancreatic extract on albumins, starch, and fat. The first conclusion to which Jakubowitch comes is that the digestive ferments of the child retain their active properties for some time after death. The peptonising ferments both of the stomach and of the pancreas were in all cases found to be enfeebled, but in some cases much more than in others; thus, they were practically absent in cases in which death had been brought about by congenital syphilis, by tuberculosis, by typhoid fever with dysenteric complitions, and by hydræmia. They produced a fair amount of digestion in cases in which death had been due to leukæmia, to scarlatinal nephritis and catarrhal pneumonia, but in the last-named disease the stomach was far more active than the pancreas. Similar differences between the stomach and pancreas were observed in infantile cholera, septicæmia, and one or two other diseases, whereas, in purulent pleurisy and in "dysentery" the pancreatic ferments were more active than the gastric. In a third of all the cases the emulsionising ferment of the pancreas was absent, and in the others more or less weakened. The sugar-forming ferments were in all cases very much less affected than the peptonising and emulsionising. **Moro** (*ibid.* p. 342), working under Escherich's direction, has also made some observations on the activity of the diastatic digestion in infants. He made ten experiments on the pancreas of infants dying at the ages from one to twenty-three days, and came to the general conclusion that the pancreatic extract, even at birth, has some diastatic action, but that its activity increases rapidly. The main purpose of his paper, however, is to describe a series of experiments on the degree of activity of diastatic ferments present in the intestinal contents and in the fæces of infants. He comes to the conclusion that, as a rule, they contain from the time of birth a diastatic enzyme, which increases rapidly in quantity during the first few weeks of life, and that this enzyme is secreted by the glandular organs of the intestines, traces of it being discoverable in the pancreatic extract from infants newly born. Perhaps the most interesting point in this paper, however, is the observation that human milk normally contains a saccharifying ferment, but that no such ferment is present in cow's milk. The ferment is present in the fæces and, according to Moro, accounts for a large part of the powerful diastatic properties of the fæces.

5. Treatment of gastro-enteritis.

The dietetic treatment of gastro-intestinal affections in infants has been reviewed at length by **A. Czerny** (*Rev. Mens. des Mal. de l'Enf.*, July, 1898, from *Allg. med. central. Zeit.*, Nos. 26 and 27), who expresses the opinion that there is at the present time complete agreement among physicians upon the following three points, and upon them alone: (1) The necessity of limiting the diet during the first twenty-four or forty eight hours of an attack of acute gastro-enteritis; this limitation of the diet is of infinitely greater value than any treatment by drugs. (2) The necessity, in the case of those infants in whom artificial feeding causes dyspepsia, of replacing it by the breast. This usually succeeds, but in some cases the infant does not take the breast well, does not gain in weight and the symptoms of digestive disturbance persist, though they are less severe. He expresses the opinion that it is a mistake to be quickly discouraged because improvement is often very slow; so that if no more is done than to maintain the *status quo*, this ought to be considered a very good result, and adds that, in any case, it would be a mistake in such cases to replace the natural by artificial nourishment. (3) The value of a diet containing starchy foods for infants who are nearly a year old, and who, while taking relatively little milk, pass copious stools, containing a large quantity of mucus; a special form of enteritis exists in these cases, which is quickly recovered from if the child is given a diet consisting of starchy foods from which all albuminoid bodies are excluded. Beyond these three points he considers that there is no general agreement, and expresses the following personal opinions: (*a*) That sterilised milk is not of more value in gastro-enteritis than milk which has simply been boiled for ten minutes. (*b*) That the milks devised by Gärtner and by Backhaus* are not well borne, more especially in those cases in which vomiting is present. (*c*) That the same is true of peptonised milks. It has never been proved that casein is difficult of digestion and assimilation. The failures which occur with all kinds of milk preparations are to be attributed to a want of definite information as to why dyspeptic infants assimilate badly not only albuminoids, but also fats and hydrocarbons. Czerny thinks that the only point absolutely established is the conclusion of Keller that in dyspeptic patients there is a general lowering of the power of oxidation; in consequence he thinks

* The mode of manufacture of Gärtner's milk was described in the "Year-Book of Treatment" for 1895, p. 183. Backhaus's method is a modification of Gärtner's, differing chiefly in this, that the "separated" portion is treated with rennet so as to get rid of curd. It is, in fact, a kind of whey-cream mixture.

that the diet in such cases should consist of substances which are easily oxidisable. **Guaita** (*Rev. Mens. des Mal. de l'Enf.*, August, 1898) considers that great importance attaches to the treatment of the early gastric symptoms; he gives at once a drachm of castor oil and repeats it in six or ten hours. On the following day he gives three doses of $\frac{3}{4}$ gr. of calomel, which are administered at intervals of an hour; in other cases he gives as much as four grains of calomel divided into four doses—two given with one hour's interval in the morning, and two with the same interval in the evening. If the gastric irritation be very intense, he commences with the calomel, which checks the vomiting, and gives the castor oil on the second day. Like Czerny, he prefers to give for the first one or two days nothing but boiled water, though there is no objection to giving lime water, or infusion of camomile, if the condition of the tongue, of the abdomen, or of the stools appears to call for these medicaments. In summer he allows as much as one ounce of cognac during the twenty-four hours, copiously diluted. If there is a tendency to diarrhœa, he prescribes infusion of cascarilla diluted with an equal quantity of water, or one of the following powders two or three times a day: calomel, gr. ss., bismuth subnitrate, gr. vij, salol, gr. iss. If the onset of the attack is marked by high fever and convulsions, Guaita applies an ice-bag to the head, and mustard plaisters to the limbs. In such cases he begins with a dose of calomel as large as gr. iss., and gives an injection of boric lotion. In spasmodic croup, which he has observed as a complication 88 times among 5,000 infants, he adopts the treatment above indicated, and has always observed the croup to cease after the administration of the castor oil or the calomel. This, he holds, proves it to be due to reflex irritation, starting from the stomach, so that it is unnecessary to invoke teething or worms to account for it. When convalescence is established, he gives a cod-liver oil mixture containing a small dose of phosphorus.

Marfan (*Arch. de Méd. des Enf.*, July, 1898) insists strongly on the necessity of restricting the diet of infants suffering from cholera infantum and acute gastro-enteritis to boiled water for a certain period at the beginning of treatment. He looks upon it as the most fundamental part of treatment. He points out that the fear that the infants will not bear this deprivation of nourishment is unfounded—what they will not bear is deprivation of fluid—and he lays it down as a rule that the quantity of milk withheld must be replaced by at least an equal quantity of boiled water. During the acute stage of these diseases all kinds of

food undergo decomposition in the gastro-intestinal canal. The main action of the boiled water is that it arrests all gastro-intestinal putrefaction; at the same time it gives the stomach and intestines rest, it relieves the thirst, which is often very great, it maintains diuresis, which it is essential to maintain to ensure elimination of toxins, and it stops the dehydration of the tissues, which in acute gastro-intestinal disorders is always very marked. The water ought to be boiled for a few minutes, and should be kept in the vessel in which it has been boiled. It should be given cold in a bottle or cup previously thoroughly cleaned in boiling water. For the first few hours no addition should be made to the water, but if after a trial the infant does not take the pure water freely, a little sugar may be added, but in no case should any albuminous substance be given in it. In a serious case of gastro-enteritis this restriction to water alone should last for at least twenty-four hours; if the child is then better, if vomiting has ceased, if the diarrhœa has very much diminished, if the temperature is nearly normal, it may be put to the breast every four hours, or it may be given, if brought up on the bottle, small quantities of sterilised milk, diluted with an equal quantity of sweetened water; the boiled water should still be given in the intervals between these feedings. If the improvement has not been conspicuous, nothing beyond the boiled water should be given for another twenty-four hours. If relapse occurs, the milk must be withdrawn again and boiled water alone given. Marfan says that the improvement on this watery diet is often so rapid that there is a temptation to resume feeding with milk too soon. If a case is seen late, he recommends, in addition to the diet of water, subcutaneous injections of normal saline solution, and the use of hot baths at 96° F. These baths exercise a sedative influence, lower the temperature, stimulate the skin, and favour diuresis. If during convalescence diarrhœa continues, he gives minute doses of calomel, or small doses of bismuth subnitrate. In less severe attacks of gastro-enteritis the water diet is valuable especially in those cases in which the gastric symptoms (vomiting, etc.) are prominent. Marfan says that, as a rule, even cachectic infants usually bear the water diet well, though it may be necessary to stop it after eight or ten hours. **Mongour** (*ibid.*) arrives at the same conclusion, but he has maintained an absolute diet of water for as long as six days. Other French writers prefer to render the water faintly alkaline, or to administer a natural alkaline mineral water, such as that of Vichy or Vals.

6. Acetonuria in gastro-enteritis.

The occurrence of acetonuria in gastro-enteritis is a subject to which **Vergely** has recently called attention (*Rev. Mens. des Mal. de l'Enf.*, Jan., 1898). He gives a series of cases and draws the conclusion that acetone, diacetic acid, and beta-oxybutyric acid are frequently present in the urine of infants and children suffering from digestive derangements. The symptoms of a typical case described by him are nausea or vomiting, complete anorexia, great thirst, extreme restlessness and excitability, and a peculiar sweet odour which may be detected in the breath and in the urine. The bowels then may be constipated, and diarrhœa is not a prominent symptom. When convalescence has commenced, the odour disappears from the breath, but persists for some time longer in the urine. The attack is accompanied by some fever, and at the onset the temperature may reach 103° or 104° F. In most cases it falls to normal in a few days and convalescence commences, but in some cases the fever continues for a week or ten days and a suspicion of typhoid fever is apt to be raised. The state of nervous excitement, however, is quite different from the hebetude or muttering delirium of typhoid fever. The complex of symptoms—(1) Gastric disorder with some fever; (2) sweet odour of urine; (3) restlessness, talkativeness, and insomnia—are in Vergely's opinion characteristic. **Professor Deniges**, who estimated the amount of acetone, found in one case as much as 10·5 per litre of urine. In this case the urine also contained beta-oxybutyric acid in the proportion of 6·87 per litre. In another case Deniges found acetone 5 grm., and beta-oxybutyric acid 7 grm., in a litre of urine. Vergely believes that beta-oxybutyric acid, diacetic acid, and acetone present in these cases may be formed in the alimentary canal by the action of micro-organisms on the albumins and sugars of the food. Since in young children the emunctories are usually healthy, the toxic bodies are quickly eliminated and the prognosis is good, but relapses are not uncommon. The treatment should be simple; a few doses of rhubarb and soda or magnesia, preceded, if the patient is seen in the earliest stage, by an emetic. The diet should be carefully regulated by the elimination of the meat, fish, eggs, and milk—that is to say, it should consist solely of carbohydrates. If the patient is restive under this diet, weak soups may be given, but the best drink is an alkaline water such as that of Vichy or Vals, freely diluted.

7. Intestinal astringents.

Koelzer reports from Heubner's clinic, in Berlin, the results of a series of clinical observations on the action of intestinal astringents (*Jahrb. f. Kinderheilk.* Bd. xlvi., p. 280). The drugs

used were tannigen (di-acetyl-tannin), tannalbin (a compound of tannic acid with albumin), and tribenzoylgallic acid, but the results of his investigation would appear to be applicable to other remedies of the same class. In Heubner's clinic cases of intestinal disorder are classified according to the character of the stools, as (1) dyspeptic (green with much mucus); (2) intestinal catarrh (watery diarrhœa); (3) enteritis (stools containing mucus, many cells, and often blood or pus). Class (1) is believed to be due to abnormal decomposition of the contents of the intestine, with slight irritation of the intestinal mucous membrane; classes (2) and (3) to primary changes in the mucous membrane. The first general conclusion at which Koelzer arrives is that the astringent remedies have a very marked effect, if they can be brought to act in the right place. They are essentially local remedies, and their action must be reinforced by regulation of the diet, and by remedies directed to the relief of the general symptoms. He finds that the astringents enumerated are useful in the treatment of the local sequelæ of acute dyspepsia, and in simple intestinal catarrh if the diet is regulated at the same time. They are untrustworthy in chronic dyspepsia and in true enteritis. They have no influence, either good or bad, on the general symptoms due to intestinal disorders, except in so far as by checking the local affection they may indirectly tend to lessen the general symptoms. Tannigen and tannalbin are of about equal strength, and the amount found necessary for an infant was 7 to 8 gr. a day in four doses; tribenzoylgallic acid contains about 35 per cent. of gallic acid, which is liberated in the presence of alkalies, so that gallic acid is formed in the intestines soon after the point at which the pancreatic juice enters. The dose should be twice as great as that of tannigen. It was often found advantageous to combine with these astringents small doses of calomel, and this was particularly the case in treating the sequelæ of acute dyspepsia. **Goundobine** (*Arch. de Mal. des Enf.*, 1898, p. 309), who speaks highly of tannalbin as a remedy for entero-colitis, subacute enteritis, and acute enteritis of infants and children, and for the acute dyspepsia of infants, gives to an infant gr. iss from twice to four times a day, and increases the dose by 1½ gr. for each year of life.

8. Coryza.

Coryza in infants is often a condition of considerable importance, owing to the fact that it interferes with sucking, and may even render it impossible. Further, it is probable that it favours the occurrence of bronchitis and broncho-pneumonia, owing to the inhalation of infective nasal mucus during strong inspiratory efforts.

It is often exceedingly difficult to treat, owing to the smallness of the nostrils and the difficulty of getting a view of the parts. **Nägerli-Ackerblom** (quoted *Jahrb. f. Kinderheilk.*, Bd. xlviii., p. 351) believes that the use of brushes, etc., to make applications to the interior of the nose, is not free from danger when the operator is not guided by the eye, and states that for the last six years he has used with great success a 2 per cent. solution of cocaine (in equal parts of glycerine and distilled water). A drop of the solution is dropped into each nostril three or four times a day with a dropper. The power of breathing through the nose is, he says, rapidly regained under this treatment.

9. Venesection.

Baginsky (*Berl. klin. Woch.*, May 23, 1898), in an address delivered before the Berlin Medical Society, spoke out very strongly as to the value of venesection as the best remedy for one condition in childhood which may be brought about in more than one way. He said that when from any cause the circulation threatens to be arrested, owing to failure of the action of the heart against obstruction, venesection is as distinctly indicated as is tracheotomy or intubation in stenosis of the larynx. He related several cases in illustration of the condition to which he considers the treatment to be applicable: one case was that of a girl, aged seven and a half years, admitted after eight days' illness into the hospital, with the diagnosis of inflammation of the lungs and heart failure; there was marked cyanosis, extreme dyspnœa and orthopnœa, the pulse was imperceptible at the wrist, and the heart's action was irregular. Slight improvement took place after hypodermic injection of camphor, inhalation of oxygen, and strophanthus internally; the child, however, continued very ill, and had occasional exacerbations of the dyspnœa, during which the "air-hunger" was intense. Forty-eight hours after admission 120 c.c. (a little over 4 fl. oz.) of blood was withdrawn by venesection. While the blood was flowing the extreme cyanosis disappeared, the lips became red, the pulse distinctly perceptible, and the breathing quiet, while the general condition of the child was altogether changed. The venesection was made at mid-day, and at five p.m. the breathing was again somewhat difficult, and a leech was applied over the left mastoid; from this time the child steadily improved, and eventually recovered. Another case of a boy, aged nine years, was of a similar character, but the effect of venesection to between 3 and 4 fl. oz. was equally prompt and more permanent. In a third case, a girl, aged seven years, admitted almost moribund with extreme dyspnœa, associated with the onset of measles, the free opening of the median vein at first in the

right, and afterwards in the left arm, led to the loss of only a few drops of blood. The left radial artery was then opened and nearly 3 oz. of blood were withdrawn; this was followed by immediate relief to the symptoms, and the child ultimately recovered. He referred, also, to some cases in which venesection did not save life, and expressed the opinion that venesection only acted mechanically and had no influence on the course of the disease which brought about the heart failure and dyspnœa. It fulfilled, however, the immediate indication to relieve the circulation, and might thus save life. Baginsky also spoke of the value of leeching in certain cases in children, and expressed the opinion that it was particularly indicated in infantile convulsions which do not yield to other treatment, and in uræmic eclampsia. In one case which he mentioned of acute nephritis in a girl, aged eight, the child, in spite of active treatment, had passed into a moribund condition, with coma and Cheyne-Stokes respiration. Six leeches were applied to the head, the convulsions ceased, and the child eventually recovered.

10. Pneumonia.

Söderberg (quoted *Jahrb. f. Kinderheilk.*, xlviii., p. 365) strongly recommends pilocarpin in the treatment of acute pneumonia and other "croupous diseases," for example, membranous laryngitis. He reports ten cases of acute pneumonia, six of them in children, treated with this drug; all recovered, and the duration of the disease was considerably reduced (from seven or eleven days to twenty-four or sixty hours). In a case of membranous laryngitis the patient was out of danger in less than two hours; a case of "croupous bronchitis" terminated in a day and a half. In acute pneumonia the symptoms became very much milder after the first dose of pilocarpine, and the pain disappeared in a few hours. Perspiration and salivation were marked, but no disquieting symptoms of collapse were observed, so that he considers the treatment to be free from danger. He gave the drug internally in watery solution, and in some cases administered at the same time alcohol or digitalis or strophanthus, when these drugs appeared to be necessary. Relapse he met by giving small doses of pilocarpine for a few days. **Schlesinger** (*ibid.*) found the mortality of 173 children treated in the Kaiser und Kaiserin Friedrich Children's Hospital, in Berlin, to be only 4 per cent. The treatment which gave the best results when the temperature was high was the moderate and careful use of the cold pack. The careful administration of stimulants, especially alcohol, was also looked upon as important.

11. Influenza in childhood has been studied by **Furst** (*Rev. Mens. des Mal. de l'Enf.*, Jan., 1898). He describes a period of

depression, with some nasal catarrh, and slight dry cough preceding the onset of the fever. It may last, he says, eight or ten days, and he speaks of it as the period of incubation, although it may be observed that this period, in the adult at least, is generally much shorter. The onset of the pyrexia is marked by shivering, the voice becomes hoarse, deglutition is sometimes painful, the nasal catarrh increases, and there is some dyspnœa; constipation is the rule, and in many cases there is severe headache, though in infants this may be replaced by convulsions. He believes that treatment may have a very material influence in cutting short the disease, and of all internal drugs prefers salipyrin, which he looks upon as almost a specific. At ages from five to ten years he gives 4½ gr. thrice a day; from ten to fourteen years, 15 gr. thrice a day. After a couple of days it will usually be sufficient to give only two doses a day. Salypyrin was originally made by Lüttke by heating together equal molecular weights of salicylic acid and antipyrin. It was first recommended as a remedy in acute rheumatism, but Von Monsengeil some years ago said that he found it most useful in influenza, especially in influenza with little or no elevation of temperature, as it did not produce the depression which antipyrin itself is apt to cause. Furst treats the pharyngitis and rhinitis, which are often the most troublesome symptoms of influenza in childhood, by pulverisations. For this purpose he prefers a 2 per cent. alcoholic solution of rectified turpentine, although he employs also a mixture of menthol, eucalyptus, and cocaine in a suitable menstruum.

ANÆSTHETICS.

By Dudley W. Buxton, M.D., B.S.,

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I.—LOCAL ANÆSTHESIA.

Infiltration.

Mehler (*Centralbl. f. Chir.*, No. 9) has used Schleich's method in two hundred and fifty major operations with success. He has the solutions coloured with dyes so as to distinguish them and prevent mistakes. He uses a larger syringe than usual, and sterilisable by boiling. **Krecke** (*Münch. med. Woch.*, Oct. 19, 1897), however, believes the infiltration method to be of less general utility than was at first thought. The freezing of the part before the initial punctures are made, and the infiltration itself, cause considerable pain, even when the tissues are not inflamed. He recommends that the deeper structures should be infiltrated *before* the skin incisions are made, so as to obviate the escape of the injected fluid. Both he and **Lilienthal** (*Annals of Surgery*, May, 1898) find the tissues after infiltration are difficult to identify, and the difference between healthy and diseased parts is made less clear. This is especially the case with glands, so that Krecke has given up the method when glands are under operation. In skin-grafting infiltration lessens, and even jeopardises, the vitality of the flaps. In external urethrotomy and tracheotomy the method has in his hands proved valuable. **Custer** (*Cocain-und-Infiltrationsanästhesie*, Basel, 1898) describes both the Schleich and Reclus methods at length, going into the details of the technique. He insists that failure arises from want of attention to this. **Tropacocaine**, the physiological behaviour of which was described by **Chadbourne**, is suggested as an alternative to cocaine in the infiltrating fluids.

The contra-indications to Schleich's infiltration method may be summarised as follows (*Med. News*, June 4):—(1) Whenever the limits of the disease are not reasonably definable; (2) in diffuse cellulitis requiring free incisions; (3) in cases of malignant new

growths and diffuse tuberculosis owing to the danger, pointed out by Braatz, of forcing the *materies morbi* into the lymph channels; (4) when any special attitude has to be maintained by the patient during a long time; (5) in the case of nervous persons who dread watching the surgeon's manipulations.

Eucaine.

Ver Eecke (*Bulletin of the R. Acad. of Med. of Belgium*, No. 4, 1897) sums up the results of a research upon the physiological action of this body as follows: (1) In cold-blooded animals convulsions are preceded by excitations and followed by paralysis of peripheral origin. In warm-blooded animals no paralysant action is met with. Death occurs from asphyxia. No cumulative action exists, and the organism appears to grow immune to increasing doses. Upon the heart eucaine seems to act by paralysing the intracardiac nerves as well as by acting directly upon its muscular fibres. The blood-pressure is lowered by peripheral dilatation. The respiratory centre is directly stimulated by eucaine. It increases nitrogenous, phosphorous, and chlorous metabolism. It is eliminated by the kidneys, but undergoes decomposition in the organism. It may cause glycosuria. By lessening the vitality of the red corpuscles it tends to induce fatty degeneration. While chloral checks eucaine convulsions, eucaine cannot act antidotally to chloral.

The **Hydrochlorate "B"** has been employed by **Dr. Lewis Somers** in rhinological and laryngological surgery. It is a white crystalline powder, neutral in reaction, and only sparingly soluble in cold, but more so in warm water. It remains unchanged by boiling, and thus admits of ready sterilisation. After standing for some days, a precipitate falls and the anæsthetic properties of the substance gradually disappear. He gives his conclusions as follows (*Therap. Gaz.*, Sep. 15, 1898): (1) A 3 per cent. solution produces as complete an anæsthesia of the nasal chambers as a 4 per cent. solution of cocaine; (2) it has a slower action; (3) its effects are more transient; (4) it is non-toxic; (5) it does not cause the turbinal investiture to shrink; (6) it is superior to ordinary eucaine, being less toxic, more rapid in its action, non-irritating, and requiring less of the drug to produce its physiological effects.

Eucaine is somewhat more irritating when applied locally than is cocaine, and this has restricted its use both in ophthalmology and laryngology.

Lilienthal regards eucaine as the best local anæsthetic. A 6 per cent. or 10 per cent. solution used in fifty cases of major operations gave no toxic symptoms, although in one instance he injected nine grains. He regards it as quite as powerful as cocaine, but without

causing the vascular depression to which the latter gives rise. Lilienthal, however, when operating in severe cases, especially if much time is likely to be taken up, injects a small dose of morphine previously to the application of the local anæsthetic. As he finds eucaine does not act very readily upon mucous membranes, he paints on cocaine solution before injecting the eucaine when he operates in the neighbourhood of tissues covered by mucous membrane. He points out further that the tissues vary widely in their degree of sensibility, and require more or less injection made deeply into them. Muscles give rise to little pain if cut or handled, while tendons are insensitive. Nerves cause distress if cut, handled, or clamped, as do arteries. Puncture, section, or gentle manipulation of the parietal peritoneum is painless, but rough manipulation is painful, and this applies to other abdominal structures. Inflamed bone cannot be rendered insensible save by general anæsthesia. As a rule, gr. v of eucaine is enough for even a long operation. The use of chloride of ethyl and other freezing bodies should, he thinks, be restricted to simple incisions.

Tito Costa found that warm solutions of cocaine acted very much more rapidly than cold ones. He employs a temperature of 120° F., and says that a 5 per cent. solution of cocaine kept at this temperature on a water bath gives excellent results.

Orthoform.

Hirschbruck (*Münch. med. Woch.*) injects a solution of 2 per cent. of cocaine—2 milligr. of the salt—and then injects 1 c.c. distilled water containing 3 per cent. of orthoform in solution. The syringe has to be constantly shaken, as the orthoform is merely in suspension. The substance appears to be quite free from dangerous properties. It takes effect in five or ten minutes.

Orthoform, in 10 to 20 per cent. powders, anæsthetises raw surfaces and maintains insensibility for days. **Isidor Dreyfus** (*Münch. med. Wochen.*, 1898, p. 527) varies this proceeding by first infiltrating by Schleich's method, and then powdering with orthoform.

Although at present no practical results have been obtained, it is of some interest to find that, according to **Prof. Scripture** sinusoidal currents produce anæsthesia, which persists even after the current has ceased to pass through the tissue.

Scheppegrell (*Med. News*, Oct. 1, 1898) points out the dangers of cocaine when recklessly employed. He considers it should not be used as a nasal spray nor as a hypodermic injection, as the effect cannot in such cases be controlled. Fatalities have followed gr. $\frac{1}{3}$ given as a urethral injection, and even when placed in a hollow tooth. **Grassmann** has met with a fatal case following $\frac{3}{4}$ gr. applied to the gums. Death appeared to be due to asphyxia, and to be hastened when the bodily temperature is artificially raised. **Langlois** and **Ridiet** regard the convulsions of cocaine as similar to those of cortical epilepsy. There seems little doubt that the danger of cocaine depends upon the actual quantity of the alkaloid taken, and not on the amount of the solution injected.

Schellenberg (Wiesbaden) reports that toxic symptoms followed a 2 per cent. solution applied to the nasal mucous membrane. He has met with the "cocaine habit" contracted through applications made to the nose and throat, and several following the use of cocaine snuffs.

M. Jabony has revived with apparent success the method of obtaining anæsthesia by compression of the carotid arteries.

II.—GENERAL ANÆSTHETICS.

Gibb, of Philadelphia (*Journ. of Amer. Med. Ass.*, March 5) considers a general anæsthetic should be used in intranasal operations when (1) these are major, when large growths have to be dealt with, when dissection and external structures are involved in the field of operation; (2) in cases of large bony deflections, when it is necessary to break up the septum at its base; (3) large bony spurs; (4) congenital or acquired stenosis; (5) plastic operations. For brief operations he employs **nitrous oxide**, but regards **ether** as the best anæsthetic for more prolonged cases. He insists upon the importance of posture, and gives the preference to that advocated by Trendelenburg, since in that position the blood gravitates out of the surgeon's way. When it is practicable, Gibb prefers to employ a local anæsthetic, and gives the preference to eucaine, except in laryngeal cases. In these he still uses cocaine. His method is to spray the nasal chambers with a 2 per cent. solution of eucaine to obtain tolerance. After a minute a pledget of cotton-wool, soaked in 4 to 10 per cent. of eucaine, is introduced and left in for five to ten minutes. If the operation is likely to be a prolonged one, he recommends further spraying with a 5 per cent. solution of **antipyrin**, which, although too irritating for a first application, serves the purpose of intensifying and prolonging the eucaine effect, and acts also as a hæmostatic. Ether, Gibb regards as the best anæsthetic in nasopharyngeal operations, and cautions against shock, especially in the case of children, when anæsthetics are not employed. Although **Drs. Morgenthau** (Chicago) and **Moritz Schmidt** (Frankfurt) speak well of bromide of ethyl for these operations, there seems no reason to believe

this anæsthetic is more free from risk than others which contain a haloid factor. In chronic heart disease there is certainly

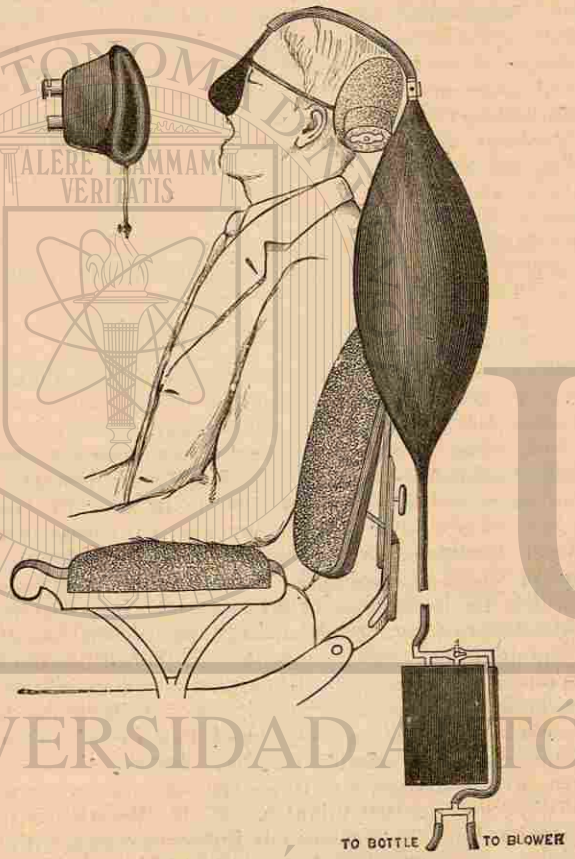

Fig. 1.—Mr. Coleman's apparatus for administration of Nitrous Oxide Gas through the Nose. When in use the face piece is applied over the face and covering in the nose piece.

danger. **Casselberry** and **Menge** (*ibid.*, p. 547), in the course of a report upon the employment of nitrous oxide with and without a mixture of oxygen, state the advantages as (1) safety; (2) no preliminary preparation requisite; (3) possibility of the

patient taking the anæsthetic in the sitting posture; (4) that it does not affect hæmorrhage; (5) saving of time; and (6) freedom from after-effects. The disadvantages they regard to be (1) cumbersome apparatus—they employ a rubber bag of five gallon capacity connected with two cylinders containing respectively nitrous oxide and oxygen which are mixed in the bag so as to give 5 per cent. of oxygen; (2) the necessity for extra assistance; (3) the necessity of rapid operating.

Prolonged operations under nitrous oxide diluted with oxygen.

Although it has been proved almost from the first introduction of nitrous oxide that the longer operations can be performed while the patient is under the influence of nitrous oxide—Paul Bert and others using this agent in major operations—yet it has been obviously impossible to conduct prolonged surgical proceedings about the mouth when nitrous oxide was used. This difficulty has now been to a great measure overcome by the following methods:—

(1) **Coleman** apparatus for prolonged administration of nitrous oxide (*Transactions of Society of Anæsthetists*, vol. i., p. 117). The patient is rendered unconscious by nitrous oxide gas given through the nose-cap (shown in Fig. 1), the mouth being covered by the face-piece represented in the figure at some distance from the face, although expiration is permitted by the valve. As soon as anæsthesia is established, the face-piece is withdrawn and insensibility maintained by the gas entering through the nose. This is found sufficient for brief operations. (2) In Fig. 2 is shown the apparatus designed by **Harvey Hilliard** (*ibid.*, p. 170). He anæsthetises by the ordinary plan; and as soon as unconsciousness is complete, by turning the lever on the gas bottle the stream of gas is deviated into the bag attached to the catheter shown in the figure, and the catheter is introduced into the nostril. In this way anæsthesia is maintained after the face-piece has been withdrawn.

Schleich's solutions for general anæsthesia.

Arguing that the rapidity with which anæsthesia is produced by any drug which is inhaled and the persistence of its action depend upon the boiling-point, or point of most rapid evaporation of the anæsthetic used, **Schleich** has suggested the employment of solutions containing various proportions of chloroform, ether, and petroleum ether. It is assumed that by altering the point of evaporation, so as to make it nearly coincide with the temperature of the body, it might be possible to regulate the intake and output of the anæsthetic vapour, so as to maintain anæsthesia without

running the risk of over-narcotism, since the elimination would in all cases be kept within manageable bounds, and accumulation of the anæsthetic into the system would be rendered impossible.

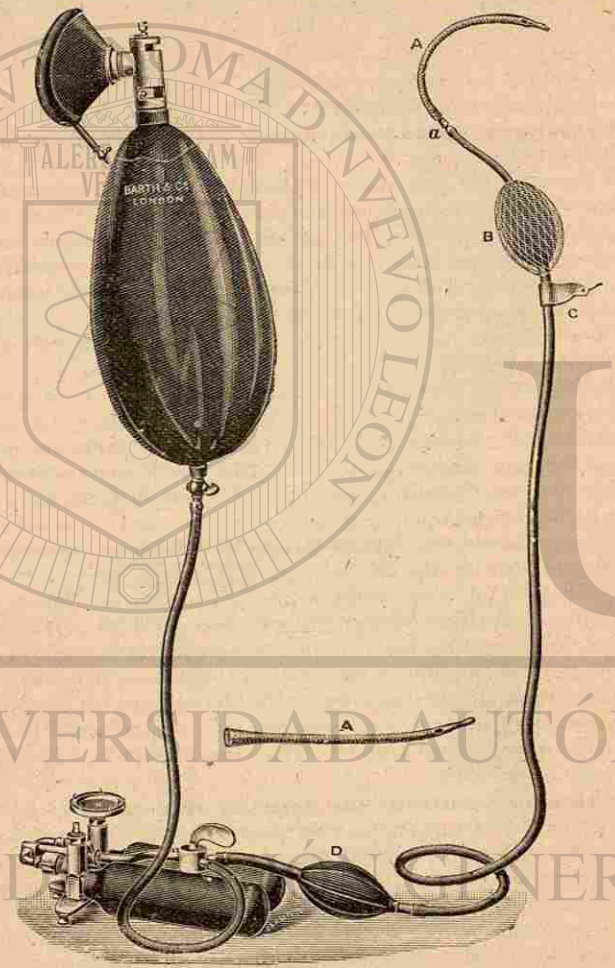

Fig. 2.—Mr. Harvey Hilliard's apparatus for prolonging Nitrous Oxide administration by a nasal tube. A, tube for insertion into nose; B, netted bag to maintain pressure; C, hook for suspension of apparatus to administrator's coat; D, expansion bag.

Schleich proposes three solutions for (1) light, (2) medium, and (3) deep anæsthesia. These are :—

	1.	2.	3.
Chloroform	45 parts	45 parts	30
Ether (sulphuric)	180 „	150 „	80
Ether (petroleum)	15 „	15 „	15
Boiling-point	38° C.	40° C.	42° C.

It is pointed out (*Therap. Gaz.*, Feb., 1898) that the petroleum ether employed must have a boiling-point between 60° and 65° C., as the common commercial kind is not free from deleterious effects when inhaled for any time. **Willy Meyer** (New York) and **Maduro** (New York) have employed the solutions, chiefly No. 3., and in their original reports appear to accept as true the experience of Schleich—that patients readily inhale the solutions from a cone or Esmarck's mask, suffer no bad after-effects, and avoid the dangers and difficulties of chloroform and ether.

Garrigues (before the American Gyn. Society, 1898) has used Schleich's solutions in 100 cases with satisfaction. Several patients had heart, lung, and kidney disease, but were not injured by the anæsthetic. He used an Allis's inhaler with the double current (chloroform) attachment. Commencing with a drop, he pours 1½ c.c. every half minute of solution No. 1. If anæsthesia is not complete in ten minutes, he substitutes No. 3. solution. ℥ss is usually enough for the induction, and the average time, six minutes. Garrigues, as well as Emil Mayer and Schleich, deny any ill effects from the solutions.

On the other hand, **Rodman** (*Med. Rec.*, Oct. 1, 1898) reports less favourably from an experience of 700 cases. Patients, he found, preferred the odour to that of ether, but thought it more unpleasant than chloroform. It took from fifteen to twenty minutes to produce anæsthesia. The closed mask he regards as a source of danger, in that the chloroform vapour given off from the solution was not diluted with sufficient air, while the solution usually trickled down over the patient's face and burned him. This could probably be avoided by care or the use of another form of inhaler. The solution, although causing some excitement, compared favourably with ether in this respect, and also produced more complete muscular relaxation. There was also less irritation of the mucous membranes. The early disappearance—presumably before true anæsthesia—of the reflexes, especially the ocular, is, Dr. Rodman thinks, a drawback, as the anæsthetist loses a valuable guide. The patients after inhaling No. 3. solution became cyanosed, the pulse slowed and grew weak, the pupils were dilated, while the respirations were less rapid, and eventually the

cyanosis became general, the breathing infrequent and shallow, and with little warning stopped altogether. This occurred in six cases which he witnessed, while in others profound circulatory depression, with heart failure, was seen. Retching and vomiting were, Rolman contends, as frequent as with other anæsthetics, nor was the return to consciousness more rapid or freer from inconvenience. Schleich appears to regard the recovery as like that of one awakening from slumber. Upon the lungs and kidneys the effects were much the same as with ether. Bronchitis, followed by pneumonia, occurred in several cases, resulting in death in some. Rhinitis and conjunctivitis were sequelæ observed, and in three healthy persons albuminuria, with casts in the urine, followed the inhalation of the solution. It would appear that after a somewhat extensive trial of Schleich's solutions their use has become very much restricted. Rodman further records a case in which heart-failure of the most pronounced nature resulted from inhalation of No. 3 solution.

Complications of anæsthesia. The circulation and kidneys.

Working with Roy's oncometer, and taking manumetric tracings of the blood-pressure, **Thomson** and **Coleman Kemp** found Schleich's solution gave a cardiac depression, quite similar to that occurring under chloroform, and renal disturbance as pronounced as with ether. Thus the urine was decreased in amount, but without complete suppression; albumin was always present. The same observers obtained the following results with other anæsthetics. With **ether** (*Med. Record*, Sept. 3, 1898) there was a marked increase in blood-pressure in the carotid arteries—increased by pushing the anæsthetic, decreased when it was lessened. Upon the kidneys a specific effect appeared to be produced, the more marked in proportion to the amount of the anæsthetic given. A pronounced fall of the oncometric curve takes place, evidencing renal contraction, associated with gradual diminution in the quantity of urine excreted, culminating in complete suppression. Albumin appeared early, even under moderate narcosis, and increased to 60 per cent. by volume under profound etherisation. These effects were at once reversed when ether was withdrawn, to return as soon as ether was again given. The behaviour of nitrous oxide was marked, but evanescent. While arterial pressure rose, due probably to struggling, no cardiac depression occurred until respiration was profoundly affected. The kidneys contracted, the urine lessened in quantity, and albumin appeared. These renal changes were quite transient, and were, the observers think, merely a local manifestation of a general arterial contraction. In the case of

chloroform, there was an evanescent rise of blood-pressure, which rapidly gave place to a fall, which the authors regard as due to the depressant action of the drug upon the heart. When the chloroform was pushed from the first, no initial rise took place. The effect upon the kidneys was an oncometric curve on a parity with the blood-pressure curve. The urine remained copious, and albumin appeared only after prolonged narcosis, and was then small in amount. With regard to the A.C.E. mixture, an interesting result of their experiments was, that when this anæsthetic was given with a large percentage of air, the effect upon circulation was the same as with ether, while chloroform effects resulted when the closed method of giving the anæsthetic was adopted. With plenty of air the urine was not so much decreased as with ether, but albumin was present. It thus appears that the A.C.E. mixture administered by the closed or semi-closed method gives a depressant effect (chloroform effect) upon the circulation and an ether effect upon the kidneys. They conclude that the ether effect upon the kidneys is similar to what occurs after ligature of the renal arteries, the epithelial cells becoming damaged and inoperative.

Legrain (*Ann. des Malad. des Org. Génito-Urin.*, No. 2, p. 191) examined the urine of fifty-four persons after chloroform narcosis of average duration of fifty-seven minutes, and of forty-one after ether narcosis with an average duration of ninety minutes. He found ten cases of albuminuria and cylindruria in the former, and fifteen in the latter; but in three of the ether cases there had been pre-existing kidney disease. Autopsies were made in two instances when ether had been given, and profuse hæmorrhagic nephritis, chiefly affecting the glomeruli, was found. Legrain undertook experiments upon dogs, which gave similar results, but which led him to conclude that the renal disturbance following chloroform was persistent and tended to chronicity, while that caused by ether was transient. This possibly is explicable by the results arrived at by **Parasporo** (*Il Policlinico*, Dec., 1897), who gave chloroform and ether for two hours daily to animals until their death on the fifth day. Examination of their bodies and of that of a woman who had died from an overdose of chloroform, revealed marked degeneration of the parenchyma of the organs, with inflammatory and necrotic changes sufficient to interfere with the performance of their functions.

Pulmonary complications.

Pneumonia following ether inhalation has been studied clinically by **Drummond** (*Brit. Med. Journ.*, Oct. 1, 1898). The temperature appears irregular in type, the bronchi are mainly and

primarily affected, patches of lobular consolidation appearing later. In the cases noted an Ormsby's inhaler was used, and the operations being prolonged, the quantity of ether taken was large. The rise of temperature in seven cases appeared within twenty-four hours. The cases in which coughing was most difficult, as from the necessities of the surgeon occurred in abdominal sections,

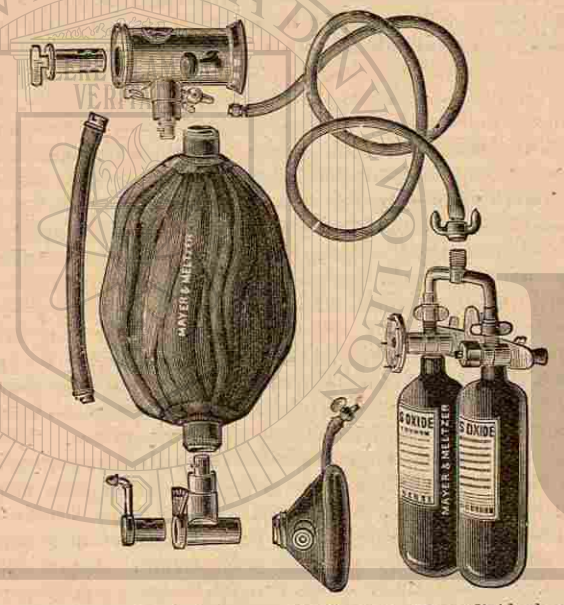

Fig. 3.—Dr. Dudley Buxton's Improved "Clover." The individual parts of the apparatus are shown disconnected. They are separated in this manner when cleansed after use. The ordinary nitrous oxide yoked bottles and attachments are figured below.

suffered most. Drummond regards the disease as due solely to the ether. Upon the other hand, **Whitney** (*Boston Med. and Surg. Journ.*, Sep. 23, 1897) contends that it is microbic in origin, and suggests cleansing the patient's mouth and pharynx carefully for twelve hours before giving the ether. He orders a final spray of peroxide of hydrogen, one in three, and douches the nasal chambers with boric acid solution. The cleansing of inhalers is also insisted upon.

In Fig. 3 is shown an inhaler made from the design of the **writer of this article** upon the lines of the Clover's Gas

and Ether Apparatus, but which takes to pieces and can be absolutely sterilised. The metal sections can be boiled and the rubber portions soaked in antiseptics. The figure shows the parts of the inhaler pulled out and ready for separation. I have found this inhaler free from the drawbacks incidental to the older patterns. The centre tube, although most pliable, is quite incapable of becoming kinked.

Silk, discussing the question of infection through dirty apparatus, points out that inhalers are probably not the seat of infection, as specific bacteria always exist in the buccal cavity, and the patients probably infect themselves, the vitality of the mucous membrane being lowered by undue cooling, caused by evaporation from their surface. It must be remembered that pneumonia was a common complication of surgical operations even before anæsthetics were in use. The **lowering** of the **temperature** during operation under an anæsthetic is doubtless a factor in producing this complication. **Allen** (*Amer. Journ. Med. Sci.*, 1898) showed experimentally that 3° to 4° fall in temperature takes place in dogs, and another writer (Editorial in *Ther. Gaz.*, May 1898) found in twenty-six ether administrations an average fall of from 2·5° F. to 4·4° F. (axilla). In another series, there was a fall of from 2·32° F. to 3·15° F. (rectal), the operations being of every degree of severity. **Rushmore** (*Ann. of Surgery*, Oct., 1898) suggests means for the prevention of dangers following the use of ether. He believes these arise from excessive quantities of the anæsthetic. Six minims of Magendie's solution (morphine, 16 gr. to ℥i) and gr. $\frac{1}{120}$ sulphate of atropine are given hypodermically not less than half an hour, or more than one hour, before the ether. In the case of children he sometimes omits the morphine, and, of course, varies the dose according to the requirements of the case. The atropine lessens the bronchial secretion, diminishes shock, stimulates the heart, and prevents suppression of urine, and he believes it acts antidotally to ether. The stomach should be left empty for three hours before the anæsthetic, and he suggests coffee should be the last nourishment taken, as being a valuable stimulant. He cautions against purgation, trusting to an enema to clear the bowels. **Scadding** (*Med. Rec*, 1898, p. 267) points out that many of the reputed cases of "ether pneumonia" are to be accounted for by exposure during and after operations. **Goldman** also regards ether complications as mainly due to careless preparation or faulty administration. He orders a cathartic, followed by a saline, one to four days before operation. If much shock or hæmorrhage is likely to result from the operation, he injects two quarts of normal saline by Wales's bougie into the colon before the operation, the patient being in a recumbent

posture. Large quantities of water should also be given for some days previously. When necessary, hot concentrated broths should be given two to three hours before the operation, and the patient kept in bed for twenty-four hours in a temperature of 80° to 85° F. before taking ether. In cases of emergency, when the stomach contains food he orders lavage. His experience is that kidney complications never follow ether, but he has seen a case of exudative nephritis improved by using ether. Goldman admits that ether, if given to saturation, may cause both pulmonary and renal complications, and urges wrapping the patients up warmly and using morphine and atropine before ether. **Rhoads** (*Therap. Gaz.*, Oct., 1897) discusses the treatment of shock under anæsthetics. He refers to the following methods of treating slight and grave complications. Retching is checked by lifting forward the lower jaw. For vomiting he orders a tumbler of hot water; and in cases of pyloric obstruction with reflux of intestinal contents, lavage. Mackenrodt's suggestion of making the patient inhale the fumes of vinegar from a cloth he finds efficacious. **Hearn** orders ℞ Sp. chlorof. ♏viij, Acet. opii ♏iij, Mucilag. Acaciæ et aquæ āā gr., and gives ʒj hourly. Rhoads uses either ♏v of a 5 per cent. solution of eucain. hydrochlor. in ʒj of hot water every fifteen minutes for four or five doses, or, failing that, ℞ Hydrarg. chlor. mit. (U.S.) gr. $\frac{1}{10}$, Cerii oxal. gr. ij, Codeiæ gr. $\frac{1}{5}$, F. charta, one every half-hour for two or three hours. This checks the formation of mucus. In persistent vomiting, when sinapisms fail, Kussmaul's method of lavage is recommended, and one or more pints of warm boric acid solution are given (gr. v to ʒj). An Ewald's tube is employed, and the stomach washed out by siphon action, the glass funnel containing the boric solution being alternately raised and lowered. The troublesome complication of thirst is best treated by copious draughts of hot water (two quarts a day) for several days before operation. **Kelly** advises enteroclysis, especially for abdominal sections. For dryness of the tongue he orders T. myrrhæ or borax, or a piece of linen soaked in glyc. ʒj, alcohol et aq. āā ʒj and kept in the mouth. Hypodermics of distilled water also are useful.

Chloroform.

The danger of using chloroform in the presence of an exposed lamp or gas has been illustrated by more than one death due to inhaling the products of the burnt chloroform, carbonyl chloride. Professor Ramsay states that chloroform exposed to air or light decomposes, and so becomes unfit for inhalation. If, however, it is well shaken with lime and carefully filtered off it becomes freed of all deleterious materials, and can be safely inhaled.

When so treated it is believed to be less liable to produce nausea, vomiting, or other after-effects. The decomposition which takes place is $CHCl_3 + O = COCl_2 + HCl$, carbonyl and hydrochloric acid. Treated with lime $CaOH^2 + COCl_2 = CaCO_3 + CaCl_2$, which fall as precipitate.

Desgrés and **Nicloux** (quoted by *Journ. of Amer. Med. Ass.*, Jan. 29, 1898) state that chloroform decomposes blood in presence of an alkali and liberates carbonic monoxide. This also takes place in the body in alkaline blood. They suggest that this fact may account for some "chloroform deaths."

Remedies for chloroform toxæmia.

Reid (*Brit. Med. Journ.*, Nov., 1897) records a case in which he injected hypodermically $\frac{1}{2}$ gr. of strychnine in three hours, and kept up respiration by faradising the muscles of respiration.

Manskowski (*St. Petersburg. med. Wochen.*, Bd. 30) has employed intravenous injections of sterilised freshly-prepared suprarenal extract in chloroform syncope. Even in doses of 15 to 30 grm. of a 1 per cent. solution it acts as a powerful contractor of the vascular system, assists respiration, and gives tone to the heart muscle. It is a powerful remedy, and must, therefore, be used with caution. This observer suggests massage of the precordium as an adjuvant measure. **Schäfer** (*Transac. Soc. of Anæsthetists*, vol. i., p. 55) spoke highly of this remedy in circulatory paralysis, and regarded it and **nicotine**, also in intravascular injections, as the most hopeful agents at present in our hands. **Chiarleoni** (*Gaz. degli Osped. e delle Clin.*, Mar. 20, 1898) records two cases of cholæmia due to chloroform inhalation. There were severe icterus, mental disturbance, and prostration, lasting for twelve days. He suggests no remedy. Probably such complications are evidence of excessive quantities being inhaled. **H. Henson** (quoted in *Sem. Méd.*, Feb. 26, 1898) gives results of experiments bearing upon the effects on uterine contractions under ether and chloroform. Henson found that after ether the uterus in five to twenty-five minutes recovered full contractility, but after chloroform fully two hours elapsed before uterine inertia was overcome. He considers that this proves that full chloroformisation lessens the expulsive power of the uterus, and favours *post-partum* hæmorrhage.

Augustus Waller (*Transactions of Society of Anæsthetists*, vol. i., p. 72), has continued his researches upon the effects produced upon isolated nerve by various anæsthetics. He finds chloroform seven times as lethal as ether. His chief contention is that by adopting a dosage system of administering chloroform, the safety of that agent can be enormously increased. He regards the

"open method" as "slap-dash," and the drop-bottle and mask as an unreliable substitute for some method such as that used by Snow and Junker. With either of these, or by Duroy's æsthesiometer, an exact quantity of the anæsthetic can be given and varied according to the requirements of the patient.

GENERAL SURGERY.

By Albert Carless, M.S. Lond., F.R.C.S.,

Surgeon to King's College Hospital, and Teacher of Operative Surgery in King's College, London.

I.—GENERAL METHODS.

On the picric acid treatment of burns.—Some amount of doubt is being cast upon the value of this method in spite of the favourable reports which have appeared from time to time. Thus, whilst on the one hand **Miles** (*Scottish Med. and Surg. Journ.*, Nov., 1897) recommends it warmly, maintaining that it is soothing, simple, free from danger, and aseptic, **Latouche** (*Rev. de Chirurg.*, Feb., 1898, p. 159) reports two cases of intoxication by its means, both of which recovered, but only after grave symptoms of vomiting and diarrhœa. Several members of the Soc. de Chirurgie related their experiences, stating that it constantly caused severe pain, and one case of death from collapse after the appearance of toxic symptoms was reported; whilst others maintained that the rapidity of healing was not appreciably increased. The possible explanation of these divergent views lies in the character of the burns which were treated. It is only suited to the first two degrees, *i.e.* to cases where the whole thickness of the integument is not destroyed. For superficial scorches without vesication it acts admirably; in treating burns of the second degree, the bullæ should always be opened and the cuticle removed, and then the picric dressing applied: in the latter class of case the action is a little less certain, and special idiosyncrasies of the patient may render it extremely painful. Picric acid should always be avoided in very extensive burns.

The cause of death after extensive superficial burns is the subject of a long and valuable report by **Char. R. Bardeen, M.D.** (*Johns Hopkins Hospital Reports*, vol. vii., No. 3). The conclusions at which he arrives are that there is not sufficient evidence for us to accept the old theories as to its causation, viz. that it is due to vaso-motor changes, or to extensive thrombosis, or to the influence of the burning on the internal organs. From clinical and experimental evidence he concludes that acute toxæmia is the real and ultimate cause, although he admits that the nature of the toxic bodies and

"open method" as "slap-dash," and the drop-bottle and mask as an unreliable substitute for some method such as that used by Snow and Junker. With either of these, or by Duroy's æsthesiometer, an exact quantity of the anæsthetic can be given and varied according to the requirements of the patient.

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their mode of action and origin are at present mere matters of conjecture. In connection with this theory an article by **Tommasoli** (*Centralbl. f. innere Medic.*, June 25, 1898) is worthy of note, in which he recommends the intravenous injection of artificial serum (*i.e.* of normal salt solution) to prevent death in such cases. The first patient upon whom this method was tried died, but a second was saved after having received injections of from 8 to 16 oz. of serum daily for a number of days. Experiments on animals also confirmed this idea: two out of six rabbits whose hind-quarters had been severely burned recovered after the use of injections, whilst four control animals without injections died. This fact is well worthy of notice; we have already, in the "Year-Book" for 1897 (p. 179), pointed out the value of such treatment in conditions of septic toxæmia in other parts of the body, and there can be doubt that similar good results would follow the use of intravenous injections in severe burns.

The treatment of inoperable sarcoma by Coley's fluid still continues, and reports of cases dealt with in this way appear from time to time in the journals. The most important of these is a communication from **Coley** himself to the American Medical Association at Denver (published in full in the *Journ. of the Amer. Med. Assoc.*, Aug. 20 and 27, 1898, and abstracted in *Med. Record*, Aug. 27). Coley has made no difference in the method of preparation of the fluid, and still considers that the addition of the micrococcus prodigiosus is desirable. Care must be taken that no living virus is present in the fluid (and it is always advisable to test every sample carefully before use), whilst the most stringent precautions as to the asepsis of the skin at the point of injection, and of the syringe employed, must be observed. It will be remembered that a case of pyæmia was published by M. Sheild in the beginning of last year as an outcome of this proceeding. **Sheild** has now published another case, in which he has utilised it with temporary advantage (*Brit. Med. Journ.*, July 23, 1898): "On each occasion the surface of the skin was carefully purified, the needle was sterilised, and the puncture made by it at once covered with iodoform and collodion. Pure carbolic acid was kept in the barrel of the syringe between the intervals of use. . . . The syringe was filled by plunging the needle through a septum of fine gutta-percha tissue stretched over the bottle which contained it. The puncture thus made was at once closed by wax. . . . During the intervals between use it was kept in a cool chamber." Coley points out that the doses should be very minute to start with, and gradually increased until reaction is obtained. The amount employed in any case varies with the virulence of the

particular sample, and with the site of injection. If the subcutaneous tissue of the trunk is employed, larger doses are called for than if injected near to or into the substance of a vascular tumour. At the same time he recommends that it is desirable to employ it locally. The method of action cannot, however, be that of a local escharotic, since some tumours have disappeared when it was merely injected into the back. Its influence must be exerted directly upon the cells of the tumour, causing them to undergo fatty degeneration and absorption. If the tumour is a firm one, of the spindle-celled type, it will diminish and disappear without sloughing, whereas a soft round-celled tumour will very probably break down and slough away, necessitating the adoption of careful antiseptic measures. If no improvement is shown in three weeks, the treatment should be discontinued. The chief dangers arise from the use of too large a dose, possibly causing collapse, and from the dangers of sepsis, unless sufficient precautions are taken. Coming now to results, Coley summarises them as follows:—140 cases have been treated by him, and of these the great majority have been proved to be sarcoma by actual microscopic examination of fragments removed; eight cases remained well over three years; well from one to three years, nine cases; well from six months to one year, four cases; recurred after having once disappeared, four cases—two of whom died, whilst two are still living in good health after further treatment. He has also been able to collect twenty-six cases treated by other surgeons, in which the tumour completely disappeared, and nine where it disappeared temporarily. Of these, three were published by **Mansell Moullin** in England (*Lancet*, Feb. 5, 1898).

One other point in this connection remains to be noted, viz. that Coley and other surgeons recommend that after operation for sarcoma, where there seems any likelihood of recurrence, it would be well to put the patient through a course of treatment for a short period, as a prophylactic measure. Of course it is difficult, or even impossible, to say whether such is of any value, since absence of recurrence might be due to completeness of operation, but there is very little risk associated with the proceeding if due precautions are taken, and it may be advantageous.

The treatment of tubercular glands.—One detail which, though old, is evidently not sufficiently recognised, has had attention again called to it, viz. that tubercular glands are due to some local cause which, if looked for, can usually be found, and which should always be treated prior to touching the glands. Thus when the glands in the neck are affected, one usually finds that there has been, or that there is present, either an enlargement of

the tonsils, adenoids, eczema of the ears or nostrils, chronic otorrhœa, or some such condition. This opinion is expressed by **Miller**, of Edinburgh (*Scot. Med. and Surg. Journ.*, Dec., 1897), as follows: "(1) Glandular enlargement has always a *cause* which should be *sought for* and *removed* if possible. (2) If the cause be not removed, the enlargement will *persist*, and such *persistence* (the open door) may give occasion to *tuberculosis*. (3) Persistent enlargement after removal of all discoverable causes generally means tubercular infection or a *pretubercular* condition; therefore all persistently enlarged glands should be excised." **Bilton Pollard** (*Clin. Journ.*, Nov. 24, 1897) says much the same thing, and one's own experience fully confirms the accuracy of these opinions.

The treatment of tetanus:—There is the usual crop of contradictory reports as to the value and efficacy of treatment by the subcutaneous injection of antitoxin. This mixture of praise and condemnation was well illustrated at the meeting of the Royal Academy of Medicine in Ireland (*Dublin Journ. of Med. Sci.*, Feb. 1, 1898). **Lund** (*Boston Med. and Surg. Journ.*, Aug. 18, 1898) discusses the whole subject, and some of his conclusions are as follows: (1) That although the statistics of the antitoxin treatment up to the present time apparently show a diminution in the mortality, they may be legitimately criticised as on the whole insufficient in number, in definiteness of reports, and as probably not including all fatal cases treated. (2) The more we study them, the less evidence do we find that the anti toxin treatment and not the mild course of the disease was responsible for the favourable results. There is no satisfactory evidence that harm has resulted from the injections. (3) There is a distinct probability that in the great majority of the total number of cases treated, the dose of antitoxin, especially the all-important initial dose, has been too small to have any possible effect upon the disease. (4) The chief means whereby we may hope to render this plan of treatment more efficacious consists in securing a stronger product, and, on the part of those who employ it, the administration of a sufficiently large initial dose, given at the earliest possible moment. The serum should be injected directly into the blood stream.

As to statistics, which (be it remembered) must necessarily be very unreliable, the latest that have been published are as follows: **Lund** (*op. cit.*) has collected 167 with 54 deaths, *i.e.* with a mortality of 39·5 per cent., against the estimated mortality of 60 per cent. without antitoxin treatment. **Weischer** (*Münch. med. Woch.*, Nov. 16, 1897) collected 98 cases treated with

serum, of which 57 recovered, giving a death-rate of 41·8 per cent. He also criticises the variability in the strength of the antitoxin sent out.

The most important step in connection with this question arises from some new experimental work published by **Roux** and **Borrel** (*Annales de l'Institut Pasteur*, April, 1898), which suggests a novel treatment for tetanus, and may have wide and far-reaching results in its applicability to other diseases. It has been long recognised that the effect of the antitoxin is preventive rather than curative. Its action in man as a curative agent is unsatisfactory and uncertain, and the explanation now suggested of this fact is that the cells of the central nervous system have a selective affinity for the toxin which they store up in their substance. The antitoxin is only introduced under the skin and circulates in the blood, and hence is unable to reach and act upon the toxin which unites chemically with the cell protoplasm. Metchnikoff has already proved the diffusion of the antitoxin through the cerebro-spinal axis by means of leucocytes, and therefore Roux and Borrel propose to introduce the antitoxin into the substance of the brain so that it may act upon the uninfected centres as an immunising agent, and thus, if the medullary centres are not already affected, it is hoped that the patient's life may be saved long enough to enable the toxic substances acting on the lower centres to work off their effects and disappear. If the medullary centres are involved in the trouble there is practically no hope of staying the course of the disease, at any rate by sero-therapeutic means.

This method of treatment has already been extended to the human subject. Three cases have been reported, of which the outcome was satisfactory in two; in the third a fatal result ensued (*Presse Méd.*, June 18; *Gaz. des Hôpitaux*, June 21; and *Méd. Moderne*, Aug. 10, 1898). The proceeding is an eminently simple one. A curved incision is made so as to expose at the centre of the flap a point 8 cm. above the external orbital process. A trephine 8 mm. in diameter is utilised; the dura mater is incised transversely, and the surface of the brain exposed, corresponding to the base of the second frontal convolution. A hypodermic needle is introduced into the brain to a depth of about 5 or 6 cm. and the injection slowly made. In the first case Roux injected into each side of the brain 1½ to 2 c.c. of dried antitoxin dissolved in 5 c.c. of sterilised water. In the successful cases the result was that the tetanic seizures ceased to involve any new regions, although the contractions in those already affected continued. Gradually these passed off, and in the first

case, which was of a very grave nature, the tetanus was practically cured in 22 days, although the patient's illness lasted for some weeks longer. In the fatal case some degeneration of the brain was found corresponding to the site of the injection. Further observations of this method of treatment will be followed with the greatest interest.

II.—SURGERY OF BONES AND JOINTS.

The treatment of fractures.—**Vitrac** (*Presse Méd.*, Feb. 23, 1898) contributes a useful article, well illustrated, dealing with the *ambulatory treatment* of fractures of the leg, particularly emphasising the value of a movable stirrup incorporated in the plaster case. The accompanying figure (Fig. 1) is a reproduction of the double splint and stirrup which he advises. It consists of two wooden limbs to pass down each side of the leg. Their length necessarily varies, but they are usually about 40 cm. long, 4 cm. broad, and 4 mm. thick; they must be made of light, though strong wood, and the outer surface is best left unpolished, so as to allow the plaster to adhere to it more closely. The upper ends have metal plates attached, which can be moulded to the shape of the tibial tuberosities. The stirrup is made of metal, preferably aluminium, so as to reduce the weight of the apparatus, and works up and down the wooden side-pieces, in which slots are cut for the insertion of screws or bolts. The centre of the sole-piece is cut out so as to reduce the weight, and the under-surface is coated with leather. The stirrup is applied loosely, whilst the plaster casing is being put on, and, of course, the plaster extends under the foot between it and the stirrup. The limb is first encased in plaster in the usual way, a firm and strong extension passing under the sole. The apparatus is applied to the outer side of this, and the upper end of it securely incorporated in the plaster case. The stirrup is then fixed by the bolts or screws at a suitable height, and when all is firmly consolidated the patient is able to walk or even run about. Thus, a child, twelve years old, was able to play about on the fifth day after a fracture of the leg in its middle third. As to fractures of the femur, Vitrac states that a similar apparatus can be employed, only longer and stronger, and with the

Fig. 1.—Splint with movable stirrup for ambulatory treatment of fractures of the leg (*Vitrac*).

malleable metal supports at the upper end much larger, so that they can be moulded to the ischio-trochanteric region. He considers, however, that the cases of fracture of the thigh which can be advisably treated in this way are few in number, owing to the weight of the apparatus, which causes it to slip down and become displaced, thus permitting movement of the fragments.

The utility of *massoge* in fractures is being more and more recognised, although some of the exaggerated statements which appeared a few years back are being discredited. One of the most sensible papers dealing with this subject is by **Buscarlet** (*Rev. Méd. de la Suisse Romande*, Dec. 20, 1897), who points out that to depend entirely on massage in fractures of the long bones is to court failure. His conclusions concur entirely with one's own opinions, viz. that in such cases a combination of the old plan of keeping the limb in splints with suitable massage and passive movement of joints, commenced at as early a date as is thought safe, will give the best results. There is no question that the bad results attending fractures of the long bones is not to be attributed entirely to the defective position in which the ends are allowed to unite, but rather to the impairment of movement of neighbouring joints, due to prolonged immobility, and to adhesions and fibroid changes occurring in muscles and their sheaths, due to the imperfect absorption and subsequent organisation of blood clot. Massage is an excellent means of assisting in the absorption of extravasations, and, of course, will prevent in a large measure the atrophy of the immobilised muscles. Hence the plan that ought to be followed is to apply light splints which can be easily removed and replaced, and then as soon as the callus is beginning to become firm, say, in ten or twelve days, or possibly earlier in some instances, the splints should be removed daily, and *séances* of massage, gradually increasing in length, should be instituted. Naturally this practice is more adapted to private cases than to hospital work, unless our students are regularly instructed in the methods of massage. **Bennett** (*Lancet*, Feb. 5, 1898) strongly confirms these statements, and follows the same practice.

When, however, we come to treat fractures involving, or in the neighbourhood of, joints, it is often found unnecessary to use any immobilising apparatus, beyond, perhaps, a sling for the upper extremity, and rest in bed for a week or two in the lower. *Colles's fracture* is one in which these principles ought to be followed very carefully; only too frequently do we see cases in which the deformity persists, and in which the movements of the wrist are subsequently much hampered, owing to adhesions of tendons and in the joint. **Corson**, of Savannah, Ga. (*Med. Record*, Jan. 15,

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1898), contributes another paper on this subject. He points out that in many cases there is not only fracture of the lower end of the radius, but also fracture of the styloid process of the ulna, and rupture of the internal lateral ligament of the wrist, as indicated by the outward displacement of the whole hand, a point especially noticeable in skiagrams. To overcome this the wrist ought to be kept for a week or more on a splint which will keep the hand adducted and at the same time allow free mobility of the fingers; but as soon as possible the splint should be omitted and only a bandage or poroplastic protection worn, which is removed once or twice daily to allow of regular massage being adopted.

As to the *open treatment* of fractures but little has to be added to what was written in the "Year-Book" last year. **Roberts** and other surgeons emphasised its value in injuries about the elbow-joint at the discussion on the subject at the British Medical Association; **Lane** contributes another lecture dealing with it (*Clin. Journ.*, April 20, 1898); and **Parkhill** (*Annals of Surgery*, May, 1898) describes and illustrates a form of bone-clamp which he has utilised with advantage. It consists of four silver-plated shafts, which are introduced into the bone, two above and two below the site of fracture. Wing-plates are fitted to the outer ends with nuts, and these are clamped firmly together by cross-plates and screws. That immobilisation of the fragments can be secured in this way seems certain, but the apparatus is somewhat complicated, and the use of so many bolts and nuts is not desirable in work that requires above all the most complete asepsis. In fourteen cases, however, satisfactory union occurred without infection.

Treatment of fractures of the lower jaw.—**Moriarty** (*Boston Med. and Surg. Journ.*, Nov., 1897) publishes an excellent lecture, delivered at the Dental School of Harvard University, emphasising the fact that in the treatment of these cases dentists ought to be ready to undertake the main part of the work, viz. the preparation of a splint to fix the fragments. He recommends that an impression of the broken jaw should be taken in plaster or modelling composition, without attempting to replace the fragments. This is then carefully sawn in two at the site of the fracture, and the lower teeth are articulated with a similar cast of the upper jaw. The two portions are then fixed together, and a vulcanite casing moulded so as to fit accurately over the teeth. In the simpler cases this is all that is required to keep the fragments in position; but in the severer, where there is a considerable tendency to displacement, he advises that small slots should be vulcanised on to the splint, into which can be inserted wire arms. These wire arms are bent at the angles of the mouth, and extend backwards below

the ears, being fixed by a bandage behind the occiput; a bandage round each arm and beneath the chin gives the pressure required to hold the fragments in position. In still worse cases, *e.g.* where the fracture is in the region of the molars, and considerable pressure is required to prevent deformity, he adds a chin-plate to the apparatus, uniting it to the wire arms by screw bolts, which can be gradually tightened up until all displacement is overcome. Of course, in a certain proportion of cases failure will follow, owing to the occurrence of septic osteitis, but the general results that have been obtained are very good.

Injuries of the elbow-joint formed one of the subjects for discussion in the surgical section of the British Medical Association at Edinburgh (*Brit. Med. Journ.*, Oct. 29, 1898, p. 1317). **Prof. Bennett** pointed out the difficulty of diagnosis in the majority of cases, and alluded to one or more types of injury which were not infrequently overlooked. **J. B. Roberts**, of Philadelphia, read an interesting paper on the same subject (published in *Phil. Med. Journ.*, Sept. 24, 1898). He maintained that the chief cause of subsequent ankylosis is the imperfect reduction of fragments, or incomplete restitution of structural relations. He laid considerable stress upon the occurrence of what has been termed the "gunstock" deformity, in which the normal angle which exists between the axes of the humerus and ulna is lost, and which may be due either to immediate displacement of one of the condyles carrying with it the forearm, or to defective development of the lower end of the humerus as a result of interference with the epiphysis. A slight degree of this deformity does not cause much loss of power, but if it is at all marked, the functional utility of the limb for carrying purposes is a good deal impaired, whilst the appearance produced is not desirable. The plan he recommends in order to fix the condyles in position is to introduce long steel nails driven through the skin in such a position as may be indicated by skiagraphy. Ordinary nails may be employed in case of necessity, but they are not as a rule sufficiently tempered, nor are their points sharp enough. In more obscure cases he recommends exploratory incisions, and advises that on the outer side this should extend between the biceps and supinator. He also considers that the limb should be kept in the extended position, as less liable to lead subsequently to ankylosis. In contradistinction to this advice, **Chiene** and others heartily commended the fully-flexed position of the forearm, especially for separation of the lower epiphysis of the humerus with displacement of the fragment backwards; all that is required is to insinuate a layer of lint to keep skin from touching skin, and then bandage the arm firmly with the hand over

the shoulder. Nothing was said concerning massage by any of the speakers, with the exception of the President, who rightly pointed out its extreme value in most of the conditions to which allusion had been made.

But little fresh has been brought forward concerning *fracture of the patella* and its treatment, although much has been written, especially since the accident to the Prince of Wales. **Lucas-Championnière** (*Journ. de Méd. et de Chir.*, Aug. 10, 1898) condemns, in a strong article, the treatment which was adopted in this case, and points out that there is very little said in text-books as to the method of treatment by massage, which he considers ought always to be undertaken, when for any reason operative treatment is considered undesirable. By this means the effusion into the joint is rapidly absorbed, the mobility of the knee and of the other joints in the limb is maintained, pain is diminished, muscular atrophy is prevented, and the patient is able to walk without immobilising apparatus in from eight to twenty days. If any operation is undertaken, the open method of Lister should be employed, "rejecting absolutely all the more or less bastard proceedings which have been presented in order to diminish the danger run." As an illustration of the benefits of massage one may mention a case reported by **Lilienthal** (*New York Med. Record*, Feb. 5, 1898) in which the patient was out of bed and walking about eight days after the accident. **Ball** (*Practitioner*, May, 1898) recommends the use of a well-annealed eight-twist steel wire rope, instead of silver; it is immensely strong and does not kink. He turns up a horse-shoe flap of soft tissues, clears the ends of the bone, raising up short flaps of periosteum and tendinous tissues on each side. The steel wire is then inserted so as to encircle the bone in the way seen in the accompanying illustration (Fig. 2); the ends are twisted together at each side, beaten down upon the bone, and covered over by suturing together the periosteal flaps. The advantage claimed for this "cerclage" is that the fragments are often very friable, and a silver wire cuts through them like cheese. A case in which this treatment was undertaken is reported, and the girl was able to walk comfortably in a month.

An important statistical paper is contributed by **C. A. Powers** (*Annals of Surgery*, July, 1898), who collates the opinions of a large number of living surgeons, and also notes the results in 711 cases of operative treatment of the patella, gathered since Dennis's paper in 1886. In the latter the death-rate amounted to 4 per cent., in the former to 1·4 per cent., *i.e.* there were ten deaths, and of these only three were attributable to sepsis. As to stiffness, this was marked in 10 per cent. of the earlier cases, but only

in 3 per cent. of the later. Powers concludes that osseous suture by an open arthrotomy gives by far the greatest percentage of complete union, and further is convinced that it is followed by the smallest percentage of re-fractures.

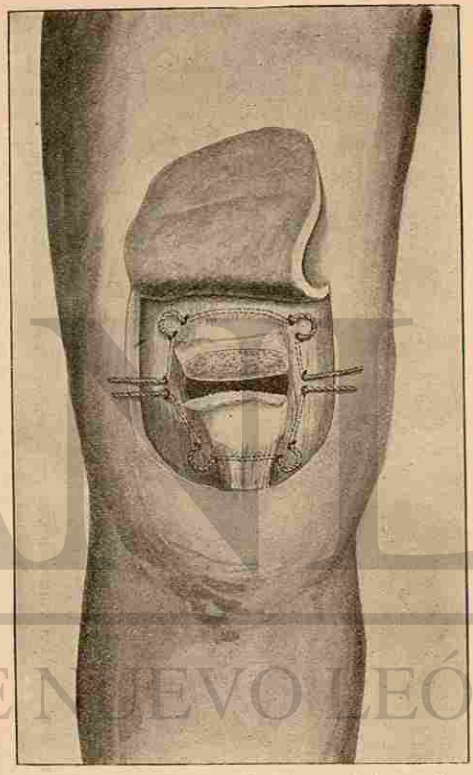

Fig. 2.—Method of introducing steel wire around the patella. (*Ball.*)

Backward dislocation of the thumb.—**J. Hutchinson, Junr.** (*Brit. Med. Journ.*, Jan. 15, 1898) maintains that the usual explanation vouchsafed by surgical text-books as to the difficulty of reducing this dislocation is not satisfactory. It is commonly stated that the head of the metacarpal bone is displaced forward and grasped by the two tendinous insertions of

the flexor brevis pollicis, somewhat like a button in a button-hole. This he considers fanciful and points out the fact that attached to the base of the first phalanx is a strong fibro-cartilaginous ligament, known as the glenoid ligament, at the ends of which are located the sesamoid bones. This ligament is detached

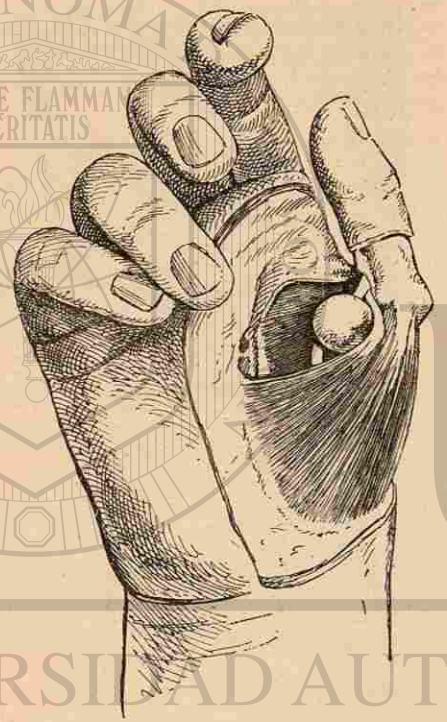

Fig. 3.—Backward dislocation of thumb, showing the tendon of the flexor longus pollicis stretched over the head of the first metacarpal. (*J. Hutchinson, Junr.*)

from its insertion into the head of the metacarpal and travels backwards with the phalanx, and either outwards or inwards according to the direction taken by that bone, more frequently the latter. In addition to this the tendon of the flexor longus pollicis is torn out of its fibrous sheath and stretched over the head of the metacarpal (Fig. 3). Should the usual manipulations fail in bringing about reduction, Hutchinson is very strongly of opinion

that no operative measures should be undertaken from the front. All that is necessary, according to him, is to divide the glenoid ligament in its centre between the two sesamoid bones, when sufficient space is gained to allow of the reposition of the phalanx. This division is accomplished from the back by a tenotome, which is introduced just behind the base of the phalanx opposite its centre, the extensor tendon being easily avoided (Fig. 4). No bleeding is caused by this little operation. Hutchinson states that on three occasions he has undertaken this operation, and reposition was easily effected in all, although

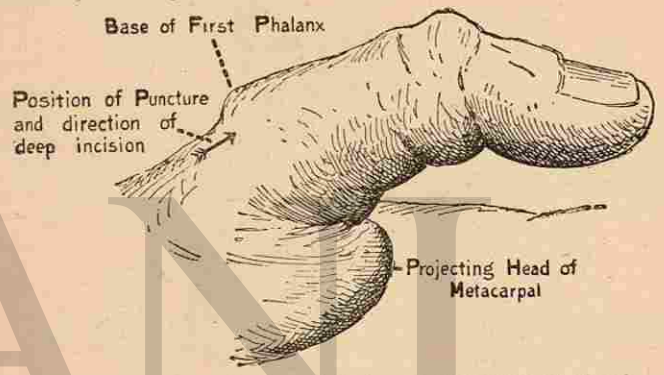

Fig. 4.—Operation for reduction of backward dislocation of thumb. (*J. Hutchinson, Junr.*)

prolonged attempts had been made previously without success. **Kammerer** (*Annals of Surgery*, May, 1898, p. 654) relates a case of this nature in which he had to operate, the incision being made on the outer aspect of the thumb. He found the long tendon tightly fixed over the head of the metacarpal, and was only able to replace this and bring about reduction by freely dividing the external lateral ligament. **Vitrac** (*Rev. de Chir.*, March, 1898) discusses, in a long and exhaustive article, the uncommon dislocations of the thumb backwards and outwards, and though admitting that the glenoid ligament is an important factor, is rather inclined to lay the greatest stress upon the displacement of the long tendon; possibly this is true for the external dislocations, though Hutchinson's paper makes it very doubtful concerning the internal forms.

Treatment of acromio-clavicular dislocation.—**Rhoads**, of Philadelphia (*Annals of Surgery*, Jan., 1898, p. 40), describes a method of dealing with the troublesome accident, by which it is

hoped that the constant tendency of the scapula to slip down from the end of the clavicle may be counteracted. A wedge-shaped pad of absorbent cotton wool rolled in a towel is placed under the arm, the apex being pressed firmly into the axilla. A folded towel is placed over the top of the shoulder, and a good pad of wool under the elbow; a strap two inches wide is then passed over the shoulder and under the elbow, and tightened; an ordinary trunk strap will do very well. The point of pressure

Fig. 5.—Method of applying dressing for acromio-clavicular dislocation. (*Rhoads.*)

must be internal to the joint so as to control the clavicle and trapezius, and a single retaining bandage passed under the opposite axilla will prevent it from slipping outwards (Fig. 5). The arm is then bandaged to the side with an ordinary roller bandage, the buckle of the strap being, however, left out so that it may be tightened up from time to time as may be necessary, without disturbing the rest of the dressing. In the particular case reported it was kept on for three weeks, and then merely a spica applied round the shoulder; a very good result was obtained.

Ankylosis of the jaw is always a difficult matter to treat, owing to the great tendency of the bony tissues to reunite consequent upon the traction of the muscles bringing the raw surfaces

into apposition after any of the ordinary sections. Esmarch's operation of resecting the angle of the jaw is not altogether satisfactory, since it forms a new joint below the insertion of the masseter and pterygoids. To obviate this it has been suggested to fix some tissue or substance between the two segments and thus prevent the osseous reunion. Two illustrative and successful cases have recently been reported. In one, **Roser** (*Cent. f. Chir.*, No. 5, 1898) excised the articular surfaces, and then interposed a thin sheet of gold moulded into shape, which not only prevented union, but also helped to keep the parts in position. A second plan was adopted by **Krajewsky** (noticed in *Cent. f. Chirurg.*, No. 10, 1898), who had to deal with a case of osseous ankylosis in a girl of thirteen due to suppurative arthritis following variola. A vertical incision was made in front of the ear, a portion of the zygoma was resected, and then the bony mass formed by the union of the condyle and coronoid process with the base of the skull was chiselled away. A flap of the temporal muscle was stitched across the interval, and the wound sutured up. The results in both cases were most satisfactory.

Interscapulo-thoracic amputation of the upper extremity.—Two successful cases of Berger's operation were reported by **Barling** (*Trans. Clinical Soc.*, 1898, p. 175), in which sarcomatous limbs were removed. One patient had perfectly recovered, the other died six months after the operation from general dissemination of the disease. Stanley Boyd and Spenser each referred to successful cases, and the general opinion expressed by members of the Society was that very much less shock results than might be anticipated from the extensive nature of the operation, and that it might with advantage be undertaken more frequently than it is. Barling also stated that, in his opinion, simple amputation at the shoulder-joint was in many cases quite insufficient for sarcoma of the humerus. Another point emphasised was that one of the chief difficulties consisted in securing the subclavian vein without wounding it, and to effect this it was advisable to remove rather more of the clavicle than Berger originally recommended.

Reference may also be made here to a paper by **Berger** (*Bull. et Mém. de la Soc. de Chir. de Paris*, tome xxiii., 1897) dealing with the question of total resection of the scapula for malignant disease. In not a few cases it is difficult to ascertain whether or not the axillary vessels and brachial nerves are involved in the mass, and it is essential that the first step of the proceeding should settle this question, as if they are encroached on at all seriously, amputation of the whole upper extremity is required.

He therefore recommends that the superior and posterior borders of the mass should first be exposed by suitable incisions, and that then the clavicle should be divided in the middle and the two ends separated sufficiently to allow the vessels and nerves to be explored. In favourable cases the deltoid is next detached from the acromion process and spine of the scapula, and the acromio-clavicular joint opened up, or the acromion sawn off. The shoulder-joint is opened and the muscles passing from the scapula to the head of the humerus are divided, whilst the coracoid process is cleared as well as the superior and axillary borders. The bone can then be turned over backwards, opening up the interspace between the subscapularis and serratus magnus, and finally the muscles connecting the posterior border to the spine are divided. This operation is a considerable modification of the old one, which dealt first with the upper border, then with the posterior, turning the scapula outwards and forwards, and opening the shoulder-joint from the front. It is certainly the plan that ought to be adopted in any case where the surgeon is not clear as to the freedom from disease of the main vessels and nerves.

Resection or exploration of the shoulder-joint.—**Oscar Wolff** (*Centr. f. Chir.*, No. 6, 1898) points out that tubercular disease of the coracoid process sometimes arises in connection with a similar affection of the joint; it is never primary, and always spreads by direct extension to the gleniod cavity and neck of the scapula. When operating on such cases the ordinary incision from the front will scarcely suffice, and Wolff therefore recommends Bardenheuer's operation. The incision is a curved one, with its convexity upwards, commencing over the coracoid process, passing over the acromio-clavicular articulation, and ending behind over the base of the acromion. The deltoid is detached from its origin and turned outwards, the acromion is sawn through behind and either removed entirely or turned forwards on the acromio-clavicular joint as an axis. The head of the humerus and the muscles inserted therein are thereby exposed, and by dividing the latter the interior of the joint can be fully explored. The head of the bone is then sawn off, whilst the glenoid cavity and coracoid process can easily be chiselled or gouged away.

Senn (*Phil. Med. Journ.*, Jan. 1, 1898) recommends a somewhat similar proceeding, differing from Bardenheuer's mainly in the position of the incision. He commences it over the coracoid process, and carries it downwards and outwards in a gentle curve as far as the middle of the deltoid, when it is continued in a similar curve upwards and backwards as far as the posterior

border of the axillary space on the same level as it was commenced—*i.e.* a point opposite the coracoid process. The semilunar flap thus marked out is dissected up as far as the base of the acromion process and reflected. The acromion is then sawn through and turned down together with the deltoid. The subsequent steps of the operation are modified according to the condition to be dealt with, but afterwards the acromion is stitched or wired into position, and the cutaneous flap sutured down. The advantage claimed by Senn over the former method is that the cicatrix does not fall over the point of the shoulder, but is below it, and thus protected from irritation and injury.

Bone grafting.—**Ricard** (*Presse Méd.*, Feb. 5, 1898) related two most interesting cases to the Académie de Médecine. In the first a woman was operated on in 1891 for a large osteosarcoma of the frontal bone, the removal of which laid bare the meninges for a considerable distance. The defect was at once made good by grafting in the iliac bone of a dog, removed at the time with every aseptic precaution. Perfect union occurred, and when the patient died five years later from general dissemination of the disease, the graft was still firm and in place. The second case was one of the so-called "saddle-nose," due to inherited syphilitic disease. Twice previously had she been operated on, and a platinum plate had been incorporated between the skin and mucous membrane, but without benefit. Ricard first operated in 1896, and removed the platinum plate, subsequently allowing the wound to close entirely. He then incised the nose in the middle line, and carefully separated the skin from the mucous membrane, taking the most scrupulous precautions not to injure the latter. Hæmostasis was effected by the pressure of a gauze plug, and during the interval the fourth metatarsal bone was resected in its entirety. Its ends were removed, and shaped up so that it might lie comfortably in the depths of the nasal wound, being wedged into a notch cut in the frontal bone above, lying in front of the rudimentary and depressed nasal bones in the middle, and behind the soft tissues constituting the tip of the nose below. The soft parts were then stitched together, and a most carefully adapted antiseptic dressing applied. The graft "took" splendidly, and the wound healed without difficulty. The patient was seen eighteen months afterwards, and it was then found that the graft had been entirely absorbed, but was represented by a rod of fibrous tissue which, though supple, was firm enough to maintain the shape of the nose, which had not become depressed in the least. Ricard's conclusions as to these cases are as follow:—(1) That grafts of living bone can be transported into the human organism without fear of elimination, given

the most scrupulous asepsis; (2) that such grafts may persist or be absorbed, leaving, however, in their place a tract of fibrous tissue whose solidity can be counted upon; (3) that autoplastic grafts do not present a greater chance of persisting than heteroplastic. **Lane** (*Clin. Journ.*, April 20, 1898) also relates a successful case of bone-grafting in a child whose ulna was developed in two portions, an upper and a lower, the ends of which overlapped and were not in contact; in consequence, the forearm and hand were becoming greatly deformed. He cut down, freed the ends, brought them into line, and spliced them together by means of a rabbit's femur split in two and laced to the fragments by silver wire. The effect of this operation on the appearance and utility of the arm was most marked.

III.—SURGERY OF THE HEAD.

Craniectomy.—The practice of turning down large portions of the skull, together with the scalp tissues, as recommended by Wagner, has led to the suggestion of many mechanical devices with the object of accomplishing this without undue loss of time or blood and without injuring the brain. Various electrical engines have been recommended, but the simplest of all the devices seems to be that of **Gigli**, a Florentine surgeon (*Centr. f. Chir.*, Aug. 14, 1897, and April 23, 1898). In the same journal **Obalinski** (No. 32, 1897) and **Baratz** (No. 3, 1898) have spoken favourably of this proceeding. **Keen** (*Phil. Med. Journ.*, Jan. 1, 1898) also describes the method, and relates his experiences, which were most favourable. The plan consists in the division of the skull by means of a saw, which consists of a piece of roughened steel wire about 35 cm. long and about 0·5 mm. or more in diameter, with a loop at each end, to which a handle can be attached (Fig. 6). Two or more trephine openings are made, marking out the limits of the flap; through this the dura mater is separated along the lines of incision and the saw introduced. The handles are then attached, and by moving the saw to and fro the skull is cut through. Keen points out that by this means the sections through the bone can be bevelled in such a way that, when replaced, the osseous flap does not tend to sink into the cranial cavity, but retains its normal level; in fact, it is only necessary, and often only possible, to effect this bevelling in the centre of the cut, but this will suffice for the purpose. It is also possible by this means cleanly to divide the inner table along the base of the flap and thus avoid the ragged rough edges which are usually left if the base is merely broken through. A number of the Gigli saws have to be kept, since after being once used they curl up, lose their rough margins, and cannot be employed again.

Codivilla (*Centr. f. Chir.*, No. 16, 1898) recommends a somewhat complicated craniotome for a similar purpose. It consists of a strong screw-like centre-piece, which is firmly driven into the skull, and upon which works a movable metal arm capable of carrying a knife for the section of the skin, or an osteotome for division of the bone. The flaps made in the bone must thus be arcs of a circle, and to perform a large craniectomy the centre-piece is fixed in three spots one after the other; by this means a trefoil-shaped flap, including almost the whole side of the head, can be removed without much difficulty. He has used it on three occasions on the living subject, and is fully satisfied with the results given. The operation was quickly over, the loss of blood was slight, and no injury accrued to the dura or middle meningeal artery. In all of these cases the application of an Esmarch bandage round the skull minimises bleeding and renders the proceeding much more rapid.

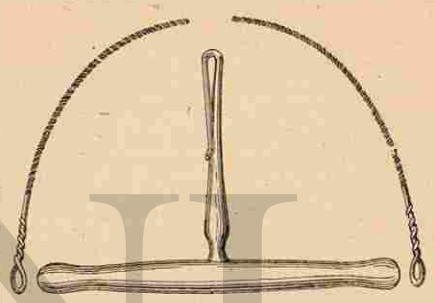

Fig. 6.—Gigli saw.

Doyen, of Rheims, related the results of his *hemi-craniectomy* cases at the German Surgical Congress (*Centr. f. Chir.*, App. to No. 26, p. 66, 1898). He has performed it on a number of cases of idiocy and microcephaly, and states that marked improvement has been noted. In his first, an idiot with Graves's disease, the child was unable to speak or even to recognise his relatives. Both sides of the skull were operated on, and in four days the goitre and exophthalmos had disappeared, whilst at the time of the report the child was able to speak and to count. Two cases of epilepsy have been free from attacks for five and six months respectively after operation. He has had one good result for Jacksonian epilepsy, the epileptogenous centre being found by electrical stimulation of the cortex and excised. Several cases of deeply situated abscesses have been dealt with, as also one case of cyst in the cortex, and one subcortical tubercular focus.

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the most scrupulous asepsis; (2) that such grafts may persist or be absorbed, leaving, however, in their place a tract of fibrous tissue whose solidity can be counted upon; (3) that autoplastic grafts do not present a greater chance of persisting than heteroplastic. **Lane** (*Clin. Journ.*, April 20, 1898) also relates a successful case of bone-grafting in a child whose ulna was developed in two portions, an upper and a lower, the ends of which overlapped and were not in contact; in consequence, the forearm and hand were becoming greatly deformed. He cut down, freed the ends, brought them into line, and spliced them together by means of a rabbit's femur split in two and laced to the fragments by silver wire. The effect of this operation on the appearance and utility of the arm was most marked.

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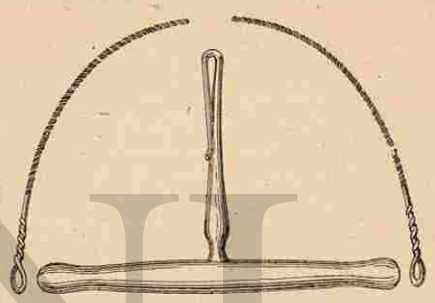

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thought that in a few cases operation might be undertaken, viz. when evidences of cortical irritation existed in the form of localised epilepsy or paralysis. In the discussion which followed, Cotterell mentioned one case which was a brilliant success, and several others in which marked improvement had occurred.

Treatment of Hydrocephalus.—**Sutherland** and **Cheyne** (*Brit. Med. Journ.*, Oct. 15, 1898) read a paper at the British Medical Association indicating a new method of intracranial drainage which they had utilised in the treatment of this affection. But little is known as to its pathology, except that there is some obstruction to the exit of fluid from the lateral ventricles. This new method is based on the observation of Leonard Hill that fluid flows directly into the veins from the subdural and subarachnoid space at any tension above the venous pressure, and hence all that should be theoretically necessary is to establish a communication between the ventricle and the subdural space. This Cheyne did in two cases by trephining in the neighbourhood of the pterion, and passing a strand of catgut through the cerebral cortex, expecting it to act as a lamp-wick and siphon the fluid off. The patients were children three and six months old respectively, and the amount of distension was great. The result in both cases was very striking. From the time of the operation all tension in the cranium ceased, the head steadily diminished in size, the interval between the bones gradually disappeared, until they actually began to overlap; after a time, however, this process came to an end. These changes were accomplished without constitutional phenomena other than a slight rise of temperature for about a week. The cerebral functions were scarcely likely to be restored completely in cases as aggravated as those operated on, but the results may be looked on as most satisfactory. One child died at the end of six months of basal meningitis, but the other at the time of report was progressing favourably. It is suggested that a catgut drain should only be used when the cerebral cortex was thinned out considerably; if the condition was less severe, and the cortex thick, some other device would have to be employed. This was evidenced in a third case of Cheyne's, where the child died a few weeks later of measles, and the opening in the cortex was found occluded by an adhesion of the dura and pia mater at the spot. Stiles, at the same meeting, mentioned three cases in which he had performed a similar operation without the slightest benefit.

Another case is reported of an attempt to cure a case of so-called acquired *acute hydrocephalus by drainage*. **Bruce** and **Harold Stiles** (*Lancet*, Jan. 29, 1898) had charge of the case, a child of

thirteen, suffering from what was evidently a basal meningitis; she was the subject of inherited syphilis, and also had renal complications. The pulse ranged from 102 to 120, and the temperature ran up to 103°; there was headache, retraction of the head and neck, severe emaciation in spite of a ravenous appetite, and various ocular phenomena. The limbs were almost completely paralysed, as also the bladder. A central trephine opening three-quarters of an inch in diameter was made over the middle line of the occipital bone; the meninges were opened, and the cerebellar lobes separated, so as to relieve pressure on the base of the brain. A large amount of fluid came away at once, amounting in all to 10 ounces. Great quantities of fluid continued to be discharged, but in spite of an early improvement the patient died, probably as much from the renal complications as from the syphilitic basal meningitis, which was demonstrated *post mortem*.

Surgical treatment of epilepsy.—A good deal of activity is being shown in attempts to relieve this terrible affection by surgical procedures. Operations upon the brain and skull have been of frequent occurrence during the past twenty years, and their value has been pretty accurately gauged. When there is any localising lesion, or if the attack commences in any particular manner, it is quite justifiable to open the skull over the spot indicated and see whether or not there is any removable abnormality, such as a piece of detached bone, or an osseous outgrowth, or dural adhesions. The fact that such conditions are often found emphasizes more than ever the importance of operating on all cases of depressed fracture, since it is extremely unlikely that when once epilepsy has been induced, operation will prove curative. Superficial tumours and cysts, whether or not of traumatic origin, may be operated on, when localising phenomena are present, but they are likely to be followed by the formation of a cicatrix in the cortex or by dense adhesions, so that although the attacks may disappear for a time, there is always a tendency for them to return. **Meyer** (*Annals of Surgery*, June, 1898, p. 770) reports such a case in which a hæmorrhagic cyst was opened over the arm centre, and 40 cc. of turbid fluid were evacuated. He had turned down a bone flap, and it was subsequently found that the bone had to be shelled out and removed, owing to the protrusion of the brain. The patient, however, did well. When the epilepsy is due to the irritation of a cicatrix in the cortex adherent to the dura, it is a question of considerable importance whether or not operation is justifiable. The wound caused by the excision of the cicatrix has in turn to cicatrise, and the condition for which operation was undertaken is thus restored, and the epilepsy is likely after a while

to return. To prevent this attempts are being made to prevent the adhesion of the cortex and superficial structures (dura, bone, or scalp) by the interposition of some non-irritating substance, such as gold-foil, vulcanite plates, india-rubber, etc. Some of the results have been satisfactory, but not all. Thus, **McCosh** (*Annals of Surgery*, May, 1898, p. 670) reports a case of recurrent epilepsy where some years previously Abbe had introduced a plate of rubber between the brain, from which he had excised a cicatrix and the superficial scalp tissues. McCosh found under the surface a dense mass of cicatricial tissue in which the remains of the rubber were to be seen; the whole mass formed a lump as large as a cherry. In this particular case there had been some suppuration at the earlier operation. On the other hand, **Curtis** (*Med. News*, July 18, 1898) relates a case in which he excised the arm and leg centres on each side of the fissure of Rolando, after tying the supplying vessels. The patient had suffered from epilepsy for some years, following an injury to one of the extremities, and always commencing in the left leg. Eighteen months after the operation the patient's general condition was good, and she had entirely recovered the use of the hand and leg. "She no longer had fits, and was in the best of health, her former cheerfulness and mental activity having been restored." In another case, Curtis opened a subcortical cyst, the result of a cerebral hæmorrhage; the cavity was stitched up, the fibrous condition of the cortex allowing this to be undertaken; twice the cavity needed to be re-aspirated owing to the appearance of serious epileptiform seizures, but finally freedom from convulsions was established, although bromides had to be employed.

Another type of treatment undertaken for epilepsy is that of *ablation of the cervical sympathetic chain*. **Jonnesco**, of Bucharest (*Médecine Moderne*, Oct. 29, 1898), reported to the Association Française de Chirurgie that he had operated on forty-five epileptics by removing the sympathetic chain on both sides *in toto*. Six died more or less in consequence of the operation, and of the thirty-nine remaining some were too recent to be considered, and others had been lost sight of. Eighteen remained for statistical purposes, and of these ten were quite cured, six were improved, and only two failures were noted. Of the cases cured, five had been free from attacks for two years, one for a year and seven months, three for fifteen to eighteen months, and one for six months. These results are very satisfactory, and Jonnesco seeks to explain them by a modification in the cerebral circulation.

Traumatic insanity and its surgical treatment formed the subject of an interesting paper by **Damer Harrisson** (*Liverpool Med.-Chirurg. Journ.*, July, 1898, p. 243). He emphasizes the point that it is not altogether uncommon to see cases of true insanity following head injuries, and gives statistics to show that in over 62 per cent. of such cases a depressed fracture was noted at the time of the accident, and in only one-seventh of them had operation been undertaken. Only a limited number of the cases are open to operative treatment, which is indicated when there is any distinct or definite focus of depression or injury. He reports in the paper three cases which he had dealt with comparatively recently. In the first the bone was nearly an inch thick, and there was a considerable collection of serum, both beneath the dura and in a subcortical cyst. The patient recovered perfectly, and there has been no return of the insanity for a period of over nine years. In the second there was merely a considerable development of adhesions between the dura and the cortex, and the separation of these sufficed to clear up the case, although convalescence was a little delayed by a collection of serum beneath the dura, which was left to be absorbed by natural processes. In a third case all that was done was to remove a portion of bone from the region where the patient had been severely injured a few months before. Although before the operation he had had several attacks of violent suicidal mania, his mental equilibrium was restored entirely and immediately.

IV.—SURGERY OF THE BREAST AND THYROID BODY.

Tubercular disease of the mamma.—An editorial appears in the **Journal of the American Medical Association** (July 23, 1898), dealing with this subject relative to four cases which have been recently reported. It appears that only about eighty cases of tubercular affections of the breast have been recorded in all, and of these bacteriological evidence was absent in twenty-three. The disease commences during the period of functional activity, usually not later than the age of thirty-five, and not infrequently has supervened during lactation. Infection is derived either from the nipple through the milk ducts, or through an open wound, or else the disease is secondary to tubercular foci in the neighbourhood. Pain is early and severe, and the patients have several times applied for treatment not so much on account of discharging sinuses or the presence of a swelling, as for the relief of pain. Scattered nodules develop throughout the organ, usually several in number, and these sooner or later break down and lead to open sores, the breast, perhaps, becoming riddled with sinuses. The diagnosis is likely to be uncertain, apart from bacteriological examination of the pus

or granulation tissue, or from the association of other evidently tubercular lesions. As to treatment, it is important to note that curettage of abscesses or sinuses is not considered satisfactory, and the total removal of the infected area, breast, axillary contents and glands, is recommended, although at the same time climatic and constitutional treatment must not be forgotten.

Mastopexy.—An interesting article appears in the *Médecine Moderne* (Sept. 28, 1898), dealing with a proceeding which apparently has not hitherto attracted much attention. A young actress applied to **Verchère**. of Paris, owing to the fact that her breasts were undergoing hypertrophy to a certain, not exaggerated, extent, and in consequence were dragged downwards by their weight to such a degree that she was unable to support them satisfactorily by any corset that she had tried; moreover, their weight caused a considerable amount of dragging pain. The only plans hitherto suggested for this trouble are amputation and the fixation of the organs by a transverse incision along their upper border, in such a way that when cicatrisation has taken place they are slung, as it were, from this transverse cicatrix, a plan recommended and practised with success by Pousson, of Bordeaux. Naturally, neither of these suggestions was agreeable to the patient, who had to appear in public considerably *decolletée*. Verchère, therefore, devised a proceeding whereby the breasts could be fixed upwards, but without showing any cicatrix. The patient was laid on the back with the arm extended outwards. An incision was then made, reaching from the apex of the axilla nearly horizontally forwards to the outer margin of the pectoral muscle; a second incision was carried downwards, almost vertically from the anterior extremity of the former to the lower border of the breast; and then a third incision was made across the axilla, connecting the two ends of the former and thus marking out a triangular flap of skin which was totally removed, together with all the cellular tissue down to the thoracic wall. This left a gap nearly as large as the palm of one's hand, and by a little undercutting the margins of this wound were brought together so as to leave a Y-shaped cicatrix. The effect of this proceeding was to lift up the breast and displace it externally to a slight degree, the nipples necessarily looking somewhat outwards instead of forwards; the organs were practically fixed to the summits of the axillæ by strong cicatricial bands. The outcome of this operation was most satisfactory.

Dermatitis maligna of the nipple (*Paget's disease*).—**M. Sheild** (*Clin. Journ.*, Sept 28, 1898) showed a case of this nature to the Dermatological Society of London, in a woman aged thirty-six; the disease had lasted eighteen months, and the area involved was

not greater in size than a shilling. At the same time it was very typical; a red, raw, weeping surface existing, whilst the parts were thickened on being felt between the finger and thumb. All the members of the society agreed that the whole breast should be excised, and this fortunately the patient agreed to. It was found that there was marked proliferation of the deeper layers of the skin, and also that the lining cells of the ducts had commenced to undergo a similar change, although there was no cancer actually present. This is a very important case as illustrating what the correct treatment of this affection should be, and also because it indicates that even in a very early stage changes in the breast itself are likely to occur; in fact, if it can thus be dealt with early, one is operating on a pre-cancerous condition. The thickening of the affected tissues when felt between the finger and thumb is a most important diagnostic sign.

As to the *treatment of cancer of the breast*, no very great advance has been made. We are getting to the end of our tether as regards modifications of operative treatment, and it seems likely that our results are as good as they are ever likely to be, until the day arrives when diagnosis can be established at an earlier date, and patients are willing to submit themselves to examination and operation without waiting for months in suspense and hesitation as to the nature of a lump in the breast. A few points may, however, be noted here. One very distinct improvement in the operative technique has been suggested during the year by **Cotterell** (*Brit. Med. Journ.*, Feb. 12, 1898), viz., that the after-treatment should be conducted with the arm at right angles to the side, and not tightly bound down to it, as has been almost invariably the custom; and to this end he devised a splint, whereby the arm can be kept in the fully abducted position without discomfort. It is wonderful how free are the movements of the arm after such treatment. I have now utilised this plan many times with the greatest advantage, although I have never seen the necessity of the splint; all that is required is to lay the arm in the fully abducted position on a pillow, to which it is fixed by a towel passing over it. Of course, now and then cases occur in which such treatment is at first impracticable, owing to the amount of tissue which has been removed, but even then it is usually possible to get the arm into this position before many days have elapsed. Another advantage derived from this plan is that the dressings and bandages can be much more firmly applied, and that thus drainage is not so urgently required as was often the case under the old *régime*.

Oöphorectomy for inoperable cancer.—**Cheyne** (*Brit. Med. Journ.*, May 7, 1898) reports two cases in which he had tried this plan of treatment. In the first, there was distinct retrogression of the tumour for a time, but about seven months after the operation growth commenced again, and the disease then ran its usual painful and rapid course. In the second case there was not the slightest effect produced by removing the ovaries. Both patients were young women with their ovaries in full functional activity. Cheyne admits that there must be some connection between the ovaries and the mammary epithelium, even when the latter has taken on cancerous activity, and suggests that possibly the question of the amount of tissue left to be absorbed may have some influence in the case, and therefore it would be well to remove as much of the cancerous material as possible.

Amputation of the arm for recurrence of cancer in the axilla.—**J. B. Roberts** (*Annals of Surgery*, Jan., 1898, p. 111) comments on the fact that the present extensive operation leads to recurrence rather at the apex of the axilla than in the neighbourhood of the wound. The recurrent growths therefore are almost always in close proximity to the axillary vessels, and it is no unusual thing to have to ligature the axillary vein, either completely or in part; even then the artery and nerves may be implicated, and there is no certainty that the cancerous material has been completely extirpated, whilst the supervention of chronic lymphatic œdema is not an uncommon sequela. Simultaneous ligature or excision of both artery and vein would in his opinion be almost equivalent to an amputation, and therefore he puts forward a plea that disarticulation at the shoulder-joint should be promptly performed in malignant disease of the apex of the axilla occurring after the usual thorough extirpation of mammary carcinoma. He instanced a case of this nature in which he had contented himself with dissecting away the tissues around the vessels; amputation would at the time have been practicable and easy, and the chances of a cure would have been considerable; the disease has again recurred, and in such a situation that amputation is out of the question. Roberts's idea did not meet with a very great amount of approval at the hands of the members of the Philadelphia Academy of Surgery, before whom it was promulgated. That there is a place for amputation of the arm in the treatment of cancer of the breast cannot be denied; when the arm has become infiltrated and swollen as the result of lymphatic œdema, and the patient can do nothing with this log-like appendage, there can be no question as to the propriety of removing it, if only to allow the patient to get about and to free her for a time of part of her pain, even though there may seem but little chance of curing her. **C. T. Dent** (*Trans. Royal Med.-Chi. Soc.*, London, 1898, p. 221) relates a case where he went even further, and removed not only the arm, but also the scapula and outer half of the clavicle according to Berger's method for a recurrent duct cancer, which had encircled the main axillary vessels and nerves, and had invaded the coracoid process. The patient did very well, and left the hospital much relieved.

It is impossible to summarise a tithe of the material which has appeared during the year concerning the ordinary operative treatment of scirrhus mammæ. There is not the slightest doubt that the results now being obtained are much superior to those seen formerly, and that in the hands of skilful operators 40 or 50 per cent. of real cures should be obtained. At the same time, it is abundantly obvious that the more complete local extirpation of the growth is leading to a smaller percentage of local recurrences, and that glandular and internal complications are those which appear most frequently, and are responsible for the majority of the fatal results. One of the most sensible communications of the year is from the pen of **Matas** of New Orleans (*Phil. Med. Journ.*, Sept. 17, 1898), who emphasizes in particular the impossibility of determining the direction in which lymphatic infection is occurring, whether by the usual axillary route, or by way of the mediastinal or supraclavicular glands to which some of the lymphatics of the breast run directly. For this reason he objects, and rightly so, to the use of the terms "complete" or "radical" as applied to the operations for the removal of scirrhus. At the same time he admits the value of the extensive proceedings now practised by Haltsted and others, quoting the statistics of the former, that in only 22 per cent. of his cases did local or regional recurrence occur. He considers, however, that in advanced cases such an operation offers no more prospect of cure or chance of escape of internal metastases and secondary recurrences in the neck than the older and less mutilating proceedings. In this connection the *discussion at the Medico-Chi. Soc.*, London, of Sheild's paper on Immunity and Latency after operations for cancer of the breast (*Trans. and Proc. Med.-Chi. Soc.*, Jan. 25, 1898) was instructive. The author had collected a number of cases in which permanent cure had followed from an admittedly incomplete operation, and a number more were mentioned during the discussion. Of course, this merely proves that out of the enormous number of patients operated on by the eminent surgeons who took part in the discussion, fortune had favoured a certain small number. Many most unscientific opinions were educed

from men who ought to have known better, and the ultimate outcome was to suggest that Volkmann's three years' limit could not be absolutely taken as a test of a "cure," and that the more thorough the operation the better the results were likely to be. In his recent work on *Diseases of the Breast* (*Macmillan and Co.*, 1898, p. 406), **M. Sheild** lays down the following rules for guidance, founded upon a careful consideration of London practice by the more junior surgeons at the present day, and to them one is fully inclined to accede:—1. On no account are operations of a partial or incomplete character to be undertaken, unless in some exceptional cases of cancer in an accessory mamma quite free of the breast. 2. The axilla is to be opened in every case, and the pectoral fascia and all obtainable glands are to be removed. 3. The removal of a large area of skin with both the pectorals is reserved for advanced cases; the operation is yet on its trial, and the majority of operators do not adopt it in ordinary cases, where no axillary infection can be detected. Sheild himself is inclined to remove both pectorals in all cases where the axillary glands are notably involved.

The surgical treatment of goitre.—**Reverdin** (*Gaz. des Hôpitaux*, Sept. 24, 1898) has an interesting paper dealing fully with this subject, excluding, however, the malignant variety and Graves's disease. He classes the indications for operation under three headings, viz. those done for urgency, necessity, and *de complaisance*. *Urgency* can be claimed for only two conditions, viz. menacing dyspnœa or septic complications; the former is usually due to pressure on the trachea or the laryngeal nerves, or to the presence of retro-sternal prolongations of the growth. Under such circumstances a tracheotomy is essential, but it is not always an easy matter. The writer has had a case where he was called on to operate suddenly for such a complication; a median lobe growing from the isthmus was readily enucleated, but its removal apparently allowed the two halves of the enlarged thyroid to fall together and complete the occlusion of the flattened and displaced trachea to such an extent that even when that tube was found and opened, a tracheotomy tube was only inserted after so much difficulty and delay that the patient was dead ere it was accomplished. Operation may be looked upon as an act of *necessity* for many reasons:—(*a*) For functional troubles more or less grave which do not yield to medical treatment; (*b*) for dyspnœa, more or less persistent; (*c*) for dysphagia; (*d*) for circulatory troubles, whether cardiac in origin or due to compression of the main vessels in the neck; and (*e*) for toxic disturbance probably due to absorption of excessive or vitiated

hyroid extract. Another cause of necessary operation is the rapid and continuous growth of the mass in spite of treatment. Finally an operation *de complaisance* is perfectly justifiable when undertaken for cosmetic effect.

As to the exact method to be adopted in operating, there has been some little discussion. An article dealing with the point is contributed by **Wormser** (*Rev. de Chirurg.*, No. 4, p. 308, 1898) claiming, and rightly so, that Kocher's plan of thyroidectomy is to be preferred to that of intraglandular enucleation, except in a few cases. It may be as well to add here the conclusions drawn up by Kocher as to the choice of operation. Thyroidectomy is indicated:—1. For malignant tumours of the gland. 2. For acute and chronic inflammation. 3. For diffuse parenchymatous hypertrophy. 4. For polycystic goitres. 5. For goitres with multiple adenomatous nodules. Intraglandular enucleation (sometimes known as Socin's operation) is indicated:—1. For unilocular cysto-adenoma. 2. For isolated nodules of adenomatous material, embedded in the normal tissue, if they can be got at easily and without much bleeding; otherwise thyroidectomy should be undertaken. 3. For large nodules scattered through immobile goitres.

Reinbach (notice in *Centr. f. Chir.*, No. 41, 1898) relates the experiences obtained in Mikulicz's clinique with the use of thymus extract in the treatment of ordinary goitres. Fifteen cases were treated in this way, eight with thyroid extract and two with thyroiodine. It was demonstrated that thymus extract had a distinct influence in diminishing the size of the goitres in some cases, though nearly a half were unaffected. Adenomata and cysts were uninfluenced, as they are by thyroid extract. None of the cases were cured, and most of them required subsequent operation, but the remedy did no harm and gave rise to no unpleasant results. This contrasts favourably with the thyroid treatment, since it is found that heart failure is not uncommon after its exhibition. On the whole the effect of thymus treatment was thought to be greater than when thyroid extract was employed.

Thyroidectomy in Graves's disease.—**Paul**, of Liverpool (*Brit. Med. Journ.*, Jan. 1, 1898) narrates two cases in which he operated recently; in one a fatal result ensued from the acute train of symptoms which is considered to be due to acute thyroid toxæmia, and which usually destroys life within forty-eight hours of the operation, and in the other the patient recovered after a severe attack which for some time looked like being fatal. In the former case it was found *post mortem* that there was a want

of healing action in the wound, and the fluid contained in it was of a very watery character; there was no suspicion of septic changes. The divided section of the isthmus appeared quite fresh, as though repair had not yet commenced. The other organs were comparatively healthy except the liver. In the second case, which occurred a fortnight after the former, the patient passed into a very serious condition within twenty-four hours of the operation. The temperature ran up to 101°, and subsequently reached 104°; the pulse was 128, and she became very restless. The dressings were early removed, and the wound was seen to be discharging freely a thin watery fluid; on cutting the stitches more of this fluid escaped. The cavity was left open and packed with dry salicylic wool. For twenty-four hours her condition seemed precarious, and during this time the packing of the wound was changed as often as it became wet. By this means distinct improvement came about, and convalescence was gradually established. In considering these cases, Paul noted that in his earlier operations nothing of the kind had been seen, and concurrently with this remembered that he had formerly been very careful not to squeeze or handle the gland until he had secured the main vessels, whilst latterly he had been in the habit of controlling hæmorrhage, which is often very considerable, by grasping the organ. "I take it that squeezing the gland may help to liberate secretion contained in the follicles, and that the same may escape into the wound from the lymphatics in the divided capsule round the severed isthmus, the lymphatics being the normal channel for absorption of the secretion." He advises that in operating for Graves's disease, the isthmus should first be freed, ligatured and divided, and until this has been done the greatest gentleness should be exercised in handling the gland. The lobe to be removed should then be separated from within outwards, with only the slightest possible degree of handling. On the first onset of symptoms, the wound should be freely opened up, and packed with dry wool or gauze, so as to prevent absorption of the secretion from the raw surfaces. **Booth**, of New York (*Med. Record*, Aug. 13, 1898), reports eight cases dealt with by thyroidectomy, of whom one died, five were cured, and another was improved, but had been operated on too recently to have reached the point of maximum benefit, which is always somewhat delayed. The order of improvement noted by Booth corresponds with that observed by others, viz. first the goitre diminishes, next the nervous symptoms disappear, then the pulse-rate and vaso-motor phenomena improve, and the exophthalmos last of all.

No further records of importance have been forthcoming in

the treatment of Graves's disease by total excision of the cervical sympathetics. Old statistics have been dished up by Jaboulay and Jonnesco, but nothing new has been added.

V.—SURGERY OF THE VASCULAR SYSTEM.

The treatment of aneurysm by extirpation forms the subject of a valuable lecture by **Pearce Gould** (*Clin. Journ.*, July 20, 1898), in which he contrasts it with that of proximal or Hunterian ligature, under four headings:—1. The operation itself is more difficult, and sometimes impracticable; the rapidity of the Hunterian method may be a matter of importance in weakly subjects. 2. As to the mode of cure, it must be remembered that the "irreducible minimum" required is the total occlusion of the vessel at the site of dilatation. This is brought about in the Hunterian proceeding by indirectly influencing the circulation, but in extirpation it is the direct result of the operation. This point may be illustrated by a case reported in the *Brit. Med. Journ.* (Dec. 25, 1897), by **W. M. Willis**, in which a popliteal aneurysm was apparently cured by ligature of the femoral at the apex of Scarpa's triangle, and yet five years later the sac refilled, forming a tumour which simulated, and was supposed to be, a sarcoma, requiring extirpation for its cure. 3. The interference with the circulation in the limb varies considerably in the two operations, and the variation is not in favour of the Hunterian method. When an aneurysm is extirpated, the circulation is interfered with at one spot alone, viz. where the sac has been removed, and the very removal of the sac may assist in establishing the collateral circulation by removing a cause of pressure upon the collateral trunks. In the Hunterian proceeding the blood stream is cut off at two different levels, viz. at the site of ligature, and again in the aneurysm, whilst the presence of the consolidated sac may interfere with anastomotic branches. This is especially the case in the popliteal trunk, where the articular branches are important anastomotic connections, and hence gangrene is more frequently noted after ligature of the main trunk than after extirpation. 4. As to the range of applicability, the advantage is still on the side of extirpation, since it may be utilised in cases where ligature is attended with great difficulty or danger, as also for leaking or ruptured aneurysms when the Hunterian proceeding is inapplicable.

In confirmation of the views expressed in this lecture, two cases of importance may be referred to, in which extirpation has been employed for aneurysms of the external iliac and subclavian arteries respectively. **Dollinger** (*Pest. med.-chi. Presse*,

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In confirmation of the views expressed in this lecture, two cases of importance may be referred to, in which extirpation has been employed for aneurysms of the external iliac and subclavian arteries respectively. **Dollinger** (*Pest. med.-chi. Presse*,

No. 49, 1897) operated on a man, aged 32, who had suffered from pain and swelling in the right groin for two years. The mass was pulsatile, and extended from just above the line of Poupart's ligament for 2½ in., and was 1½ in. in breadth. The patient could not stand the pain of digital compression, and the idea of tying the common trunk was not liked; the existence of a well-marked collateral circulation also favoured the idea of extirpation. An incision was made parallel to Poupart's ligament, and the peritoneum pushed forwards sufficiently to enable a ligature to be applied to the trunk, about an inch above the sac; the narrowed common femoral was next tied below, and the sac was then easily removed. The patient did well and made a good recovery.

Moynihan (*Annals of Surgery*, July, 1898, p. 1) relates a case of subclavian aneurysm treated in the same way. The sac extended from the outer border of the scalenus, and was apparently about as large as a hen's egg. The method of operating employed was as follows:—A large curved incision was made with its convexity downwards over the centre of the clavicle, and the flap thus marked out was dissected up. The clavicle was cleared at each end, drilled in four places to carry silver wire, two holes at each end, and divided between the drill holes. The attachments of the sternomastoid to this portion were divided, and the central part of the clavicle was thus easily turned down and held out of the way. The aneurysmal sac was thereby freely exposed, and cleared up to the border of the scalenus anticus. A ligature was passed round the second part of the trunk, exposed by gently pulling aside the scalenus, and a fourfold strand of fine catgut was tied tightly around it. Another ligature was applied just above the sac, but outside the former, and the vessel was divided between the two. It was then a simple matter to free the aneurysm entirely, as far as the first part of the axillary, which was secured by a triple strand of catgut. The clavicle was replaced and fixed in position by sutures passed through the drill holes, and the wound was then closed. Unfortunately, the further history of the case was complicated by the presence of sepsis, and the ultimate outcome was that the subclavian trunk gave way and the innominate had to be subsequently tied, a proceeding from which the patient, more or less exhausted by previous hæmorrhages, never rallied. There are several points worthy of notice in this case. The method of reaching and exposing the artery was novel, but commends itself as extremely valuable; the chief risk is in the possibility of wounding the subclavian vein which lies nearer to the bone than the artery; it must be well protected by the insertion of a spatula behind the bone when the drill is being employed. In 1897 it was pointed out that the application of a tight ligature to this vessel is dangerous, and it seems probable that the secondary hæmorrhage in this case was partly due to that fact and partly to the existence of sepsis. Had the Ballance-Edmunds method of ligature been employed and sepsis avoided, I see no reason why the operation should not have been successful.

Two other cases of *ligature of the innominate artery* have been reported during 1898, neither of them successful, unfortunately. In **Gay's** case (*Med. and Surg. Reports of the Boston City Hospital*, 1897, p. 296) failure resulted from omitting to tie the common carotid together with the innominate, and from the fact that wound infection occurred, owing to a defective steriliser having been employed for the silk. In the second case (**Schumpert**, *Medical Record*, Sept. 3, 1898) failure was due to cerebral softening. The vessel was tied close to the aorta with a strand of braided silk, drawn tight enough to occlude the vessel, but not to wound the coats. Death occurred on the ninth day, and at the autopsy the ligature was found lying quietly encapsuled.

Two cases of *ligature of the first part of the subclavian*, one on each side of the body, have also been reported. **Schumpert** (*op. cit.*) operated on the left side, and claims that it is only the second operation of the sort that has ever been attempted. The case was fully successful. **Curtis** (*Annals of Surgery*, April, 1898, p. 540) operated on the right side; the inner end of the clavicle was cleared and turned outwards, and the vessel secured about an eighth of an inch from the thyroid axis by two fine catgut ligatures placed in close approximation.

Distal ligature in the treatment of aneurysms forms the subject of two interesting papers by **Heath** (*Brit. Med. Journ.*, Feb. 19, 1898), and **Le Dentu** (*Presse Méd.*, March 2, 1898). In both it is admitted that this proceeding is applicable only to aneurysms of the aorta or occasionally of the main vessels of the neck, and they relate at length some of the results that have been obtained. The method of cure in aneurysms of the root of the carotid seems somewhat difficult to explain, but Le Dentu suggests that it is largely due to an aspiratory influence exercised by the current of blood passing through the aorta upon the stagnant blood lying within the *cul-de-sac* formed by the ligatured carotid, so that the vessel is emptied and allowed to contract. A case has recently been reported by **Cheyne** (*Brit. Med. Journ.*, Oct. 22, 1898) in which he tied the left carotid for an aneurysm of the aorta, but the patient died of cerebral embolism. Another case has been

under the care of Prof. **Rose** and **myself** (*Brit. Med. Jour.*, Dec. 3, 1898), where we had occasion to tie first the common carotid and then the subclavian, both on the left side, for aneurysm of the aorta involving the root of the carotid, and, possibly, of the subclavian. The result in this case proved everything that could be expected or desired; the dyspnœa and pain both passed away, and the patient is able to get about again in comparative comfort. Of course the aortic dilatation persists, but the pulsation is less forcible than formerly, and had nothing been done it is probable that the patient would long ago have died.

Aneurysm of the abdominal aorta treated by introduction of gold wire and electrolysis. **Noble**, of Philadelphia (*Phil. Med. Journ.*, June 25, 1898), relates a case in which Stewart's plan of treatment (commented on in the "Year-Book for 1898," p. 189) was applied with brilliant success to an abdominal aneurysm. The patient was an Englishman, thirty-seven years of age, who had suffered from syphilis fifteen years previously, and who came under observation for acute abdominal pain of a boring character, together with severe gastric disturbance. On examination of the abdomen an aneurysm the size of a large fœtal head was found midway between the ensiform appendix and umbilicus. Treatment by rest, iodide of potassium, opium for the relief of his pain, and the administration of nourishing food in small quantities frequently repeated seemed utterly unavailing, and the patient gladly agreed to operation. The abdomen was opened, and the aneurysm exposed by separating a number of adhesions. A small cannula was introduced into the sac, blood spurting out of it to a distance of several feet. Eight and a half feet of hard drawn No. 30 gold wire were introduced into the sac, and the positive pole of the battery was connected with the end of the wire, the negative with a clay plate beneath the patient's buttocks. Electrolysis was maintained for about thirty-seven minutes, the current being gradually increased until it reached 70 milliampères, at which it was kept for six minutes. By this time the pulse was very rapid, and the patient's condition not at all good. The wire was cut short, the cannula withdrawn, the abdomen closed, and the patient put back to bed, the operation having occupied two hours and ten minutes. "There was no pain after the second day, and improvement was rapid. The pulsation in the stomach of which the man had complained so much before disappeared entirely, and he was able to retain nourishment without difficulty. He was kept in bed about eight weeks, and when discharged the mass had lessened to the size of a small orange, and gave no pain. The man returned to his home apparently well." This is the eleventh case on record

of treatment of aneurysms in this way, and we cannot but feel that it is a valuable addition to our means of dealing with some of the more hopeless cases of this terrible affection.

Wounds of the thoracic duct.—The extension of operative procedures for carcinoma of the breast into the supra-clavicular fossa is responsible for a number of cases of this type, and it is important not only to remember its possibility but also to recognise how it may be treated should it unfortunately occur. Four new cases are reported from America during 1898 (*Annals of Surgery*, June and August, 1891, pp. 719 and 229), and five by **Wendel** (*Deut. Zeit. f. Chirurg.*, Bd. xlviii., p. 437). It must be remembered that the main thoracic duct communicates with the venous circulation in the so-called *angulus venosus* at the junction of the left subclavian and jugular veins. Wendel has made a number of careful dissections and confirms what has already been pointed out, viz. that it is the usual thing for the duct to terminate, not in one main branch but by a number of smaller trunks, and thus it is possible for one or more of these to be injured, giving rise to an escape of chyle, and yet on tying or otherwise stopping the flow, no evidence of lymphatic obstruction occurs. Wendel also states that there is sometimes a communication between the thoracic duct and the vena azygos major, as also with the renal vein, a condition found in four out of twenty-nine observations. As to the treatment to be employed for an accident of this type, should it be recognised at the time of operation—if the wound in the trunk is longitudinal it may be practicable to close it by suture without totally occluding the vessel; this was successfully accomplished by Cushing in one of the cases mentioned above. Failing this, a ligature should be applied, and should this tear off, as is not uncommonly the case, tamponade of the wound must be resorted to, and in all probability it will suffice. Should the lesion not be recognised at the time, and the wound closed, evidence of distension in the latter will soon manifest itself, and sooner or later chyle will escape externally. This should be dealt with by opening up the wound, looking for, and if possible tying, the divided vessel, and, failing this, tamponade.

VI.—ABDOMINAL SURGERY.

The surgery of the stomach.—No organ within the abdomen has received so much attention during 1898 as this viscus, and a great impulse has been given to it partly by the record of cases of total gastrectomy which have been reported, and partly by the publication of statistics of the work of many surgeons during the past few years. In reality the stomach appears to be one of the

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most favourable organs in this region to operate on. Two very exhaustive series of lectures dealing with this matter have been published, and to these constant reference will be made, viz. by **Keen** (*New York Med. Journ.*, May 7, 21, and June 4) and **Barker** (*Clin. Journ.*, April 20, *et seqq.*).

Total removal of the stomach.—At least five cases of total gastrectomy have been reported in 1898, and probably others have been undertaken; of the five four recovered, and only one died, and that from collapse. **Schlatter** (*Corresp. Bl. f. Schweiz. Aerzte*, 1897, No. 23) published the first case, and thus set the ball rolling. The patient was a woman, aged fifty-six, with all the signs of a well-marked cancer of the stomach. On performing an exploratory laparotomy it was found that the walls were so infiltrated that gastro-enterostomy was out of the question. The growth was, however, so entirely limited to the organ that it seemed justifiable to attempt its total removal. This was done by first freeing it from the structures in the greater and lesser omenta, and then cutting it away at the level of the cardiac and pyloric orifices respectively. It was then found impossible to approximate the two ends, and therefore the duodenal orifice was totally closed, and the lower end of the œsophagus was united by a series of silk stitches to a lateral opening in a suitable coil of jejunum, drawn up over the transverse colon. The abdomen was totally closed, and the patient made a good recovery. She was fed after the third day by the mouth, and within two months gained nine pounds in weight and complained of nothing. She was then able to take ordinary food, and an examination of the motions and fæces demonstrated that her powers of assimilation were perfect. In **Brigham's** case (*Boston Med. and Surg. Journ.*, May 5, 1898) an inch and a quarter of free œsophagus remained in the abdomen after removal of the stomach, and it was found that the upper end of the duodenum could be brought into apposition with it without much traction. A Murphy button was utilised in this case to unite the two ends, and no supporting sutures were needed. Hot water in 3-dr. doses was given every hour on the second day, and food in somewhat similar doses on the third. Gradually the amount given was increased, but she did not take more than 6 dr. at a time with comfort, even at the end of a week. On the thirteenth day she found that she could swallow with ease, all evidence of obstruction having ceased, and it is presumed that the button must have passed on about this time. In **Nobie's** case (*Med. Record*, July 23, 1898) the patient was really too far gone for success, the surgeon only undertaking operation at the urgent demand of the patient, who collapsed before it was terminated. The technique

was identical with the former operation, the ends of the duodenum and œsophagus being united without much difficulty by a Murphy button, as also occurred in the case reported by **Macdonald**, of San Francisco (*Journ. of Amer. Med. Assoc.*, Sept. 3, 1898), whilst **Richardson** (*Boston Med. and Surg. Journ.*, Oct. 29, 1898) utilised silk stitches, but had to divide some retro-duodenal bands before he could secure approximation. The latter only took one hour over the proceeding, and the loss of blood and shock were slight.

Such a record of cases is remarkably good, and if to them be added the many cases of partial resection of the stomach which have been recorded in recent years, the death-rate is as low as in any other serious type of intestinal resection. Thus **Krönlein** reported to the German Congress of Surgery at Berlin (*Wiener klin. Rundschau*, July 31, 1898) that in the course of the last few years he had undertaken twenty-one cases of partial gastrectomy, of which only five had died, and of the last seventeen operations there had been only two deaths. **Schuchardt** (*ibid.*) reported on a case where he had removed nearly the whole stomach, except three fingers' breadth of the cardiac orifice, with recovery, the patient living for three years, and then dying of cancerous pleurisy. It appears that at first she was only able to eat small meals, but as time passed the capacity of the portion of the viscus that was left increased so that an ordinary meal could be eaten with comfort. The necropsy showed that there was no recurrence in the stomach, and that owing to dilatation of the small portion of the cardia and of the duodenum its capacity had become normal. No hydrochloric acid had, however, been secreted, although much lactic acid had been found. **Wendt** (*Med. Record*, Dec. 25, 1897) draws the following conclusions as to gastrectomy: (1) The human stomach is not a vital organ; (2) the digestive capacity of the human stomach has been much exaggerated; (3) the fluids and solids constituting an ordinary mixed diet are capable of complete digestion and assimilation without the aid of the human stomach; (4) a gain in weight may occur without gastric activity; (5) typical vomiting may occur without a stomach; (6) no immediate deterioration in health need occur after removal of the stomach; (7) the most important function of the stomach is to act as a reservoir for the reception, preliminary preparation, and propulsion of food and fluids; (8) the chemical functions of the stomach may be completely and satisfactorily performed by other divisions of the intestinal canal.

Pylorectomy is rarely undertaken except for malignant stenosis. **Barker** (*op. cit.*) gives long statistical tables dealing with the mortality of the proceeding, from which it appears that in all the published cases it amounts to about 50 per cent.,

somewhat higher in the malignant cases, and lower in the simple ones. The figures have, however, been modified of late years, showing that modern methods and appliances are having their fruit in increased success. Still the death-rate does not fall much below 40 per cent. in malignant cases, and 28 per cent. in non-malignant.

As to methods of operating, the chief difficulty has always been felt to lie in bringing the unequal segments of the duodenum and stomach into accurate apposition. To this end, not a few operators close the lower end of the stomach entirely, and implant the duodenum into a separate opening in the posterior wall, either using a Murphy button, or relying, as does Kocher, on simple suturing. Czerny prefers to do a posterior gastro-enterostomy first, and then excises the pylorus, totally closing the two ends. **Tuffier** (*Presse Méd.* Oct. 29, 1898, p. 259) has operated nine times for tumours of the pylorus; four died within a few days, and there were five operative cures. In one case he united the segments end to end, in four he sutured the duodenal orifice to the posterior wall of the stomach, and in five he depended on a gastro-enterostomy, closing the wounds in the stomach and duodenum. **R. Morrison** (*Brit. Med. Journ.* Feb. 19, 1898) describes the method he adopts to bring about a satisfactory end-to-end suture. He divides the anterior wall of the duodenum for about an inch in its longitudinal axis, and by spreading it out makes the duodenal orifice as nearly as possible equal to that in the stomach. He then approximates and steadies the ends by the use of three fixation stitches which remain loose, though clamped above by forceps; the posterior wall is then united by a continuous stitch including all the coats of the gut. This is carried right round the opening, and the fixation stitches can then be removed. Finally the continuous stitch is buried by the insertion of a series of interrupted Lembert sutures all the way round. Morrison claims that by the adoption of this plan the operation is expedited, and that a firm bond of union will result with no tendency to sloughing at the margins. He reports two cases, both successful as regards the immediate result.

The surgical treatment of gastric ulcer is becoming more and more established. One is fully ready to admit that there are a certain number of cases which react readily and quickly to medical treatment, but there are others which do not. The duration of the illness, the difficulty of nutrition, the possibility of the patient's lowered state rendering her more liable to other infective troubles, such as tuberculosis, the danger into which she may be brought from hæmorrhage, or as the result of

adhesions between the stomach and the parietes, possibly determining intestinal strangulation, let alone the risk of perforation and the possible supervention, at a later date, of cancer—all these are reasons why surgeons may rightly be called upon to undertake the treatment of such cases, granted that they can do so without exposing the patient to undue risks. **Keen** (*op. cit.*) argues very strongly along these lines, even urging that when the diagnosis is in doubt, it is not only proper, but it is the highest duty of the surgeon to make an exploratory laparotomy in order to determine the correct diagnosis and institute the proper treatment.

Excision of the non-perforating ulcer has been undertaken in a number of cases, and practically always with success, if we exclude a few instances where pylorectomy was undertaken. Naturally the situation is a point of prime importance, but granting that it can be got at without much difficulty, there is no reason why complete excision should not be performed. "The danger to life from gastric ulcer," says Mikulicz, "is at least not less, but probably far greater, than the danger of a complete modern operation."

Hæmorrhage from gastric ulcer does not offer such a good field for surgery. About 5 per cent. of all cases of ulcer of the stomach die from this cause, which may occur either as a furious outburst, killing by the first or second bleeding, or as a more chronic flow, constantly repeated and gradually draining away the patient's strength. For the first type of hæmorrhage, although successful cases are recorded, operation is not on the whole to be advised, eight out of twelve cases dying, according to **Hartmann** (*Semaine Méd.*, Nos. 8 and 9, 1898). His conclusion is that most cases of hæmorrhage can be arrested by rest, absolute diet, and bandages to the four extremities, to which, perhaps, saline infusions may be added. For the more chronic forms of bleeding there can be no question as to the advisability of operation, the nature of which must depend upon the conditions found at the time; failing excision, any means, such as pyloroplasty or gastro-enterostomy, whereby the emptying of the stomach is expedited, assists in keeping it at rest, and thus conduces to a good result.

Gastro-enterostomy v. pyloroplasty in cases of pyloric stenosis not due to malignant disease.—**Carle** and **Fantino** (*Il Policlinico*, March 15 and April 15, 1898) discuss this question relative to forty-four cases that have been under their care. Thirty of them were cicatricial in origin, eight spasmodic, three due to gastric atony, and two to stricture of the duodenum. It is most

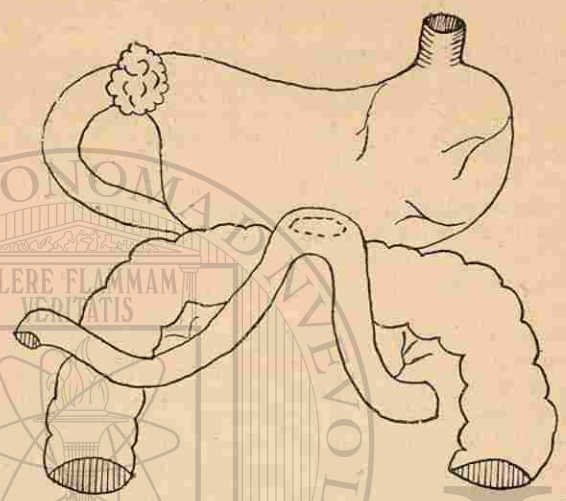

Fig. 7.—Original anterior gastro-enterostomy, in which the jejunum is drawn up over the transverse colon to be attached to the stomach.

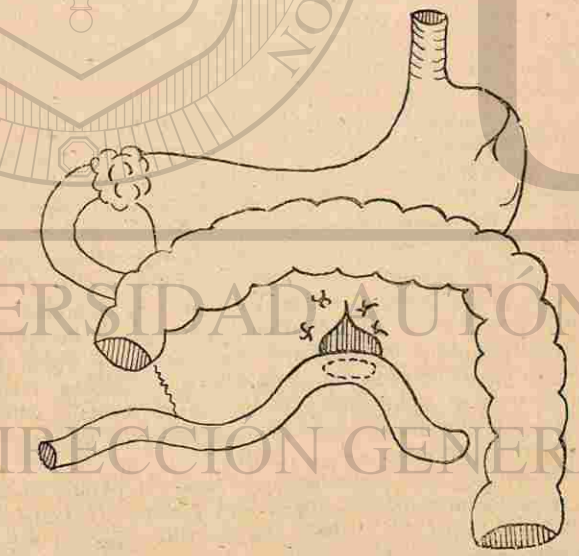

Fig. 8.—Posterior gastro-enterostomy (*von Hacker*), in which a hole is torn through the transverse mesocolon, and the stomach and jejunum thus approximated.

important to allow the stomach to empty itself as rapidly as possible, and to this end one of the two proceedings mentioned above should be undertaken. When the pyloric thickening is very exaggerated, when an abundance of adhesions exists around, when the site of stricture is in the duodenum, or when the stomach is atonic and has lost its contractile power, then gastro-enterostomy should be undertaken, and that by the posterior method. The mortality in the two operations is about the same, viz, 7 per cent. The results of pyloroplasty, as tested in seventeen cases operated on from three to seven years previously, are perfect and permanent, although the capacity of the stomach did not diminish to such an extent as might have been expected from the improvement in the health. (See also editorial article, *Annals of Surgery*, June, 1898.)

As to the actual means of performing gastro-enterostomy, there has been much discussion. Two chief methods have been advocated, viz., the original anterior method (Fig. 7), in which the jejunum is brought up over the transverse colon to be attached to the anterior stomach wall; and the posterior method of von Hacker (Fig. 8), in which a hole is torn in the transverse mesocolon, through which the jejunum is connected with the posterior gastric wall. There is an almost unanimous opinion in favour of the latter method. The anterior operation necessarily tends to lead to constriction of the transverse colon, whilst, owing to the necessary drag of the gut, the two limbs tend to become parallel to each other (Fig. 9), and hence "the afferent limb distends, and pressure is produced upon the efferent loop. Owing to this, a spur is produced between the two limbs which directs the bile into the stomach, and prevents its entrance into the efferent limb" (Barker, *op. cit.*). This leads to recurrent bilious vomiting, which may be so considerable as to prove fatal.

The posterior operation is usually followed by good results, but even here there is a tendency to bilious vomiting and to regurgitation through the artificial opening, partly due to kinking of the gut. To avoid this difficulty many authorities are now recommending the combination with it of an entero-enterostomy—that is to say, that the afferent and efferent coils of gut are united together below the point of union with the stomach by a lateral anastomosis (Fig. 10). At the French Surgical Congress (*Presse Méd.*, Oct. 29, 1898) several speakers commended this plan of operating, which is sometimes known as Roux's plan of "*anastomose en Y.*" **Weir** (*New York Med. Record*, April 16, 1898) also believes it to be the best plan; whilst **Keen** (*op. cit.*) thinks it useful, though scarcely applicable to all cases, since so many of

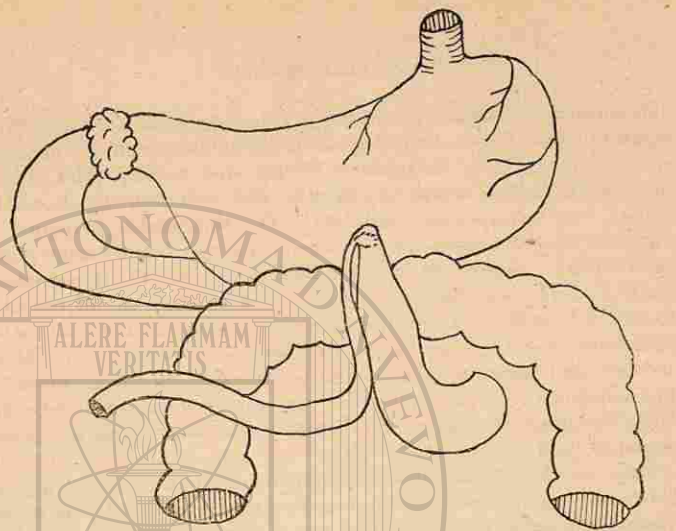

Fig. 9.—Inefficient anterior gastro-enterostomy; the drag of the intestine forms a kink at the point of junction.

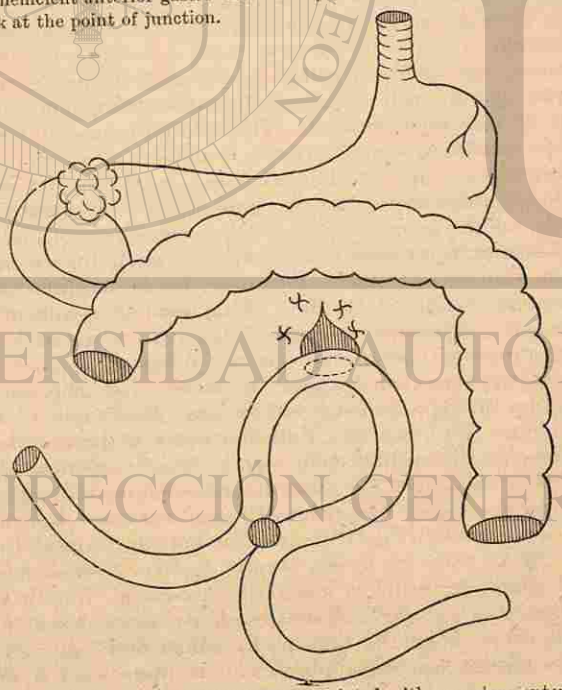

Fig. 10.—Posterior gastro-enterostomy associated with an entero-enterostomy.

the patients are in a condition of considerable debility, and any undue prolongation of the operation is unadvisable.

As to methods of performing the anastomosis, the old discussion of button *versus* stitch still proceeds. Some authorities prefer one plan, some another. On the whole, surgeons are endeavouring to do, as far as possible, without such a dangerous mechanical contrivance as the Murphy button; if something similar could be devised which could be applied equally quickly, it would be a desideratum. As Keen says, "The ideal method of union has yet to be found." **Paul** recommends (*op. cit.*) that the serous and muscular coats of the portions to be united should be incised, and the exposed mucous membrane well cauterised with chloride of zinc; the denuded areas are then sutured accurately together, and it is probable that, if the cauterisation is effectually accomplished, sloughing will take place in a day or two, and the artificial communication thus be established. Of course, this depends upon the occurrence of sloughing, and it would be decidedly awkward if it did not occur. Keen notes this point in discussing this proposal, and condemns the plan as utterly unscientific.

Appendicitis.—Much difference of opinion still exists as to the treatment of this affection, although one is thankful to note that the importance of early surgical intervention is beginning to find its way into the conservative minds of the majority of practitioners, even in Great Britain. Still the fact that in America **Richardson** and **Brewster** (*Boston Med. and Surg. Journ.*, July 14, 1898), commenting on an analysis of 464 cases, have to admit that thirty-one were moribund when first seen by the surgeon, shows that much has to be done in educating both the lay and the medical public as to the nature and gravity of the disease. Statistics are naturally extremely misleading, but it is worth noting that, of the 464 acute cases mentioned above, 180 were treated medically, and of these thirty-one died, giving a mortality of 17 per cent.; whilst 284 were operated on, with a death-rate of 21 per cent. Of course, some of the thirty-one fatal cases on the medical side might have been cured by operation, whilst possibly some of the sixty-three surgical deaths might have been avoided if operation had not been undertaken, or had been performed earlier. When to operate in acute appendicitis still remains the great bone of contention. **Treves**, in his article on perityphlitis (Clifford Allbutt's "System of Medicine": Macmillan & Co., 1897) maintains that surgical intervention in an acute attack should only be undertaken when there is evidence that suppuration has taken place, and the object of the operation

is to evacuate the pus. **Quénu** (*Journ. des Praticiens*, No. 10, p. 145, 1898) says: "Le but essentiel de l'opération est de donner issue au pus, sans transformer un foyer d'infection circonscrit en un foyer généralisé." **Czerny** stated as his opinion not long ago that the first attack of appendicitis belongs to the physician. "This attack may (*a*) pass by without complication, in which case there is no occasion for surgical interference; or (*b*) earlier or later, with alarming symptoms of general or local nature (fever, rapid pulse, pain, dulness on percussion, rigidity), it may go on to perforation and abscess formation. Such an abscess either (*A*) leads to progressive and threatening peritonitis, or (*B*) it remains circumscribed and becomes encapsuled, the first severe symptoms remaining without important change. The conditions (*b*), (*A*), (*B*) indicate surgical treatment, as do all recurrent chronic forms of appendicitis, whether they be purely catarrhal, ulcerative, perforating, or obliterative."

With due deference to these distinguished authorities, their conclusions do not strike one as surgically sound. Waiting for the formation of pus in these cases often permits the case to get out of hand, and the logical position is surely to anticipate the formation of an abscess, which may burst at any moment into the peritoneal cavity and produce a grave infection which cannot but lead to a fatal issue. Moreover if operation is undertaken early, there is much more likelihood of the *fons et origo mali* being removed, whilst the patient is protected from the risks of recurrence, and the period of convalescence is considerably diminished.

As to the operation itself there is no need to say very much. The position of the *incision in the abdominal wall* is an important one. **Woolsey** (*Annals of Surg.*, Jan., 1898, p. 6) discusses this matter in a valuable article, showing that one of the chief things to consider in planning one's abdominal incision is the situation and direction of the nerves. Vertical incisions are on the whole bad because these are thereby divided, and the strength of the walls must thereby be diminished. He considers that Jalaguier's proposal is fairly good, and certainly one has practised it with advantage. It consists in a vertical division of the superficial layer of the rectus sheath about an inch from its outer border, the retraction of the intact muscle inwards, and the division of the posterior layer of the sheath and the subjacent layers much in the same line as that of the incision of the superficial layer of the sheath. Such a wound can be stitched up so as to give a firm cicatrix; but, of course, it divides nerves, and therefore in many cases an incision parallel to Poupart's ligament will suffice admirably. In recurrent chronic

cases McBurney's method of separating the fibres of the muscles and holding them aside with retractors without dividing any of them is an admirable arrangement, as being less likely to lead to the subsequent development of a hernia.

As to the method of removing the appendix when found, various plans of amputation have been recommended from time to time, but there are objections to all of them, and one has seen many cases of infection evidently due to imperfect closure of the stump of the appendix. **Deaver** (*Annals of Surg.*, Jan., 1898, p. 81) recommends *total excision of the organ from the cæcum* with a pair of curved scissors. The assistant carefully holds the cæcum in his fingers, and by compressing it prevents any fæcal escape; the surgeon then puts the appendix on the stretch and clips it away. The wound thus made is readily closed by a double row of stitches, dealing with the mucous membrane and superjacent coats respectively. **Haggard** (*Journ. Am. Med. Assoc.*, June 4, 1898) fully agrees with this plan and considers it very valuable. **Brown** (*Med. Record*, July 30, 1898) has also utilised it with advantage.

It is unnecessary to repeat what has been stated so often as to the necessity of operation in chronic and relapsing appendicitis. All authorities are agreed as to the simplicity and (in careful hands) safety of the proceeding, and lists of hundreds of cases are being constantly published with a minimal mortality. One little observation is worth noting in this connection as it emphasises the necessity for surgical intervention. **Hartmann** (*Gaz. Méd. de Paris*, Nov. 27, 1898, p. 570) examined bacteriologically the contents of a terminal unobliterated portion of an appendix, the intestinal end of which had been occluded by a preceding attack of inflammation. He found the bacillus coli present in large numbers, and they were in a state of extreme virulence as compared with those in the cæcal extremity of the tube.

Idiopathic dilatation of the colon forms the subject of an interesting paper by **Treves** (*Lancet*, Jan. 29, 1898), in which he stated that the dilatation is not as a rule idiopathic at all, but due to contraction of the sigmoid flexure or of the rectum as a result of some congenital malformation. The patient, who formed the subject of the paper, was a child aged nearly six years; ever since birth the abdomen had been distended, and at the time of examination it was "enormous." Treves opened the abdominal cavity, and found that the dilatation involved the whole colon, and was due to a contraction in the site already mentioned. He consequently excised the whole rectum, sigmoid and descending colon, dragging down the

transverse colon into the hole in the perineum, through which the rectum had been removed, and stitching its margins to the skin. The child made a perfect and uneventful recovery. All other cases on record have died, except one in which colotomy was performed, and hence the practitioner has an important object-lesson as to the treatment required should a case of this nature present itself.

Colotomy.—**Paul** (*Liverpool Med. Chi. Journ.*, July 1898, p. 395) recommends the application of the valvular plan followed with so much success in gastrostomy to this operation. "I make the incision in the line of the internal oblique fibres, withdraw the bowel, attach it by one or two sutures to the deep part of the wound, then pass it under the external oblique directly backwards for about two inches, where it is brought out and sutured to the skin, the original skin wound and the opening in the external oblique being completely closed." Several cases in which this plan was followed are alluded to, and the results seem to have been excellent.

Removal of gallstones from the lower end of the common bile duct.—**McBurney** (*Annals of Surg.*, Oct. 1898, p. 481) describes the last of six cases in which he has removed a calculus through an incision in the duodenum, and in all of them, with one exception, the patient recovered perfectly; the fatal case was due to prolonged and uncontrollable vomiting, there being no sign of peritonitis or perforation. The plan he adopts is to make a very free oblique incision in the abdominal parietes parallel to the right costal margin, thereby exposing the liver and gall bladder, which in these cases is often shrunken, although the liver is enlarged. The absence of stones in the gall bladder having been determined, or their removal having been effected in the usual way, the bile ducts are examined, and when a stone has been located in the lower end, the duodenum is drawn well into view and incised for about an inch and a half along its anterior wall. The papilla marking the entrance of the duct into the bowel is then looked for, and a probe passed along it to confirm the presence of the stone. The orifice is then incised and dilated; it is found that an incision half an inch long can be safely made. By a process of manipulation from behind and by gently pressing the intestinal walls backwards over it, the stone is gradually delivered, and is followed by a flow of bile into the intestine, even at the time of operation. The wound in the duodenum is then sutured, and if thought advisable a gauze drain may be passed down to the site of the operation for a day or two.

The advantages of the method are very obvious when one has got over the traditional fear of opening the intestine and stitching it up again. In none of McBurney's cases has there been the slightest hesitancy in the wound healing. Moreover, the bile ducts can be thoroughly explored in this way, and the incision and dilatation of the orifice is rather advantageous, as it permits of the discharge of any calculous *débris* that may remain and diminishes the risks of subsequent stenosis. McBurney considers that this proceeding could with much advantage be substituted for many of the cases of choledochotomy that are reported from time to time; the suturing of a wound in the common bile duct is a matter of considerable difficulty in many cases, whilst it is a very easy and almost always successful matter in the duodenum. The proposal is not an entirely new one, as in the "Year-Book" for 1896 I mentioned a case in which Kocher had performed a somewhat similar operation, except that he divided the posterior wall of the duodenum as well as the anterior, and also had to incise the bile duct, subsequently suturing together the contiguous walls of the duct and bowel, and closing the anterior wall of the duodenum. As McBurney says, "This operation has a very legitimate place in gall-bladder surgery, and one that has not been sufficiently appreciated."

To facilitate the closure of wounds in the common bile or cystic ducts after incising them for the removal of calculi, **Halsted** (*Phil. Med. Journ.*, April 2, 1898) has had made a series of miniature hammers, which can be introduced into the duct during the introduction of the stitches, thus steadying the parts and preventing the escape of bile. The hammers are of variable sizes, and the handles are attached to one end of the head so as to facilitate introduction and withdrawal. The plan certainly seems a good one, as it is often extremely difficult to fix and steady the duct, and its accurate closure is a matter of vital importance. Halsted has utilised his method on the living subject with success.

Movable liver.—A number of cases of operation for this condition have been reported, one of the most interesting and most instructive being that related by **Blanc** (*La Loire Méd.*, Dec. 15, 1897). His patient was a woman, aged 35, the subject of locomotor ataxy; from time to time she suffered from febrile attacks associated with a slight degree of icterus and marked bilious vomiting. Examination between two of these attacks showed the liver to be enlarged and somewhat tender, and displaced downwards so as to reach three-fingers' breadth below the umbilicus. It could easily be replaced upwards beneath the costal margin, but as soon as pressure was removed it slipped

down again. Evidently this was the cause of the bilious attacks, which were induced by kinking of the bile ducts. An operation was undertaken through a vertical incision, showing the liver to be movable, hard, and more or less constricted as the result of tight lacing. The upper surface of the organ was scarified, as also the peritoneum under the costal cartilages, so as to produce bleeding surfaces and thus expedite the formation of adhesions. Three silk stitches were introduced through the hepatic tissue extending a centimetre and a half into its substance, and then they were carried round the costal cartilages. In addition, three silk stitches were inserted through the liver and the peritoneal and muscular coats of the abdominal wall. The success was perfect and the convalescence rapid, the patient no longer experiencing the bilious attacks.

Tumours of the liver are coming more and more within the scope of the surgeon's work, and a number of papers have appeared dealing with this subject. Naturally there are a large number which cannot be attacked owing to their deep situation in the substance of the organ, and many malignant growths are so disseminated as to render removal hopeless. On the other hand, some tumours are found to be distinctly pedunculated, whilst the situation of others in the peripheral portions of the lobes suggests that, granting efficient hæmostasis, their removal might be safely effected. **Martin** (*Birmingham Med. Review*, Feb., 1898, p. 92) relates a case of the former type. A woman, aged 36, applied for relief, owing to the presence of a painful swelling in the abdomen, which gradually increased in size, and was at first thought to be a cystic kidney. On exploration it was found to be an accessory lobe of the liver, separated from the main mass of the gland by a fibrous pedicle, containing some large blood-vessels and the cystic duct, whilst the gall bladder lay in front of the mass and was adherent to it. The pedicle was transfixed and tied by three interlocking silk stitches, and the whole lump cut away. The patient did extremely well. Of course, such cases are only occasionally met with, and the more common type is that in which the tumour is embedded in the liver. Where treatment is at all feasible, **Keen** (*Therapeutic Gaz.*, Jan. 1898, p. 53) recommends that if possible an artificial pedicle should be made with the cautery, and then the mass fixed in the wound and an elastic ligature tied round it. The extra-abdominal method of treatment of the base is, however, falling into disuse, since it is maintained by several observers that hæmorrhage from the liver is readily restrained. Thus, **Waring** (*Lancet*, March 19, 1898, p. 778) advises that the circulation in the organ should be

controlled by the application of pressure to the gastro-hepatic omentum. A wedge-shaped piece of liver including the diseased area is then excised, divided blood-vessels are picked up with forceps and ligatured, and the margins of the hepatic incision brought into apposition and sutured. **Terrier** and **Auvray** (*Revue de Chirurgie*, May and Sept., 1898), in a very full and valuable monograph on the subject, discuss all the different methods that have been adopted, and incline towards the same plan. They have been able to collect thirty-eight cases of genuine excision of a portion of the liver, excluding pedunculated masses such as Martin's, and find that there were only six operative deaths, attributable to hæmorrhage, shock, and sepsis. The first cause, viz. bleeding, was responsible for only two of the six deaths; hence it is evident that the danger from this source is much less than one would have expected.

ORTHOPÆDIC SURGERY.

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1. The treatment of congenital dislocation of the hip.

Kirmisson (*Traité des Maladies Chirurgicales d'origine Congénitale*, Paris, 1898); **Ghillini** (*Revue d'Orthopédie*, March, 1898); **Whitman** (*Medical News*, April 30, 1898); **Sayre** (*ibid.*).

This subject has continued to receive the attention of surgeons during 1898, and although perhaps some slight progress has been made, a review of the articles that have been published shows that the treatment of the deformity is still far from satisfactory. The open operations of Hoffa and Lorenz have not fulfilled the promise that was held out for them, and the method of Paci, combined with fixation in the position of abduction, has, to say the least, been disappointing. **Kirmisson** in his recent work on congenital deformities fully discusses the pathology, symptomatology and therapeutics of the affection, and has been forced to the conclusion that at the present time we may consider ourselves fortunate if we can obtain a partial success without any risk. He dwells upon the dangers and risks of the open operation, and upon the poor results obtainable from orthopædic appliances. **Ghillini** reports operations on seventeen cases in children varying from five to twelve. In three he practised Paci's method with a negative result, and in fourteen he combined the manipulative method with fixation of the stump of the head of the bone in or near the rudimentary acetabulum, allowing the patient to get up at once after the limb had been mobilised in plaster-of-Paris. He points out that it is only in cases where the head of the bone assumes a dorsal position that the limb should be fixed in abduction. Where the head is displaced downwards the limb should be adducted; when forwards, rotated inwards. When there is much upward displacement before beginning treatment he advises extension by means of a weight for a month or so before operation, so as the more easily to bring down the head of the femur. The after-treatment lasts six months to a

year, according to the greater or less tendency of the head of the bone to become displaced on removing the apparatus. He only claims what he calls satisfactory results, but not a perfect cure. In one case he says he obtained ankylosis of the hip, and in some others rigidity. In some he admits there was shortening, and in all some lateral deviation of the trunk during walking. At the meeting of the New York Academy of Medicine, **Whitman** stated that he had employed forcible reduction with fixation in sixteen cases, and showed a patient aged two and a half after eight months' treatment, in which the result was very good indeed. There was practically no shortening, whereas before the operation there was three-quarters of an inch. This case appears, however, to have been one of those rare ones in which an actual dislocation occurred at birth, and one, therefore, in which the head of the bone had been replaced in a more or less normal acetabulum. In the majority of cases there is, unfortunately, only a rudimentary acetabulum, and the head of the bone is more or less deformed. **Sayre** in thirty-one cases of congenital dislocation which he has treated, has only met with one in which there was a normal acetabulum. He would employ the manipulative treatment first, especially if, by means of the X rays, a normal socket for the bone is discovered; otherwise he still advocates the open operation of chiselling out a new cavity. If any good is to be obtained there can be no doubt that the earlier the attempt to replace the bone is undertaken the better, since the longer the deformity remains the more will the rudimentary acetabulum become filled up, as in the case with the acetabulum after non-reduction of an ordinary acquired dislocation. The early recognition of the deformity is, therefore, important. The X rays should then be employed, and if the cavity for the acetabulum is discovered, reduction by manipulation should at once be attempted, and the limb immobilised for a sufficient time to prevent re-dislocation. A good result will then probably follow. If no acetabulum is seen, and in older children, it is still a question if much will be gained either by the open operation or by manipulation with fixation. The reporter is bound to say that hitherto he has seen no example of either in which the result has appeared to him worth the risk of the open operation on the one hand, or the tediousness of the treatment on the other. In one case in which manipulation with fixation in a position of forcible abduction was most carefully and conscientiously carried out for him at the Hip Hospital at Sevenoaks, practically no improvement was obtained.

2. Treatment of faulty ankylosis of the hip by osteotomy.

Berger (*Revue d'Orthopédie*, July, 1898); **Phocas** (*ibid.*, September, 1898); **Willett** (*Brit. Med. Journ.*, December 11, 1897).

Berger, for certain cases of faulty ankylosis of the hip, recommends oblique trochanteric osteotomy in place of osteotomy of the neck of the femur or transverse osteotomy below the trochanter. He makes his section from the top of the great trochanter obliquely downwards and inwards to just below the lesser trochanter. In this way the divided surface of bone is longer, and therefore permits of more extension being brought to bear on the lower fragment without complete separation of the fragments. As a consequence, there is gained nearly an inch of actual lengthening of the femur. He has not found any deficiency of callus and consequent weakness of the bone, nor has he experienced any bad result by the greater separation of the periosteum and soft parts than in transverse osteotomy. To avoid splintering of the bone he uses three chisels simultaneously.

Phocas, in a paper based on seventeen cases that have come under his own observation, concludes that sub-trochanteric linear osteotomy is the operation of choice for the correction of vicious attitudes of the hip. In certain circumstances mechanical rectification or arthrotomy may be advantageously employed. Other osteotomies should seldom be practised. Bilateral sub-trochanteric osteotomy is of advantage in certain cases of bilateral ankylosis of the hip, especially when the limbs are ankylosed in the form of X.

Willett has performed osteotomy for the correction of faulty ankylosis of the hip thirty-one times. He prefers Adams's operation of section of the neck of the femur for cases of rheumatic type, and Gant's sub-trochanteric method for the tuberculous where there is scarring and production of new bone with thickening and flattening of the trochanter. In both operations he aims at bony ankylosis. Where the ankylosis affects both hip-joints, he endeavours to procure a false joint on one side; something more than a simple osteotomy is necessary for this. He then performs a modification of Sayre's operation. He makes an incision over the front of the hip-joint, deepens it until the capsule is reached, frees the connections along the anterior border of the acetabulum, and endeavours to force the head of the bone out of the cavity. If this is impossible in consequence of complete synostosis having taken place, he proceeds, partly with Adams's saw and partly with chisel and mallet, to cut out the neck and some portion of the adjoining surface of the great trochanter, leaving a complete interval of about a quarter of an inch between the pelvis and the femur. The reporter considers that for the majority of cases of faulty ankylosis of the hip sub trochanteric osteotomy is the operation *par excellence*. It is easily performed, involves the minimum disturbance of the soft parts, and if the limb is then placed in a well-abducted position on a Thomas's splint, a good inch of lengthening, as pointed out by Willett, is gained, since, when the patient begins to walk, the pelvis is rotated downwards to about that amount in order to enable the limb to be brought parallel with its fellow.

3. Treatment of badly-united fractures by osteotomy.

Willett (*Brit. Med. Journ.*, December 11, 1897) has operated nine times for the cure of the deformities resulting from badly-united fractures. In performing this operation, he insists that it is very essential for its success to disengage the fragments very thoroughly and, after careful adjustment, to employ very much more weight extension than for ordinary simple fractures, to ensure full length being maintained. In one instance he used as much as 30 lbs. of shot in one canister. His success in badly-united Pott's fracture by chiselling obliquely through the tibia, dividing the fibula transversely, and then wrenching into position, has been very good. The reporter can speak well of osteotomy for badly-set Pott's fracture, and has had several successful cases in which the deformity has been completely overcome by the removal of a wedge of bone from the internal malleolus with subcutaneous division of the fibula at the seat of fracture. In less severe cases he has obtained equally satisfactory results by re-fracture with the osteoclast, or, indeed, in cases of not long standing, with the hands alone. In all moderately recent cases—say within two months—a readjustment of the fragments with the hands or osteoclast might, in his opinion, be tried before resorting to osteotomy.

4. The treatment of caries of the spine, resulting in angular deformity.

Horsley (*Brit. Med. Journ.*, October 15, 1878); **Robert Jones** (*ibid.*); **Luckham** (*ibid.*); **Tubby** (*ibid.*); **Murray** (*ibid.*); **Kirmisson** and **Ardouin** (*Revue d'Orthopédie*, May, 1898); **Ménard** (*Gazette Médicale de Paris*, X.S., 1897); **Lorenz** (*Deutsche med. Wochenschrift*, 1897, p. 218); **Malherbe** (*Annales de Chirurgie et d'Orthopédie*, 1897, p. 656); **Noble Smith** (*Lancet*, February 19, 1898); **Gibney** (*New York Med. Journ.*, March 26, 1898); **Phelps** (*ibid.*); **Sayre** (*ibid.*); **Judson** (*ibid.*).

The treatment of caries of the spine formed a subject for discussion at the meeting of the British Medical Association at Edinburgh during the past year. **Horsley** advocates early operation

with temporary fixation in cases of marked caries of the spine. He advises that the vertebræ should be cut down upon and the carious material cut or scraped away. He holds that, if the operation is done in early cases, the risk is small, and that by removal of the tuberculous focus the danger of the further risk of latent tuberculous infection is averted and the chance of angular deformity to a great extent removed. He admits, however, that he has seen three fatal cases in which this operation has been performed, one from shock and two from dissemination of tubercle or the lighting up of latent general tuberculosis. As a precaution against the introduction of the bacillus into the circulation during the operation, he advises the irrigation of the wound with 1 in 500 perchloride of mercury solution. **Robert Jones** agreed that were it possible to remove every element of dead bone, the operation would be excellent treatment, but this was in the majority of cases, absolutely impossible. Such treatment involved either operating on early cases which might with advantage be left alone, or upon cases so advanced as to render complete operation impossible.

With regard to the treatment of spinal abscesses, **Horsley** advised that they should be opened early, scraped and closed, or drained antiseptically. For dorsal abscesses he has always employed simple laminectomy, and then, when by examination of the tissues in front or at the side of the spinal cord the abscess has been discovered, he removed the pedicles of the nearest intervertebral foramen to secure the thorough laying open of the cavity, providing for its continual drainage as well as disinfection. **Luckham** stated that he always aspirated and injected iodoform emulsion before opening a spinal abscess, and **Kirmisson** and **Ardouin** report a number of successful cases. At the Hip Hospital at Sevenoaks, where the reporter introduced the method of aspirating and then injecting iodoform emulsion, some few years ago, the success of the method has been most gratifying. The plan adopted there is to aspirate and inject immediately an abscess is discovered, whether it be connected with the hip or with caries of the spine. The aspiration and injection are then repeated four or five times if necessary, till the abscess finally ceases to refill. During the treatment absolute recumbency with fixation of the spine or hip, as the case may be, is rigorously carried out. In but few instances does it become necessary to open and scrape out the abscess cavity. For private practice, where there may be difficulties in ensuring an absolutely aseptic operation, aspiration and injection is by far the safest procedure, and should, in the reporter's opinion, always be tried before resorting to the open

method. To obtain success it is absolutely essential that the instruments and emulsion should be sterile, and the skin should be rendered properly aseptic in the region of the puncture.

Calot's method of correcting the angular deformity following spinal caries has now been somewhat extensively employed during 1898, but similarly favourable results have not been equalled by other surgeons. **Ménard** reports a death from rupture of an abscess; **Lorenz**, a death from paralysis; **Malherbe**, the fracture of a spine; and **Jonnesco**, three deaths in thirteen reductions. **Robert Jones** reports seven deaths in ninety-three cases, though he thinks only two could be attributed to the operation. **Murray** reports fourteen cases, in all of which the deformity had recurred, although the spines had been fixed in plaster-of-Paris after the straightening. His experience was decidedly unfavourable to the operation, for two of the fourteen cases had died, and three others were likely to die shortly, probably from indirect results of the straightening. In no case had the deformity remained unobliterated. He attributes the ill-success to the marked deficiency in the formation of new bone in the tuberculous disease, and the consequent want of material sufficiently strong to bear weight. **Tubby** has operated on twenty-nine cases; of these one had died of general tuberculosis and abscess in the posterior mediastinum, and two others had developed abscesses; the remainder were alive and well. He admitted that it was one thing to obtain reduction of the deformity, partial or complete, another to maintain it.

Noble Smith quotes two cases in which violent reduction led to death. In one suppuration set in, in spite of every precaution, and in the second case the patient died of generalised tuberculosis. In another case the patient lived some time after the gradual rectification, but eventually died of tuberculous meningitis. At the autopsy the affected part of the vertebral column was represented by a narrow bony column, which could be broken without any effort, leaving the medulla without support. On the other hand, **Gibney** showed two cases at the meeting of the Academy of Medicine, New York, in which, with very little force, he had corrected the deformity in two patients, a boy of twelve and another of six. There was no reaction after the operations, and the children had been allowed to get up and walk about in a plaster case a few days afterwards. These cases, however, had not been done a sufficient time to say whether there would be any return. Gibney considers angular deformity such a drawback in after-life that he thinks the operation should be attempted, even if attended with some risk. He suggests that the deformity should

not be corrected forcibly at one sitting, but gradually at several. **Phelps** also reported a successful case in a child of seven, in which the kyphosis, which was very pronounced, had been completely reduced. The cracking at the time of operation was so violent that it was thought the spinal column had been broken. There was no reaction and the patient was up in four days. He thinks, however, that when the hump is exceedingly large, when there is firm ankylosis, or an abscess is present, the operation must be regarded as very dangerous. **Sayre** was of opinion that if one could determine beforehand what cases could be rectified without danger the operation might well be adopted. Anyhow, patients for operation should be chosen with care. The general opinion at the meeting was that the operation could only at present be regarded as on its trial, and that it was not one to be generally recommended till further experience was gained on the subject.

5. Treatment of lateral curvature by forcible reduction.

Gibney (*New York Med. Journ.*, March 26th, 1898) showed before the meeting of the New York Academy of Medicine a girl of fourteen in whom he had attempted forcible rectification. Under an anæsthetic, vigorous and forcible efforts at torsion were made for five or ten minutes, and the patient put in a plaster jacket. These manipulations were made use of three times, with the result that the curve was considerably ameliorated, and the patient gained two inches in height.

6. The treatment of torticollis.

Redard (*Le Torticollis et son Traitement*, 1898) has recently published a work of 200 pages on this affection, which is a *résumé* of all that has been written on the subject in France and elsewhere. He has come to the conclusion that on the whole the open division of the sterno-mastoid is the operation that should generally be employed. At the same time, however, he has not abandoned the subcutaneous method altogether. Partial or complete ablation of the sterno-mastoid, he correctly says, ought to be reserved for very rare cases, and such as have resisted the ordinary surgical treatment. He specially calls attention to the importance of orthopædic methods both before and more particularly after operation, a treatment which is perhaps too apt to be neglected both by the surgeon and the patient.

7. The treatment of genu valgum.

Morton (*Brit. Med. Journ.*, April 16, 1898); **Willett** (*Bradshaw Lecture, Brit. Med. Journ.*, December 11, 1897).

In six cases in which the X rays were taken there was in none either a rickety curve of the lower end of the femur or

elongation of the internal condyle. On the contrary, there was an elongation upwards of the tibia just below the head, and a corresponding curve of the shaft of the tibia most marked about the middle part of that bone. In the face of these researches **Morton** asks if Macewen's osteotomy is the right operation. It has, says he, no doubt given good results, but he questions whether it would not be better surgery to divide the bones which are curved rather than to correct the deformity of the limbs by cutting through the non-deformed femur and causing a certain amount of deformity at the seat of division, together with some distortion in the position of the joints. He has treated one case by dividing the tibia transversely at the union of the head with the shaft by an incision made on the internal aspect of the limb. On one of the legs he was obliged to do a cuneiform osteotomy. The fibula was cut through at its middle part; the limb was rectified and immobilised as after a Macewen's operation. The result was very good, and the deformity just as well rectified as if osteotomy of the femur had been performed. Morton thinks if the tibia is fully exposed and the division is made with a small Adams's saw, there is no danger of injuring the tibial vessels. With this statement the reporter, however, is afraid he cannot agree, since wounds of these vessels in osteotomy of the tibia have occurred which have necessitated amputation of the limb.

Willett has performed 412 operations on 236 patients for knock-knee. Of these 232 were done after Macewen's method, 21 by the Reeves-Ogston method, and 159 by the osteoclast. He lays stress upon the importance of being able to note and record the actual degree of deformity in cases of knock-knee, because, he says, upon the two factors, the age of the patient and the degree of the deformity, he decides what operation to perform, assuming one to be necessary. He determines the amount by measuring an angle at the outer aspect of the knee by the meeting of two lines, the one drawn downwards from the great trochanter to the external tuberosity of the tibia passing over the outer surface of the external condyle, and the other upwards from the external malleolus to the outer surface of the external tuberosity of the tibia. For all patients under the age of thirteen in whom the recording angle is not less than 120 degrees, he performs osteoclasia. Above this age, being those presumably whose femora are too dense to be broken by the osteoclast, he prefers transverse supra-condyloid osteotomy on the lines laid down by Macewen, but he discards the Esmarch. Since 1885, from which date the technique of aseptic surgery has been more and more reduced to almost an infallible system, he has not met with any

mishap. In two instances, however, he had to give up the attempt to complete the operation on account of smart arterial hæmorrhage due to an abnormal position of the anastomotica magna artery, having to enlarge the wound to secure the bleeding vessel. The osteotomy was done a week or two later without further incident. Where the recording angle is less than 120 degrees, he employs the Reeves-Ogston method, since he has found it impossible by Macewen's operation in such cases to place the limb straight, because when the deformity is corrected the skin on the outer side of the limb is so tightly stretched over the projecting edge of the lower fragment that were it placed in the straight line it would inevitably ulcerate through. In one or two instances, when the deformity has been very severe, he has had to supplement the Reeves-Ogston method by a supra-condyloid division.

8. Tarsectomy for congenital equino-varus.

Murray (*Brit. Med. Journ.*, Oct. 15, 1898) reports fifty-two operations on forty-two patients, in which he has removed a wedge of the tarsus by Davies-Colley's method. He considers no operation could produce better results, both in respect to the duration of the treatment and the subsequent utility and appearance of the foot. He especially emphasises the importance of the wedge being sufficiently large to allow the foot being not only easily straightened, but of the varus deformity being slightly over-corrected.

Le Bec (*Revue d'Orthopédie*, Nov., 1898) contributes ten cases of tarsectomy for this affection. He, however, removed the astragalus and as much more of the tarsal bones as was found necessary to bring the foot into a good position. Passive movements in his cases were begun as soon as the wound was healed. He claims to have obtained a serviceable amount of flexion and extension at the ankle.

9. The treatment of infantile paralysis by function-transference or tendon-grafting.

Eve (*Brit. Med. Journ.*, Oct. 15, 1898) discusses the method for reinforcing paralysed or paretic muscles, by attaching or grafting on to them the tendon of a neighbouring healthy muscle (Nicoladoni's operation, as it is called, after its originator). He contributes five cases; in one, a case of paralysis of the muscle, supplied by the external popliteal nerve, the tibialis posticus was grafted to the extensor longus digitorum. The tendo Achillis having been exposed, a band taken from it was carried round the fibula and attached to the peroneus longus. Some dorsal flexion of the foot was regained. In a second case of equino-varus of paralytic origin, in which the peronei and

extensor longus digitorum were at fault, the tibialis anticus was divided and grafted on the peroneus brevis, and the tibialis posticus on to the extensor longus digitorum. Good power of dorsal flexion was obtained. There was no adduction. In the third case of paralysis of the extensor longus digitorum and tibialis anticus, the tibialis posticus was divided and attached to the tibialis anticus, and the peroneus brevis attached to the tendon of the extensor longus digitorum. In a fourth case of infantile paralysis with foot drop and eversion, the peroneus longus tendon was attached to the extensor digitorum, the peroneus brevis to the tibialis anticus. Distinct voluntary power of dorsal flexion was obtained. Goldthwait's plan of uniting the tendon was carried out in all cases—namely, the tendon of the paralysed muscle was split longitudinally, and the divided tendon of the functioning muscle passed through the split, and united by three or four sutures passed through both tendons. The reporter has employed Nicoladoni's method in several cases of paralytic calcaneus during the last few years, grafting the peronei on to the paralysed tendo Achillis, and in some instances the flexor longus pollicis also. The functioning muscle, when electrically stimulated, acted on the tendon of the paralysed muscle, but the power obtained was hardly sufficient to enable the patient to rise to tiptoe.

10. The setting time of plaster-of-Paris.

D'Arcy Power and Belcher (*Treatment*, March 24, 1898). Plaster-of-Paris is so much used in orthopædic surgery that the short note furnished by these authors is of value. Where it is of importance to make plaster-of-Paris set rapidly they found, after experimenting with many substances, that the best way to do so is to mix it with a 5 per cent. solution of common salt, and this may be made roughly by adding a tablespoonful of salt to a pint of water.

THE SURGICAL DISEASES OF CHILDREN.

By Edmund Owen, M.B., F.R.C.S.,

Senior Surgeon to St. Mary's Hospital and late Senior Surgeon to the Hospital for Sick Children, Great Ormond Street, London.

1. The operative treatment of cleft palate.

In the course of 1898 **Mr. Arbuthnot Lane** published a volume* of 278 pages, containing a certain number of clinical lectures which he had given, first among them being one on "Cleft Palate." In it he somewhat severely criticised the remarks of a recent writer upon the subject of cleft palate, especially the statement that the closure of the cleft in no way remedies the defective articulation. "No, gentlemen," says Mr. Lane (p. 14), "the treatment of cleft palate, like the greater part of surgery, has been a matter of creed and tradition, and has not been arrived at in any reasonable manner."

He says that he finds the best age for operative interference is during the fifth week, provided that the infant is in good health. He deals with the cleft in a hard palate by a modification of Davies-Colley's flap operation. With regard to the hinder part of the cleft he splits the sides of the soft palate and, turning over the flaps, adjusts them by sutures without removing any of the tissue. He says that it is very unusual for any portion of the flap-covering in the cleft in the hard palate to give way. The sutures used are of the finest silk. Mr. Lane writes that when he is operating on a palate and "there is no cleft in the lip and the narrow orifice is a difficulty, I do not hesitate to split the lip, restoring its continuity accurately after the operation on the palate has been completed." One would have thought that a surgeon who is in the habit of operating on the palates of five-weeks-old babies would generally be able to find sufficient elbow-room in the mouth of an older child without having to resort to splitting a sound lip. However neatly Mr. Lane eventually may mend the lip which he has, in my humble opinion, somewhat needlessly split, there will always be a scar marking the situation of his cut. Perhaps, after all, however, he does not resort to this measure so often as his statement might seem to suggest. I should not envy the position of

* *Clinical Journal* Office, 22½, Bartholomew Close, E.C.

a surgeon who, having split the perfect lip of a child with cleft palate for his convenience in operating, failed to remedy the defect in the roof of the mouth! *Primum est non nocere.*

On page 23 he says: "I do not pretend to obtain the same results in the treatment of hare-lip as are apparently got by some surgeons, if one can place any reliance whatever upon the diagrams they use to illustrate their methods of procedure. These, I fancy, are purely imaginary, since they appear to be able to restore the imperfectly developed lip to its normal form, and to its relationship to the lower lip."

The perusal of this modest and suggestive expression makes me feel a little uncomfortable, for I remember that a few years ago I myself published some diagrams upon hare-lip operations.

Mr. Lane's writings are invariably straight to the point and interesting, and if they do not always carry conviction to an old-fashioned surgeon, at least they arrest his attention and offer him material over which he may do well to ponder.

Sir Thomas Fitzgerald, of Melbourne, in a lecture which was recently published in the "Hermes Med. Supplement" (lxxxiii.), whilst speaking of the closure of clefts in the hard palate, remarked that he had sometimes employed a method of Fergusson's which consisted in chiselling the bones of the palate, and levering the parts together. From experience, he believed it to be the proper operation for a really bad cleft palate. It has the advantage that cicatrisation takes place laterally, and so the soft palate is not drawn forward, and caused to be contracted antero-posteriorly. He believed that speech is better under this plan of treatment than under the muco-periosteal operation. Within the last month he had operated upon the daughter of a distinguished lawyer, where the cleft in the hard palate was too wide even for the muco-periosteal operation, and had adopted the old treatment of chiselling the bone forming the palate on either side, making four distinct wedge-shaped holes with a chisel three-eighths of an inch wide on either side of the cleft, and crushing the bones together. Afterwards he passed a strong wire through the chiselled holes from side to side, and drew the parts into perfect apposition. The case did well, and speech is good; in fact, with little or no nasal intonation. Sir Thomas's opinion is that this will be the operation of the future.

Clutton (*St. Thomas's Hospital Reports*, vol. xxv.) has recently published a full account of his operations on cleft palate. He says: "If the edges can be brought together by free lateral incisions, age alone would be no bar to operation. It is now rare for the edges to break away unless diphtheria or scarlet fever

should accidentally be contracted. This is in part due to the nature of the material used for suturing, as no one should now use silk in the mouth if it is to be retained long enough for sound union of the edges. However aseptic it may be to start with, it cannot long remain so.

"I have said nothing as to an operation in two stages, namely, the first to close the soft palate, and the second at a later date to complete the operation by the closure of the hard. I have never done it, and see no particular advantage in thus subdividing the operation. If the child or baby is strong enough for the complete operation, it is far easier to obtain success by closing the whole cleft at once. If the child is not in good condition, it is better in my opinion to postpone the operation altogether to a later period."

As regards the age for operations, Mr. Clutton says: "I believe that a very large proportion of the worst cases of cleft palate can be safely operated on before the second year is completed. The only reason that has prevented me from carrying out my own views is simply that the cases have not been brought to the hospital till the children were much older.

"It is, however, of great importance to do the operation at the earliest possible time for another reason. Milk and other fluids are liable to return by the nose. A baby has on this account to be fed very slowly, and consequently is often insufficiently nourished."

As regards the improvement of the voice after the operation, Mr. Clutton truly says that where the operation has been done before the second year has passed, it will often be found that the voice is quite natural, and is not to be recognised as one with the peculiar intonation belonging to a deficient palate. When the child is five years of age he or she has already learnt to talk for a comparatively long period, and it is sometimes quite distressing to notice what little improvement has been accomplished by the operation. The improvement that is then to be obtained rests too largely with the parents and friends. If they do not take an infinity of trouble, the child at this age of irresponsibility will appear sometimes scarcely to improve at all after the first few months, and it would appear as if one might as well have operated at ten years or even later.

A clinical lecture upon cleft palate by **Edmund Owen** was published in the *Lancet* of Jan. 29, 1898.

Upon the important question of the best age for operating he wrote:—"If the cleft be confined to the soft palate and the infant is in a satisfactory state of health the operation may be done

within a few months of birth. But if the hard palate be also implicated I am at present inclined to wait at least another year lest the infant should receive a fatal shock from the necessarily severe operation. I am not sure that it is necessary thus to wait before attempting to close the entire cleft, but I am at present inclined to think the delay expedient and if the cleft is a wide one I am convinced that it is discreet. The tissues at this early date are little more than protoplasmic and the infant's power to resist shock must be extremely feeble. I am not satisfied that the risks of the operation in these circumstances are outweighed by the gain of the early closure.

"However wide a cleft of the hard and soft palate may be I prefer to operate upon the entire cleft at once rather than divide the operation into two parts, one for the hard palate, and one for the soft. Indeed, it is necessary freely to detach the muco-periosteum of the back of the hard palate before one is able to bring the edges of the adjoining part of the soft palate into apposition, and similarly the hinder part of the cleft in the hard palate cannot be closed without loosening the anterior part of the soft palate. Thus in either instance going a step further and dealing with the remaining part of the cleft adds so little to the time expended over the operation, and to the shock inflicted upon the patient, that in every case it is worth trying for. Nothing succeeds like success, and in a large proportion of cases both parts of the cleft when thus dealt with are entirely and permanently closed at the one operation."

I have tried the gag recommended by Mr. Lane, and depicted in his "Clinical Lectures," but I cannot get on with it, and, moreover, it is destitute of a tongue plate.

A perfect gag has yet to be invented. I have tried almost every gag in the market and I find that I get on best with one which is called after its ingenious inventor, "Smith's gag." A disadvantage in connection with it is that it is sometimes very difficult to keep it in place, the plates slipping forward from their bearings on the teeth and worrying the surgeon in perhaps the most important stage of the operation. But when the child has lost many of its teeth, this gag is quite useless. I have, therefore, modified Smith's gag by replacing the usual plates by bars which carry minute spikes which can slip into the interdental crevices, or into the toothless gums, and there take a firm hold. Messrs. Weiss make these modified gags (Fig. 1.).

One of the most important points towards securing union is to leave the flaps perfectly free from tension; this is done by continuing the incision which has already been made near the alveolar

process backwards through the substance of the soft palate, as shown in the dotted line in Fig 2.

Mr. R. W. Murray published a short paper upon hare-lip and cleft palate in the *Liverpool Med. and Chir. Journ.* of Jan., 1898.

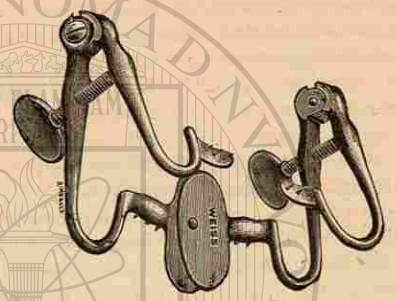

Fig. 1.—Modified "Smith's gag."

Fig 2.—Cleft of hard and soft palate (left side) showing line of incision along alveolar process, with dotted line in which incision may have to be freely extended.

He said that in all surgical text-books, and in most of the works dealing especially with this subject, the age at which it was advised that the palate should be operated upon was somewhere between the third and sixth year. This, he was convinced, was a mistake; for after all, the chief object in closing a cleft palate, more especially when this is the only deformity, was to render the powers of speech more perfect than they otherwise would be. If the operation were delayed until the third year or later, the child by that time had learned to talk, and necessarily

to talk badly: a habit which once acquired was very difficult to overcome completely. The point he wished especially to emphasise was that *the palate should be closed before the child had learned to talk at all.* This being the case and other things being equal, the sooner the cleft was closed the better, and he had on several occasions operated upon children during the first few months of life, but he had come to the conclusion that, as a rule, it is not advisable to operate so early.

"When performed at this early age the operation is a difficult one, owing to the small space one has to work in: the tissues are extremely friable, and require to be handled with the greatest care; besides which, the halves of the uvula are then so small that, after paring their edges, there is hardly sufficient tissue left to form a uvula with. During the last four years I have delayed operating until the child is about twelve months old, and I show this evening several children whose palates were closed during infancy, and who now talk quite naturally, it being impossible to detect from their speech that they ever had cleft palates. In these particular cases the cleft of the palate was not associated with a hare-lip. When the deformity includes both the lip and the palate, I operate upon the lip about the fourth week, close the soft palate at the end of the first year, and subsequently close the hard palate. In this class of case the result of operation, as regards the powers of articulation, is necessarily not so satisfactory as when the palate only is cleft, but, as you have seen in several cases shown you, the defect in speech is not very noticeable."

I quote with full approval Mr. Murray's remarks; it seems to me that he has hit off exactly the time at which, all things being suitable, the operation on the lip and on the palate should be respectively performed. But, as I have already remarked, I am not an advocate for dividing the operation upon the palate into two stages.

2. The forcible reduction of Pott's curvature.

Mons. P. Redard has issued in a brochure* the paper which he read at Moscow upon the treatment instituted by Dr. Calot. His opinion is that the method is rational, and that it can be advantageously adopted in certain cases, but on condition that it is carried out prudently "*et sans danger d'accidents primitifs ou consécutifs sérieux.*" Yes; but however "prudently" the treatment is carried out there must inevitably be a danger of immediate accident and of secondary complications. The question at once arises, Is it prudent to subject the child to the inevitable risks, immediate and remote? I am by no means going to answer this

* Paris, Carré et Cie, 3, Rue Racine.

question affirmatively, but when upon the question of "risks" I cannot hide from myself the fact that every operation which the surgeon undertakes for a deformed or helpless child contains some element of risk. The nearest parallel to Calot's operation is, perhaps, the resection of an old tuberculous hip with threefold displacement of the thigh. I suppose that no surgeon likes the operation, but we all have to practise it. After it the child may die from shock or, more remotely, from general dissemination of the infective tuberculous material, from bed-sores, or exhaustion.

So far as I can judge by studying what is written in the operation—if the cases are fairly reported—the risks in and after Calot's operation, are certainly not so great as those in connection with the operation of resection of the head of the femur in old articular disease. That this comparison is not a good one, I am fully aware, but I fail to discover a better. The comparison breaks down in this, that the *redressement forcé* of a gibbous spine is not an open operation, and will not, therefore, lead to any risk of septic contamination.

I am not for a moment arguing that the new operation marks a real advance in surgery, but I wish to be fair towards it. Redard himself says (p. 5) that some cases of Pott's curvature can be modified only by submitting the patients to the greatest dangers. And he would have it that the forcible straightening should be reserved for those cases in which, under an anæsthetic, the projection can be found to yield to a moderate force. He says that slight curvatures of recent origin and of limited osseous area can be easily and entirely reduced by a force *très modérée*, without doing any local damage. So also in the case of young or feeble children. He will not attempt to give a time limit beyond which it is inexpedient to employ the force, but he evidently considers that time—which generally means consolidation—has a very important bearing in the question of operating. "L'extension du rachis par traction au niveau de l'extrémité céphalique et des membres inférieurs, une légère pression directe sur la bosse, pendant que le sujet est profondément endormi par le chloroforme, donnent seules des renseignements nets et précis."

As Redard says, the vigorous treatment of curvatures in the cervical, and especially in the upper cervical region, would be very liable to accidents. Indeed, one shudders to think of them, and it will be noticed that in the various photographic representations which have found their way not only into the medical, but also into the lay press, the boss which is being dealt with is always in the dorsal or lumbar region. I could hardly imagine either of my

friends Calot or Redard posing to a disciple of Daguerre whilst attacking or even examining a cervical boss.

The presence of extensive cold abscess, and the existence of constitutional or organic disease are, according to Redard, to be regarded as contra-indications to operation, but the existence of paraplegia is to be taken as a clear indication for it.

In about 20 per cent. of the cases operated on, the pressure caused a superficial slough over the projecting spines—but had the force been exerted by the palms of the hands rather than by the lever, which is shown in the illustration in Redard's brochure, I think that even this accident could have been avoided. Redard says that he has seen no other complication following his operations, but that in every case the (peripheral) pains disappeared and the general health improved, and he attributes these happy results to the care which he exercised in choosing his cases.

When the operation was first introduced to England from France I confess that I viewed it with alarm. I was afraid lest a catalogue of accidents of varying degrees of gravity should attend its adoption. But so far as I can make out, this fear, if not groundless, has been proved to be greatly overrated. I am sure that there are many British and foreign surgeons who, like myself, have hitherto never had a good word to say for Calot's procedure, but I think that we must be prepared to admit that there are cases in which it may be resorted to, and it appears to me that Redard has very judiciously pointed out the class of cases in which it may be tried.

It is hardly necessary to say that the forcible straightening of the back is in no sense a *curative* operation, and that when it has been performed the surgeon has to recommence the patient treatment which ensures complete rest for the ulcerated bones. But he takes the fresh start in that direction with the back straight instead of excurved. And I should think that it would be necessary to keep the child longer in the horizontal position than it would have been had the straightening out of the carious angle not been resorted to.

R. W. Murray, F.R.C.S. (Liverpool), in publishing some cases in which he straightened a carious spine (*Brit. Med. Journ.*, p. 1630, Dec. 4, 1897) says :—"I feel sure that some permanent advance in the treatment of spine disease will be the outcome of the revival of interest in this branch of surgery. That it will not be such a great advance as some surgeons would have us believe I think there can be little doubt ; but I sincerely hope it will be a greater advance than some of us expect."

The moral which I would prefer to point from these remarks

upon the treatment of the gibbosity of the spine in Pott's disease, is that the practitioner should take so much patient care over the conduct of the case, from the very beginning of the disease, that no deformity should ensue. There is no reason why caries of the spine should be followed by obvious deformity.

If one has entire charge of a case of tuberculous disease of a hip- or knee-joint from the beginning, one takes great care that neither by the weight of the body, by the contact of the foot with the ground, nor by the energetic spasm or watchful contraction of apprehensive muscles, should the limb become deflected. He makes it his business that the child gets well with the thigh neither flexed nor adducted, though some inevitable shortening may have to be recorded. And so also with tuberculous disease of the knee, if the child is treated with the promptitude and energy which the case deserves there should be no displacement whatever of the head of the tibia.

But the child with early disease of the spine is too often allowed to go about as he pleases. The obscure peripheral neuralgias over the front of the trunk, or down the limbs, are not understood; the stiffness, the stumblings, the aches and the pains are disregarded or misinterpreted, and the disease is permitted to drift on, the disintegration of the bodies of the vertebræ increasing until deformity presents itself. Would it be believed that practitioners have been heard of who, in an obscure case, have declined to admit the existence of Pott's disease until an angular projection had occurred? To them, "angular curvature" of the spine, as they called it, and Pott's disease were interchangeable terms. I am willing to allow the term "angular curvature" to pass, though I fail to see how a thing which is "curved" can also be "angular," the two words being contradictory of each other. But I will insist on this—it is the moral which I wish to point—that if Pott's disease is promptly recognised and efficiently treated there should be no angular projection for Calot, Redard, or me, perchance, to deal with.

Reference may be made with advantage to **Dr. Calot's** remarks at the Clinical Society of London, as recorded in the *Brit. Med. Journ.* of Nov. 20, 1897, p. 1501. In the course of these remarks, Calot assured the meeting that the difficulty and the dangers of the correction were not greater in the spinal disease than in the disease of the other joints; that many hundreds of the operations on the spine had now been done for eight months in many parts of the world by a large number of surgeons, and had shown that the mortality after operation or the danger of paralysis did not probably exceed 1 per cent. His first series of thirty-seven

cases thus treated did not comprise a single instance of untoward result following the operation.

At a meeting of the American Orthopædic Association which was held at Boston in May, 1898, **Dr. Frank E. Peckham** argued against the adoption of the forcible reduction of the deformity when there was firm ankylosis, but he affirmed that in those cases in which paraplegia was present the operation should be urged with the greatest confidence.

My opinion of the value of laminectomy, the operation which was introduced some years ago as appropriate in the case of paraplegia following Pott's disease, is so unfavourable that if any operative procedure seemed to be urgently demanded in a paraplegic case I should now certainly try the effect of forcible extension of the spine.

3. The sclerogenic method of Prof. Lannelongue.

(Archives générales de Médecine, April, 1898.)

Dr. Paul Coudray remarks that he has on various occasions called attention to the results of treatment by the method of the injection of solutions of chloride of zinc in tuberculous articular disease. He places these cases in three classes: (1) Where no suppuration has occurred; (2) where, though suppuration has occurred, the joint is still closed; and (3) where the abscess is discharging. He bases his observations upon a series of upwards of a hundred cases, calling particular attention to a patient who had general tuberculous disease of the tarsus, with discharging sinuses. So unpromising did the case look that an experienced surgeon had already condemned the foot for amputation. The unhealthy granulation-tissue was scraped out from various situations, and the solution of zinc chloride was applied. The foot was saved, and it has since become strong and vigorous.

A little girl was seen in March, 1892, in a very bad state of health with a breaking-down, tuberculous knee. The child had come from a hospital, where amputation had been formally advised. On April 12, 1892, twelve injections of a 10 per cent. solution of zinc chloride (35 drops) were made, and a week later the joint was laid open as for a resection, the scissors and sharp spoon being freely used. The child recovered with a synostosed knee in a slightly flexed position. She walks excellently, "without lameness" (*pour ainsi dire*)—which is as satisfactory as this is unusual for a child with a stiff knee.

[I like the expression "*pour ainsi dire*," and intend to adopt it when recording my successful cases—other cases not being deserving of record. The expression gives a picturesqueness to an otherwise dull report; it rounds it off and effaces blank spaces. I never met with it in Euclid.]

Observation xxiii.—A child of seven years with old-standing white swelling of the knee, which was bent almost to a right angle. "Straightening under chloroform obtained with great difficulty; a month later, seven injections of the solutions were practised—1 grm." Which means, I apprehend, that about 15 gr. weight of the 10 per cent. solution in all were used for the seven injections. That is, about two drops for each injection. A month later the joint was opened and scraped. The child recovered with a stiff knee.

Reading this and others of the observations, one fails to see how the progress of the case was influenced by the injections; Coudray, however, is of opinion that they guide and render more precise the (subsequent) intervention. He says (p. 423) that the method greatly simplifies the process of curettage, and, moreover, renders the living tissues extremely active, producing in them fibrous and osseous changes which successfully oppose further infection. He is authorised by Lannelongue to affirm that the improvement thus produced is definite and permanent, recurrence of the disease being practically unknown.

In a girl of 16 (*obs. ii.*), with a tuberculous knee of nine years' standing, he employed on one occasion nine injections of three drops of the 10 per cent. solution, and, as some pain persisted, he gave two more injections at the end of a fortnight. This child did apparently well, and after six years had had no return of her trouble. Thus, if the injection does not always check the formation of a tuberculous abscess, it appears to render its influence comparatively local and harmless.

Many similar cases are given, ten or a dozen injections of two or three drops each being made at a time. In some of these cases small abscesses formed, which apparently did well under incision and scraping. It would appear that under the influence of the injections the fungous granulation-tissue steadily shrinks, probably being converted into a fibrous structure, though, in some cases, resection has ultimately to be resorted to.

There is this one feature about Lannelongue's sclerogenic treatment, that the surgeon resorts to it in cases in which he might otherwise be induced to advise a resection, and thus, if the disease is kept in check the child is afforded an extra opportunity of triumphing over it.

As regards the amount of zinc chloride introduced, it will be seen that in the case of a girl of eleven years (*obs. xxii.*), whose left knee was considerably enlarged by fungous granulations, nearly 40 gr. were used in ten injections on the one occasion. (A few weeks later this child fell a victim to tuberculous meningitis.)

In the next case reported (*obs. xxiii.*), double that amount was used for a tuberculous knee in a girl of ten years. (This child died of enteric fever some months later.)

Dr. Coudray does not strongly recommend the method in disease of the hip-joint, as the tuberculous tissue is too deeply situated to be attacked with precision and certainty. Nor has he found it of marked service in the treatment of glands enlarged by tuberculous inflammation, because, he says, it is difficult to *circumscribe* the deposits sufficiently; for he injects the solution (20 per cent.) into the superficial part of the gland and into the surrounding tissue—not into the mass of the gland.

The conclusions arrived at are that the sclerogenic method is specially indicated in early tuberculosis of the knee, and that the series of injections are best made on a single occasion. Like Lannelongue, Coudray is gradually increasing the amount employed, and he is now using, for a knee, for instance, ten or twelve injections of four or five drops each of a 10 per cent. solution in a child of eight or ten years.

For my own part I think that the method is worthy of more attention than it has yet received in Great Britain. I have from time to time employed it, but I confess, in a somewhat half-hearted manner, expecting, perhaps, too much from it.

At any rate it may be employed without incurring risk, as it appears, and it may prove useful in that large class of cases of "white knee" in children in which the surgeon feels that something ought to be done, whilst he recoils from the resort to an erasion or resection.

The subject of zinc chloride injections in tuberculous osteo-arthritis came under discussion before the *Société de Chirurgie de Paris*, on Feb. 9, 1898, on the case of an adult who had been under the treatment of Dr. Gérard Marchant. It seemed to have been a hopeless case of tuberculous disease of the tarsus with discharging sinuses. The injections had been made every week for eight months. In the course of some remarks Lucas-Championnière said that it was impossible to compare success of the treatment in adults with that obtained in children.

4. Myeloid sarcoma.

Myeloid sarcoma of the femur treated by scraping, by **Frank Hinds, M.D.**, Hon. Medical Officer to the Worthing Infirmary (*Brit. Med. Journ.*, Feb. 26, 1898, p. 555). Although the case recorded was that of a man of thirty-four years, it has, nevertheless, a very important bearing on the surgery of childhood, where central sarcomas are so frequently met with.

The case was that of a healthy-looking man with a swelling at the lower end of the femur, which, at the time of the operation, was thought to be probably a central necrosis. But as soon as the incision was carried down to the bone, its thin expanded condition and the bluish colour of the subjacent structure showed the nature of the disease. A piece of bone about the size of a crown piece was removed with scissors, and the growth, which was dark red and firm, scraped out, leaving a cavity in both condyles, extending upwards into the shaft, and measuring 4in. in depth from the opening in the internal tuberosity to its outer side. The interior was scrubbed with chloride of zinc solution (gr. xx ad ℥j), and packed with gauze.

At the end of six weeks, the appearance of the granulations not being satisfactory, the cavity was again scraped out and scrubbed with zinc chloride solution; no definite masses of growth were recognised at this operation.

Convalescence was uninterrupted; the leg was kept in a Thomas's knee splint for nine months, and afterwards a leather splint was worn for a further period of nine months.

At the beginning of February, 1898, the man's health was perfect, and there were no signs of growth to be detected anywhere. The knee had only a very slight degree of flexion; there was no pain in it; the patient used it practically as a stiff leg. There was a sinus about 1 in. deep on the inner side, which discharged enough pus just to soil a dressing in twenty-four hours. Under the microscope the growth was seen to be a myeloid sarcoma with numerous giant cells.

There has been no sign of any recurrence after four years from the date when the earliest symptoms were noted, and two and a half years from operation. The advantage of removing the growth by scraping instead of by amputation of the limb is obvious, and the earlier it is resorted to the better the prospect will be of saving the bone in a condition in which repair may take place to such an extent as to result in a useful limb. The very thin condition of the bone was the reason for keeping the knee free from weight for so long a period.

Certainly the case is very instructive, and it will be welcomed by those surgeons who argue for a less serious operation than amputation in central sarcoma of the lower end of the femur. Myeloid sarcoma is the least malignant form of malignant disease, and some pathologists go so far as to affirm that it ought not to be classified amongst the malignant diseases at all. At any rate it differs in every respect, clinically and pathologically, from a periosteal sarcoma; and if a child with a central sarcoma can be

kept under constant observation for some years, the surgeon may do well to follow the course adopted with, apparently, so great success by Dr. Hinds.

Myeloid sarcoma of the upper end of the tibia treated by scraping.

Charles A. Morton, F.R.C.S., Prof. of Surgery in University College, Bristol (*Brit. Med. Journ.*, July 23, 1898). Now that with increasing clinical experience and greater pathological knowledge, central sarcoma has beeen clearly differentiated from periosteal, its comparative harmlessness has become more generally admitted. Previously it was the invariable custom to amputate a limb for a myeloid sarcoma, but of late the operating surgeon has become much less heroic in his treatment, and, as these reports show, he now makes it his first business to try to save the limb.

In the important matter of the treatment of a sarcomatous bone, everything turns, of course, upon the histology of the growth. And though the comparatively harmless endosteal tumour usually attacks the end of the diaphysis, this is by no means always the case, for sometimes a periosteal sarcoma attacks the neighbourhood of the joint. Unfortunately, too, a sarcoma which is not of the myeloid variety sometimes, though very rarely, attacks the interior of a bone. "If," says Prof. Morton, "on examination of the growth after removal it was found not to be myeloid, the patient should be very carefully watched, and amputation performed at the earliest sign of local recurrence." It is apparently a fact that if a myeloid sarcoma has not perforated its capsule it may be safely removed without fear of recurrence: it does not disseminate; and **Sutton** has suggested that a central sarcoma should no longer be called a myeloid sarcoma, but a myeloma. **Clutton** also considers that they so seldom return after removal that they may almost be looked upon as benign growths. **Henry Morris** has recorded a case of resection of the lower end of the radius for myeloid sarcoma, and the patient was perfectly well thirteen years later, and **Lucas** one of resection of the lower end of the ulna for the same form of growth, and the patient was also well ten years after operation. A patient of Mr. Sutton's, from whom a myeloid sarcoma of the sternal end of the clavicle had been excised, was shown at the Clinical Society free from recurrence nearly four years later.

Excision of the affected portion of bone has now been accepted by most surgeons as the recognised method of treating such cases if the removal of bone can be carried out so as to leave a useful limb. But Morton could find no record of a case in which this has been successfully done in the femur or tibia, though it has in

the upper end of the humerus. "I have now excised the upper end of the tibia for myeloid sarcoma in two cases. In the case first operated on the patient has a most useful limb, and in the other is beginning to walk without support. In the first case I determined to try to save the limb, but the patient consented to amputation if I thought, during the operation, that it would be the best method of dealing with the disease. In the second the patient absolutely refused amputation under any circumstances. It seemed to me that the shortening could easily be made up for by a high-soled boot, but what I feared was after removal of so large an area of bone, when I approximated the tibia to the femur, the tissues in the popliteal space, instead of retracting to a sufficient extent, might kink, and thus, by obstruction of the popliteal vessels, cause gangrene in the leg. That the operation can be performed without danger of kinking of the vessels is now evident, and that we may get perfect osseous union and a very useful limb is shown by my first case."

5. Hæmarthrosis due to hæmophilia.

A. Chaning Pearce, M.B., B.S., Lond. (*Brit. Med. Journ.*, April 30, 1898, p. 1135). CASE I.—H. F., aged seven years, injured the left knee on August 29th, 1895; a week later the joint was tense and fluctuating, but not very tender. He was anæmic; his cheeks were covered with dilated capillaries. Pulse rapid and small; hæmic bruits were heard. Temperature 102°. An attempt at aspirating the joint was made under the impression that the condition was one of subacute synovitis, but was given up when nothing but treacly-looking blood oozed out. The high temperature persisted for ten days; the swelling of the knee gradually diminished. Six weeks later the joint was nearly normal, and movement was only slightly limited. His mother said that he has been liable to attacks of "rheumatism" ever since he was two years old; it had been observed that the network of capillaries on his cheeks became engorged before an attack. When he cuts himself, he is said to go on bleeding for a week.

He again came up on October 16th with troublesome oozing from the gum following removal of two fragments of his temporary incisors. His left elbow was said to have been knocked; the joint was distended and the skin discoloured; there was slight tenderness. A week later the other elbow was found in the same condition; this was not ascribed to any injury.

A month after this he was again admitted for an enormous hæmorrhage in the popliteal region extending down to the ankle. There was a history of injury. The boy was feverish and weak, but rapidly improved under treatment. When last seen, in January, 1896, he was fairly well, but had a hæmarthrosis of the right elbow associated with a bruise over the inner condyle.

CASE II.—P. M., aged two years, had been admitted for what was thought to be a "pulpy swelling" of the right knee when ten months old. The notes recorded that the swelling extended half way up the thigh. About this time it was noticed that the slightest pressure, such as that of the fingers in lifting or that of the rail of his chair, caused bruising of the skin. There was no family history of hæmophilia.

In May, 1895, he was admitted with a wound of the mucous membrane between the upper lip and gum, which had bled continuously for twenty-four hours. The knee was well. In spite of plugging with gauze, local application, and internal administration of styptics, the bleeding continued for a week. The wound was then charred over with Paquelin's cautery till all oozing stopped; it healed without further trouble.

Four months later he was brought up with a slight effusion in the left knee, and a month later a large hæmatoma appeared on the right knee. In January, 1896, he had a hæmatoma extending from the umbilicus to flank. He was in a serious condition, but he made a rapid recovery.

The third case was a boy, 2–3 years, who "bruised readily." His maternal uncle had frequent epistaxis. In August, 1895, the boy came under treatment for bleeding into his ankle-joint.

It is well from time to time to be reminded of the existence of such a disease as hæmophilia, for the surgeon sees so few cases of it that when one comes before him he is apt to be off his guard, and, by adopting active treatment under a misapprehension, to invite disaster. So far as my experience goes, there is nothing in the aspect of a boy to show that he is a bleeder. It has been suggested that all such subjects should be tattooed upon the front of the chest with a conspicuous "B" to show that they are bleeders. But I should think that in later years the boy would be as anxious to hide that initial as was a young man whom I once had as an out-patient on whose chest a big "D" was branded!

The first of the cases here reported is just the sort of one to get a practitioner into difficulties—a boy is admitted with acute effusion into a knee. What more likely than that it should be a sero-synovial, blood-stained effusion, the result of an injury, and what treatment more suitable than that of tapping the joint and fixing the limb in plaster-of-Paris splints for a while? But what a calamity if the hæmorrhage continued, and if an oozing through the puncture caused the joint to become septic!

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As a rule, however, the disturbance of the joint is but temporary; the blood is quietly absorbed, and in due time the articular function is completely restored. But though I do not happen to have seen a joint ruined by hæmorrhage, such a contingency does now and then happen; so that a hæmophilic child with a distended knee is a double source of anxiety.

The surgeon is to be congratulated on the success which attended the cauterisation of the buccal wound. I confess that my own experience would have discouraged me from adopting such energetic treatment. However, nothing succeeds like success.

6. Fracture of the neck of the femur in childhood. Two interesting articles upon this important subject were published during 1898, one by **Hamilton Russell, F.R.C.S.**, Surgeon to the Children's Hospital, Melbourne (*Lancet*, July 16, 1898, p. 125), and the other by Rozal Whitman, M.D., New York (*Trans. of the Amer. Orthop. Assoc.*, vol. x., p. 216).

Fracture of the neck of the femur in childhood is usually, I think, separation of the upper epiphysis, which comprises the head of the bone. There is a clear history of injury in most cases; the child cries when the limb is roughly handled or moved; he cannot walk, or if he walks it is with a great limp, and he complains of pain in the region of the joint. If he is stripped and placed in the upright position he keeps the thigh slightly flexed, supporting the weight of the limb upon the toes of the extended foot. If he is placed flat on his back the limb is found slightly everted, shortened, perhaps by half an inch, and, as already noted, the child does not like the limb being moved at the joint.

Nothing is easier than to mistake such a case for one of hip-joint disease. Hip disease is one of the commonest lesions of childhood, whilst fracture of the femoral neck is a rare one. Synovitis at the joint there must be after so severe an injury as fracture of the neck of the femur, but it is not the synovitis that is going to lead on—if the case is properly treated—to destructive disease. If, however, the child were tuberculous, it is quite likely that separation of the epiphysis would be the precursor of complete destruction of the joint.

In all probability, many children with separation of the upper epiphysis of the femur are treated as cases of hip-joint disease, without any attempt being made to restore the parts to their proper position; so the head of the bone remains in the acetabulum, whilst the short neck and the shaft of the femur are carried upwards and backwards, as far as the lower part of the capsular ligament will permit.

As regards diagnosis, the best thing is for the surgeon to keep it always in his mind that a child who has severely, or even apparently not severely, injured his hip-joint may have the upper femoral epiphysis detached. And if he finds that the limb is everted, and that careful measurement from the anterior superior iliac spine to the tip of the internal malleolus shows a shortening of about half an inch, it will be well for him to have his suspicion confirmed by the X rays.

Mr. Russell says:—"In the absence of especial care in the use of the tape-measure such a fracture may very readily find its way into the category of cases of hip disease, and I have no doubt that this has been the usual fate of such injuries in young children. This mistake in diagnosis having once been made, the further course of the case is easy to imagine; the child is put into a Thomas's splint, which no doubt will afford considerable relief, and after a few months of this treatment the limb will be found to have largely regained its utility, and the surgeon will cherish the belief that the disease has become cured under his treatment. It is true that there will be some shortening and adduction of the limb, but on the whole there is ample ground for satisfaction at having got rid of the disease in so short a time and without abscess-formation. We could regard an error of diagnosis with tolerance, if the worst evil resulting from it could be shown to be merely an erroneous belief that we had treated a case of hip disease with great skill and success, but unfortunately this is by no means the case." For permanent shortening is sure to occur.

But even if the lesion is duly recognised, and promptly treated, there is, it appears to me, a great risk of the occurrence of permanent shortening, because of the disturbance at the growing end of the bone, and because of the further sinking of the head of the bone when the erect posture is eventually resumed.

Dr. Whitman describes ten cases in which the lesion was diagnosed, and in the one numbered "four" in the series he gives in a nutshell the physical signs of the fracture:—A boy, aged eight years, fell about fifteen feet; this was followed by pain and disability. The trochanter was elevated above Nélaton's line, there were marked thickening about the joint and muscular spasm on motion. The leg was fully extended and rotated outward. On the child's admission to the hospital he was anæsthetised, and a diagnosis of fracture of the neck of the femur at its junction with the shaft was made. There was distinct bony crepitus at this point, and the trochanter rotated on its own axis. Here is the report of the sixth case; it was that of a girl of six

years :—Five months previously she had fallen down a flight of stairs, and being unable to walk was placed in bed. No immediate diagnosis was made ; later, after consultation, the child was said to have hip disease, for which she had been treated by rest in bed with traction for several months. The examination showed limp, an elevated and prominent trochanter, three-fourths of an inch of shortening, and slight eversion of the left leg. Motion was unrestricted. A final examination was made two and a half years after the accident (January 28, 1897.) There was no decided change in the physical signs. There was, however, an increase of one-fourth of an inch shortening, and there were slight eversion of the foot, and slight restriction of abduction. No discomfort or disability was complained of.

Dr. Whitman remarks that in all his cases the patients were perfectly well until they received a severe injury which necessitated immediate confinement to bed for several days or weeks. And he suggests that it would appear that mistakes are due to neglect of proper examination, or to inaccuracy in the interpretation of obvious signs, rather than to any particular difficulty that diagnosis offers, either in the primary or the secondary stage of the injury.

I am half afraid that Dr. Whitman will think that I have taken a great liberty with his interesting and important paper, in that I have used his clinical material to illustrate my remarks upon separation of the upper epiphysis of the femur, rather than actual fracture of the neck of the bone. Dr. Whitman regards the cases of fracture, but if I make so bold as to consider an uncertain portion of them as separation of the epiphysis no great harm is done, and I think that I may be pardoned. My desire is to call attention to the fact that fracture of the neck of the femur does occur in children from time to time, and that we must be prepared to meet and deal with it. As regards the way in which it should be dealt with, I will merely say that the practitioner who can diagnose its existence will not need to be told how to treat it.

7. Infantile sterno-mastoid tumours and the simple wryneck of children.

Jordan Lloyd, M.S., F.R.C.S., Senior Surgeon to the Children's Hospital, Birmingham (*Birmingham Med. Review*, May, 1898).

"The common wryneck of children is interesting in its relation to the well-known swellings met with in the sterno-mastoid muscles of infants during the first few weeks or months of their life, and wrongly described as 'congenital.' In my student days these little tumours were always regarded as gummata, and their

presence was accepted as positive evidence of a syphilitic heritage. They were seen to disappear when the child wore a circlet of flannel spread with unguentum hydrargyri around its upper arm, and the tumour was smeared with an ointment of iodide of potassium, or some other wonder-working composition. This evidence was accepted as conclusive : the ointment had been rubbed in, the tumour had gone, what further proof was needed ? The *post hoc* fallacy is responsible for many errors. The theory of syphilis offered no explanation why these so-called 'congenital muscular gummata' were seen only in the sterno-mastoids."

In common with most surgeons, Mr. Lloyd has noticed that many children suffering from these sterno-mastoid tumours, and also many children with wryneck, came into the world breech first, and one has only to follow the movements attending the delivery of a fœtus in this position to see how the sterno-mastoid muscles happen to be injured.

The swelling is not present at birth, but appears most often about two or three weeks later. It is smooth and hard, usually in the inner head of the muscle just above the level of the clavicle, and it varies in size from a horse-bean to an adult thumb. It is elongated in the direction of the muscle. The skin over it is normal and unattached, and the swelling can be moved with the muscle in a lateral direction only. It is painless, but is occasionally tender. The head is kept slightly drawn to the affected side, the face being turned away from it ; and when an attempt is made to turn the face in the opposite direction resistance is felt and the child cries as if in pain.

The tumour consists of reparative material in the course of organisation, and is thrown out in excess, just as is seen in other parts where injured muscles, tendons, or bones are not kept at rest during their process of repair.

"The treatment of the condition is simple and satisfactory, because it is common-sense and mechanical. All our efforts must be directed to keeping the face turned towards the affected side both waking and sleeping, so as to prevent the damaged muscle repairing itself in its shortened condition. Patience and a 'proper understanding' on the part of the nurse or mother are absolutely essential, and the less we confuse them with drugs and mystery, the more likely are we to secure a good result. Treatment must be continued for several months, even after all signs of the swelling have disappeared. The child should be carefully examined from time to time—say every six or twelve months—during the first few years of its life, to see that its neck is symmetrically developing. In this way wryneck would be discovered at its

earliest inception, and if properly treated then all its troublesome secondary consequences would be averted."

The sixth of a series of cases reported is especially interesting. With reference to it Mr. Lloyd says: "Until a month ago I had thought that the sterno-mastoid tumours of infants were always unilateral, but I then saw a little breech-born patient a few weeks old with a nodule in each muscle."

If this case had been allowed to drift on untreated each muscle would have become shortened, the chin being firmly fixed towards the episternal notch. There would have been no turning of the face to one side or the other, the neck would have been merely bent forwards in the middle line. Thus, single sterno-mastoid tumour produces single wryneck, but double sterno-mastoid tumour does not produce double wryneck—such a condition being manifestly impossible.

A few years ago, as Mr. Lloyd says, the nature of these tumours was shrouded in mystery, but even at the present day, though they are of by no means uncommon occurrence, they are often mistaken for enlarged glands or gummata.

DISEASES OF THE GENITO-URINARY SYSTEM.

By Reginald Harrison, F.R.C.S.,

Surgeon to St. Peter's Hospital.

1. Renal surgery.

The progress of surgery relative to the kidney and its duct formed the subject of the Hunterian Lectures (1898) at the Royal College of Surgeons, by **Henry Morris.** The published volume (Cassell & Co.) also contains a fourth lecture devoted to injuries of the ureter. The work embraces not only a digest of the author's large experience of the subject, but a liberal reference to the practice of others. The surgery of the ureter is importantly added to, and much that is new and progressive is advanced and summarised. The various methods of effecting uretero-ureteral anastomosis are described and illustrated, and their respective advantages discussed. As the permanent occlusion of a ureter, following its rupture or accidental division, means irreparable damage to the corresponding kidney, the importance of this method of obtaining repair, as in the analogous case of the male urethra, is obvious, if the kidney is to be saved. Nephrectomy as a primary operation for surgical injuries of the ureter is quite unjustifiable. It would occupy too much space to describe the different modes of establishing ureteral anastomosis. The classes of cases in which it is applicable are stated as follows: "To restore the continuity of the duct (1) after accidental section, and (2) after resection of a short length of it during abdominal operations. (3) After resection of a portion of the ureter for strictures, ulceration, sloughing around a calculus, or any other condition which, if not removed, would terminate in stenosis. (4) After rupture and other injuries from external violence—as soon as the case is diagnosed when intraperitoneal, and before suppuration or sloughing occurs when retroperitoneal." Various forms of ureteral grafting are also described. Amongst the most satisfactory are: "(1) Invaginating the fistulous aperture itself into the bladder after first incising the vesico-vaginal septum. (2) Grafting the ureter to the bladder

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through the vagina. (3) Grafting the ureter into the bladder by an extraperitoneal route through an incision in the abdominal wall. (4) Grafting the ureter into the bladder by a transperitoneal or intraperitoneal operation." "In cases of limited suppuration," Morris proceeds to remark, "of circumscribed tuberculous disease, of innocent growths, and in certain injuries of the kidney, partial excisions are now being practised in place of nephrectomy. In many instances of calculous pyonephrosis irrigation of the renal calyces and infundibulum, followed by suture of the kidney, has taken the place of nephrectomy." Calculous anuria is referred to as a question of the day, and one of the greatest importance: "Nephrotomy should be performed in the gravest cases to prevent death from uræmia; in the slighter and intermittent cases, to extract a stone which may at any time produce complete persistent anuria."

2. Affections of the urinary apparatus in children.

J. H. Morgan gives a useful summary of these in his Lettsomian Lectures (*Trans. Med. Society of London*, 1898, and Reprint). He thus expresses his views as to the treatment of stone in children: "(1) That, in the cases of boys and girls, stones of moderate size should be dealt with by litholapaxy; (2) that stones composed of oxalate of lime, or of such size as not to be readily grasped between the blades of a lithotrite, should be removed by the lateral operation in the case of boys; and (3) that the suprapubic operation should be reserved for stones of very large size or inconvenient shape in boys or girls, or cases of calculus embedded in a saccule of the bladder or impacted in the mouth of a ureter." He proceeds to remark: "Cases have occurred to myself and others where the lithotrite cannot be introduced owing to some puckering of the mucous membrane of the urethra, and the lateral operation may be forbidden on account of a narrowed and rickety pelvis; but I think it is proved that the tendency of surgeons is, when possible, to use the lithotrite instead of the knife, and that with proper care such a course is followed by the best results, and is free from the after-consequences of a cutting operation." With these conclusions most, I think, who have had much experience in the treatment of stone, will agree.

3. Urethral stricture following ruptured urethra.

In the same lectures Morgan refers to the subsequent history of a case of this kind (*Practitioner*, 1888) as illustrating a practice which he speaks of with commendation. The case was one of dense stricture of the urethra, with two sinuses in the perineum, through which all the urine was passed, following rupture of the utrethra from a fall. The proceeding is thus described: "I opened

the bladder above the pubes and passed a bent probe down to the posterior surface of the stricture. Cutting down upon this, I attached the mucous membrane of the urethra to the edges of the incision. The result was most satisfactory. At the end of a year I inspected him, and found him very greatly improved in health. The urine was voided from a nipple-like elevation close to the posterior edge of the scrotum. No irritability of the bladder existed, and the control over it was perfect. The urine, which previously to the operation contained pus and albumin, was normal, and the cicatrix of the abdominal wound was firm and level. So satisfactory was his condition that he and his parents declined any further interference."

This case may be regarded as a leading one relative to some traumatic strictures with certain complications in male children, and its value is enhanced by the further history of the patient and reference to this practice by the author in his recent lectures. So many proposals are tried and then dropped as to render records of this kind even more valuable to the practitioner than some novelties.

4. The Röntgen photography in the diagnosis of renal calculi.

During 1898 several successful attempts have been made in Great Britain to obtain indications of the presence of stone by the use of the X rays. The literature of the subject is still scanty, but the following two cases may be mentioned:—

F. Taylor and **Fripp** presented a case to the Clinical Society of London (*Lancet*, April 30, 1898). The points of interest were:—

(1) That an operation was performed before the photography was tried. The kidney was not opened, as no stone could be felt. Kidney very high up, and only partially palpable through lumbar wound. (2) The plates showed distinct evidence of a stone high up under the ribs (on right side), so a piece of the twelfth rib was excised one week after the first unsuccessful operation, and Fripp removed an atrophied kidney containing a fair-sized stone. (3) This is believed to be the first case, in England at all events, where the Röntgen method has been successfully used for the detection of renal stone.

The second case was brought before the West London Medico-Chirurgical Society in June, 1898 (*West London Medical Journal*, Oct., 1898), by **Swinford Edwards** and **Low**. The case was, surgically speaking, unimportant, but a very clear shadow of the stone was obtained previous to operation. It is of interest to observe that in this case also the kidney substance was extremely thin, and stretched over the stone, but was apparently healthy,

and so the kidney was not removed. A good recovery was made in each case. Since the introduction of the X-ray photography a very large number of patients have been submitted to the process, with disappointing results at present. No doubt other successful cases have occurred which have not as yet been published, but this method of diagnosis is not sufficiently established to obviate the advisability of a lumbar exploration when the photographic plates give no indications of stone. As an additional means of diagnosis there can be no doubt of its value.

5. Septic infection of urinary tract.

David Newman (*Brit. Medical Journal*, Oct. 29, 1898) lays stress on the danger of infection following the use of instruments, even if completely sterilised, where the bladder from one cause or another is not able completely to empty itself. The vesical mucous membrane loses its resisting power in such circumstances, and bacterial infection follows. The same danger attends the use of instruments in cases of injury or disease of the general nervous system where the control of the nerve-centres is impaired or cut off.

Thorkild Rovsing (*ibid.*) draws attention to the fact that infection of the bladder may be caused by a perfectly sterilised catheter or sound pushing back into that viscus the bacteria which swarm in the urethra in many instances; and that infection of the bladder and upper urinary passages may occur where no instruments have been used, citing cases in his own experience where urinary incontinence (probably retention with overflow) was present, a column of urine thus reaching from the meatus to the bladder becoming infected by micro-organisms swarming about the genitalia. He mentions also cases of urethral stricture where collections of pus occur behind the constricted portion of the canal, some of which pus may regurgitate into the bladder.

He separates the bacteria usually found affecting the urinary organs into two rough classes, viz. those which decompose urea, and those which do not. His own researches lead him to believe that the former class is of by far the greater importance, and he considers that the bacterium coli which belongs to the latter class is almost benign in comparison with the urea-decomposing bacteria. His views on this subject are in striking contrast to the opinions of the members of the great Paris school, Guyon, Albarran, Hallé, and others, who all lay stress on the importance of bacterium coli. Rovsing states that bacterium coli, even when decidedly pyogenic, cannot attack the *intact* vesical mucous membrane and cause a suppurative cystitis, and that when present in larger numbers they assist in causing a condition described under

the name of "bacteriuria," a condition quite distinct from suppurative cystitis, and more closely approximating to the catarrhal cystitis described by Mansell Moullin and other observers.

On the other hand, pyogenic urea-decomposing bacteria are certain to produce a suppurative cystitis if their peculiar power is exerted sufficiently long to render the urine ammoniacal. Rovsing concludes a paper of great interest by some practical remarks arising from the foregoing statements. He advises that as it is practically impossible to avoid the introduction of a certain number of bacteria they should be given the best chance of rapid evacuation, and to this end recommends the use of sterilised olive-oil or glycerine as lubricants, to the exclusion of all vaseline and fats, stating that the latter tend to stick to the mucous membranes with entangled bacteria attached, whereas the former are speedily passed. After any instrumentation where infection is to be feared he uses a 2 per cent. solution of silver nitrate as a bladder wash.

C. Mansell Moullin (*ibid.*) states that the rigors so often met with after internal urethrotomy are due to rapid absorption of toxins, derived from bacteria coli. The effects produced are strictly comparable to those seen after the injection of half-minim doses of Coley's fluid.

Max Melchior of Copenhagen (*ibid.*) inclines to the belief in the dangerous properties of bacterium coli held by so many surgeons.

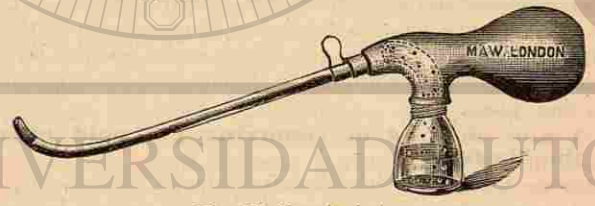
Kocher (*ibid.*) agrees with Rovsing in considering the colon bacillus of a much more benign nature than it is usually held to be, and endorses the suggestion put forward by Bruce Clarke and Klein that the relative frequency of occurrence of the bacterium coli is probably due to the fact that this bacillus triumphs over the cocci, which are originally present, and to a great extent usurps their place.

6. A new method of removing polypoid growths from the bladder.

Chismore, under this title, describes (*Journ. Cutan. and Gen.-Urin. Diseases*, July, 1897, New York) the process he employs as follows:—"The principle on which the operation is based is that by the aid of the suction exerted by an aspirator attached to a litholapaxy catheter or other suitable tube, catching the growth or growths in the eye of the instrument when by gentle traction and slight to-and-fro movements they are torn from their attachments and drop into the reservoir of the wash-bottle." Further it is remarked:—"For reasons that are obvious no estimate of the ultimate results of such an operation can be predicted, but it is contended that enough has been shown to

make recourse to this simple and painless procedure justifiable in cases of emergency, and when the bladder is filled with clots and retention from over-distension is present with its attendant suffering."

In connection with this proposal, which is illustrated by the narrative of two cases where it appeared to have succeeded, the only analogous instances I can call to mind are those where portions of villous growths or papillomas have been accidentally removed after a bladder has been searched for diagnostic purposes with the aspirator catheter and wash-bottle as used for litholapaxy, and where the growth has come away in the eye of the former instrument. I remember examining an entire tumour about the size of a small grape which was thus withdrawn, where the leading symptom was profuse hæmaturia, and which permanently ceased after this occurrence coincidentally with the recovery of the patient. I believe similar instances have been met with. Whether Chismore's ingenious proposal can be extended advantageously to more solid growths, innocent and malignant, seems doubtful. There is so little risk incurred now by a suprapubic exploration of the bladder, whilst precision is thus gained in the removing of a growth, that I hardly think a change in procedure of this nature is to be advised. Possibly it may be utilised for simple papillomas and small pendulous outgrowths from the prostate after the bladder has been carefully cystoscoped. At my request Messrs. Maw, Son & Thompson have been making some of these hand rubber aspirators as



Hand Rubber Aspirator.

described by Chismore (*International Clinics*, vol. iv., sixth series), for use with evacuating catheters. I am also having some flexible catheters fitted to them with large eyes. Chismore thus describes this simple apparatus: "It consists of a rubber bag shaped to fit the hand, without stopcocks of any kind, the soft rubber nozzle fitting the end of an aspirating catheter. A short curved hard rubber tube is placed within in such a way as to direct fragments into the glass receiver, where they are but little

disturbed by the reverse current. It is easily filled by submerging it in a pan of warm borated water and compressing the bulb a few times until the air is excluded, and it is readily and completely cleaned by boiling. I boil the rubber aspirator in a strong solution of boracic acid, which serves to increase the durability of the rubber to a remarkable extent." Ordinary catheters can thus be used for washing out the bladder with this aspirator. The apparatus may also be employed for the withdrawal of small renal calculi from the bladder, as well as for some diagnostic purposes where a movement of the fluid contents is necessary.

7. A useful method for circumcision.

Paul Rebeyrand (*Annales des Maladies des Organes Génito-Urinaires*, January, 1898) describes a method of circumcision which seems a distinct advance upon those more generally adopted. It is specially applicable to those cases in which relief is required for a tight phimosis, but where there is no necessity to remove the whole prepuce. He proceeds as follows:—The edges of the preputial orifice are grasped by forceps, and the prepuce is pulled well forwards. With a pair of scissors a cut is made all round this skin alone, from 4 to 6 centimetres behind the edge. The skin immediately retracts a little on the subjacent mucous membrane, and is rolled right back beyond the corona. The mucous membrane is then slit right back to the sulcus and removed all round. The edges of the skin and the mucous membrane are now accurately united with a few points of suture and the skin rolled forwards. The line of suture lies in the sulcus, and the glans is well covered by a prepuce of which the inner as well as the outer surface is skin.

8. Teratoma of the testis.

Chevassu reported to the Société de Chirurgie (*ibid.*, June, 1898) a case of teratoma of the testis, occurring in a young candidate for the army, but causing no inconvenience. It had been noticed from birth, but had grown somewhat larger during the last six months. When it came under Chevassu's notice the left side of the scrotum was occupied by a swelling about the size of a very large hen's egg. The swelling was irregular and evidently composed of the testicle invaded by a new growth of some kind. The testicular substance, apart from the growth, felt of the usual consistence, and testicular pain was readily elicited on pressure; the growth, on the other hand, was quite insensitive; the skin was nowhere adherent, and there was a little fluid between it and the tunica vaginalis, which was tightly stretched. On cutting into the mass

it was found possible to shell the growth out from the testicle and to leave that organ behind in a perfectly useful condition. The growth contained various histological elements, including islands of cartilage and a small fully-formed bone with periosteum complete The author adds a very full report of the minute structure of the growth, and mentions the recent work which has been done on the teratomata by various pathologists.

9. A new lithotrite fitted with a concussor.

Chismore (*Journ. Cutan. and Gen.-Urin. Diseases*, Oct. 1898) describes a new method of applying power for the purpose of crushing stones in the bladder, which, by reason of their unusual size, can only be broken with difficulty by the ordinary lithotrite in use. The principle of this device is the adaptation of the shattering effect of repeated sharp blows for breaking the stone. It was first suggested to the author by observing the ease with which an automatic rock drill penetrated the hardest granite. The concussor consists of a light hammer, actuated by a spiral spring enclosed in a cylindrical tube properly fitted to the external end of the male blade of the lithotrite. Chismore remarks: "In some experiments with a very light lithotrite, in New York last June, I readily broke pieces of grindstone an inch and a half in diameter, pieces utterly beyond the power of the instrument. In London, in the same month, Mr. Reginald Harrison was good enough to let me try the method on a large stone which he had cut for, after trying in vain to crush it, *in situ*, with his lithotrite, a far more powerful one than mine. It required but a very few blows to cause it to fly into fragments, small enough to be dealt with in the usual way."

Reference has been made in a former Year-book (1895) to Chismore's lithotrites, in which are combined in the one instrument means for crushing the stone and evacuating the fragments. It appeared to me that the introduction of the latter object tended to weaken the lithotrite materially, and thus added a risk in the case of all stones, except the smaller and softer varieties. With the view of providing against this objection, Chismore has suggested primary fragmentation of the stone by concussing instead of by screwing, and has devised this ingenious plan of giving effect to his idea. The early French school of lithotritists employed concussion in the breaking of stones with a hammer applied to the male blade, and in more recent days I have seen Guyon, at the Necker, once adopt the same principle. I am well satisfied with the most modern patterns of the ordinary lithotrites now in use. What I have seen, on trial, of Chismore's concussor would lead me to regard it as worthy of further consideration and use.

10. Castration and subsequently prostatectomy for enlarged prostate.

Nicholson (*Annals of Surgery*, Sept., 1898) reports a case of this kind occurring in a man aged sixty-four. Twelve months after castration, as the conditions arising out of prostatic obstruction were not improved, the bladder was opened in front, and a large fibroid mass connected with the middle lobe, which could be felt above the pubes before the operation, was enucleated. It weighed over 7 ounces. Twelve months after this the patient was much improved, and able to follow his occupation, though he had to wear a urinal, as he could not exercise sufficient control over micturition.

I have recorded a case, and collected others (*Trans. Royal Med. Chir.*, vol. lxv.), where large growths were shelled out of the prostate with the finger in the course of perineal lithotomies, and the patients made good recoveries. These are instances where neither castration nor vasectomy would have been of any avail, as occurred in Nicholson's case. Having regard to the great variety in form and structural composition of the hypertrophied prostate, not to say anything of the independent growths, innocent and malignant, by which its size is increased, and obstruction to urine thus caused, discrimination is necessary in the selection of cases for vasectomy. The best results following the latter have hitherto been met with in instances where the enlargement is general, and not limited to a pendulous lobe, and where the gland from its feel has not become largely fibrotic, but contains a fair proportion of its glandular and muscular element. The benefits which immediately follow vasectomy appear to be due to certain vascular changes induced in the part, whilst the more remote are atrophic.

11. Stone in the bladder.

Reginald Harrison, writing (*Lancet*, Nov. 12, 1898) on a series of over 100 consecutive operations for stone occurring in his practice, draws attention to the subject of recurrence, and the causes contributing towards it. Chief among these is senile hypertrophy of the prostate, rendering the act of micturition in many cases mechanically difficult or impossible, favouring ammoniacal decomposition of the urine with phosphatic formations, and in addition atonic conditions of the bladder, which impede the discharge of small stones descended from the ureters. Under such conditions the bladder resembles a bedding-out ground for renal calculi where they may grow. To avoid as far as may be these recurrences, several practical hints are offered. The lithotrites employed should be capable of breaking up the stone without pounding it into a sticky mass. Great care

should be exercised in removing the fragments and seeing that the bladder is left quite clean. Stress is laid on the necessity for careful after-treatment of the bladder and urine in these cases, the writer recommending that the former should be well flushed out at least once a week by the surgeon for some time, with an aspirator catheter and wash-bottle, in addition to the means which the patient himself may be able to employ. The useful properties of silver nitrate in the prevention of phosphatic deposits are referred to, and a striking case is mentioned illustrative of the benefit to be obtained by its use, where a man suffering from prostatic enlargement, for which regular catheterism was necessary, had the misfortune to break off a piece of his instrument in the bladder. His condition did not admit of immediate operation, but nitrate of silver injections were used for ten days, and the piece then removed. It was found to be quite clean, and without a trace of phosphatic concretions. The part played by castration and vasectomy in the treatment of prostatic hypertrophy is mentioned, and the latter operation is advised, as an aid to the prevention of stone recurrence.

DISEASES OF THE RECTUM.

By Alfred Cooper, F.R.C.S.,
Senior Surgeon, St. Mark's Hospital.

1. Atony of the rectum.

This subject is discussed by **Acheson**, of Ontario, in the *British Medical Journal* (Oct. 30th, 1897). He considers that atony may be either a cause of chronic constipation, or that the latter may induce the former. When from any cause impaction of fæces occurs in the rectum, the normal nervous sense is deadened, causing prolonged distension of the rectal walls; on the other hand, atony may be caused by one or other of the following—viz. a sedentary life, irregular habits, gaseous distension, due either to fermentation or to the drinking of effervescing waters, the excessive use of enemata, or to pressure from without from some form of pelvic tumour; all these causes of the atonic condition having constipation as a marked symptom.

Other symptoms which point to atony, whether as the cause or the result of constipation, are—a sense of fulness and weight in the pelvis, with tenesmus and the passage of blood-streaked mucus or a thin, watery matter. This state of affairs may induce the following nervous symptoms through absorption of the bowel contents, or in other words by auto-intoxication—viz. headache, migraine and hysteria. Constipation by its mechanical effect may be the cause of uterine displacements or of vesical irritability. The author recommends by way of treatment, if no obvious cause of obstruction can be discerned, a careful attention to the daily action of the bowels. Purgatives are not advised, but the author has found the following tonic pill of service, viz.: R. Aloin, gr. $\frac{1}{5}$; Strych. Sulph., gr. $\frac{1}{50}$, Ext. Belladonnæ, gr. $\frac{1}{8}$; Ipecac., gr. $\frac{1}{16}$. The action of this pill may be increased by the use of a small cold-water enema, or for severe cases one or other of these astringent injections may be employed: R. Tannin, gr. xxx., Aquæ, iv.; or R. Ext. Rhatinæ, gr. cxx.; Sp. Vini Rect., ℥v.; Aquam ad ℥iv. For fæcal impaction some form of operative interference is usually necessary.

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should be exercised in removing the fragments and seeing that the bladder is left quite clean. Stress is laid on the necessity for careful after-treatment of the bladder and urine in these cases, the writer recommending that the former should be well flushed out at least once a week by the surgeon for some time, with an aspirator catheter and wash-bottle, in addition to the means which the patient himself may be able to employ. The useful properties of silver nitrate in the prevention of phosphatic deposits are referred to, and a striking case is mentioned illustrative of the benefit to be obtained by its use, where a man suffering from prostatic enlargement, for which regular catheterism was necessary, had the misfortune to break off a piece of his instrument in the bladder. His condition did not admit of immediate operation, but nitrate of silver injections were used for ten days, and the piece then removed. It was found to be quite clean, and without a trace of phosphatic concretions. The part played by castration and vasectomy in the treatment of prostatic hypertrophy is mentioned, and the latter operation is advised, as an aid to the prevention of stone recurrence.

DISEASES OF THE RECTUM.

By Alfred Cooper, F.R.C.S.,
Senior Surgeon, St. Mark's Hospital.

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New York Medical Journal I referred in the issue of the "Year-Book" for 1897.

2. Stricture of the rectum.

Two new operations have recently been advocated for this condition, one by **Sonnenburg**, of Berlin, to which he gives the name of rectotomia externa—*vide* the *Medical Annual* for 1897, and the other by **Bacon**, of Chicago, which he introduces as a substitute for linear proctotomy. (*Vide* Mathew's *Quarterly Journal* for January 3rd, 1897.)

Sonnenburg utilises Kraske's method of exposing the rectum; the whole of the thickened and strictured portion of the gut is then incised in the middle line posteriorly, from without inwards, and the wound, which is plugged, is left to heal by granulation. He says recovery may take weeks or even months, but as the sphincter ani escapes division, the result as far as incontinence goes leaves nothing to be desired. He has so far met with no persistent fistula as a result, though he has operated upon six cases in this way. He advises the regular passage of bougies both during the healing process and subsequently. This operation differs from that of **Péan**, in that the latter, having exposed the rectum in the same manner, sews up the longitudinal incision, but transversely.

Bacon's method aims at preventing the re-contraction which may and often does follow linear proctotomy, by establishing a fistulous track between the stricture and the coccyx prior to the division of the stricture.

The operation is shortly as follows:—A blunt-pointed aneurysm needle armed with a stout silk ligature is introduced through the anus into the rectum, and is made to perforate the gut in the mid-line posteriorly, between the sphincter and the lower margin of the stricture. It is then carried upwards between the stricture and the coccyx, and made to enter the rectum again above the stricture area. The ligature is now seized with a blunt hook or forceps, and one end is drawn down through the lumen of the stricture, and the aneurysm needle is withdrawn, carrying with it the other end. The ligature now completely encircles the stricture. It is now securely though loosely tied and the ends are left long, protruding through the anus. The loop is left slack so as to avoid severing the stricture, as it is important that the ligature or seton should be in place for three months, to obtain a continuous mucous track. After the lapse of this time the ligature is withdrawn, and under an anæsthetic a grooved director is passed through the fistula behind the stricture, and the intervening tissues are divided with a Paquelin's cautery.

3. The operative treatment of hæmorrhoids forms the subject of many communications from America, where, although the balance of opinion seems still to favour the clamp and cautery, incision and ligature, or Salmon's operation, appears to be growing in popularity. Of other methods we hear but little, although Whitehead's operation is still warmly championed by some.

It is now some years since I gave up all other methods in favour of the ligature.

Swinford Edwards, in commenting on a paper advocating the clamp and cautery (*vide* "Treatment," April 14, 1898), makes these remarks, which, as they agree with my own views, I will take the liberty of quoting:—

"The author states that this operation (Salmon's) is less radical than that of the clamp and cautery. Here I differ from him. They are, or should be, both radical in their cure; but if there is anything to choose in this respect between the two methods I think the balance is in favour of Salmon's operation, for the application of the clamp is not, and cannot be, as exact as that of the ligature. Indeed, where the piles are numerous, it is very difficult to remove per clamp and cautery all one wishes without overdoing it, thus running the risk of subsequent contraction. As to the second objection, viz. that it involves a greater loss of blood, this appears to me a trivial point, for the amount lost in Salmon's operation is small, usually not more than a teaspoonful or two, and this slight loss is often salutary in effect. That it takes longer to perform I very much doubt; in fact, my experience teaches me the reverse. For if Smith's operation is at all hurried over, bleeding is more than likely to occur, necessitating the application of ligature, which this operation is planned to obviate. As to post-operative pain, there is a good deal of difference of opinion. I have known no pain at all complained of after the ligature, and on the other hand have met with it after the cautery. Indeed, I have known two patients, who having been in years gone by operated upon with the clamp and cautery, were, on account of a recurrence of their trouble, submitted to Salmon's operation, who both affirmed that they suffered less pain after the second than they did after the first operation.

"In most cases of internal hæmorrhoids external piles or tags of skin are met with which require removal. Surely less pain is likely to follow excision of these than is their removal by burning; and, moreover, there is less chance of anal contraction following.

"Of course the author (**S. Parker Syms**) has limited his paper to

uncomplicated hæmorrhoids; but we often have to deal with an accompanying fissure or fistula, in which case there would be no object in operating with clamp and cautery, seeing that both incisions and probably ligatures would have to be employed in the operation for the cure of the complication.

"I believe that in general the ligature operation is the better, certainly in complicated cases, and where the piles are numerous; also in those cases where the surgeon lives at some distance from his patient, for recurrent hæmorrhage is more common after the clamp operation than after the operation by ligature."

4. The treatment of pruritus ani.

Brocq, in the *Journ. de Méd. et de Chir.*, 1897, advises the frequent ablution of the part, especially where much excoriation exists, with a lotion of camomile, boric acid and saponified coal-tar, after which an ointment of vaseline and oxide of zinc is applied. When all irritation is removed the parts should be dusted with this powder—Camphor 2 grms., oxide of zinc 30 grms., subnitrate of bismuth 30 grms., talc 40 grms. After the use of this powder for a few days, a weak solution of argent. nit. may be painted on and a suppository of cocaine and belladonna may be inserted by night. **Edwards**, writing of anal irritation in "Treatment," vol. i., p. 147, recommends, in severe and long-standing cases, forcible dilatation of the anus under an anæsthetic, combined with a thorough scraping of the diseased skin with a sharp spoon and the removal of all tags or hypertrophied folds of skin. Finely powdered iodoform is then freely rubbed into the abraded surface.

5. The treatment of rectal carcinoma.

Judging from the many able papers which have appeared during 1898 on this subject, those who advocate excision, as opposed to those who rest content with colotomy, are certainly on the increase. Only one paper that I am aware of has advocated colotomy whilst throwing cold water on rectal excision. I refer to a paper by **Wm. Rose** in the *Practitioner* for July, 1897. He bases his unfavourable opinion of excision, whether by the old perineal route or by the sacro-coccygeal method, partly on statistics of Kocher and König, and also on those collected by Watson Cheyne for his Lettsomian lectures in 1896, and partly on his own experience.

Rose says "that complete extirpation of a malignant growth in this region is always a matter of uncertainty," though he admits that by Kraske's method a more thorough removal may be obtained. Since the statistics on which Rose partly bases his opinion were drawn up, the more recent ones are much more favourable to excision, for Ball in his paper on trans-sacral

resection of the rectum at the meeting of the British Medical Association at Montreal, stated that he had in seventeen cases, only lost one. **Kraske** (Nos. 183 and 184 of the *Sammlung klinische Vorträge*) during the past seven years gives fifty-one cases and only five deaths, being a mortality of 9·8 per cent.

Czerny, in the *Berliner klinische Wochenschrift* for Sept. 6th, 1897, says that since performing Kraske's operation he has had sixty-six cases and nine deaths, making a mortality of over 13 per cent., and **Swinford Edwards** reports fourteen cases with two deaths, being a mortality of a little over 14 per cent. (*Brit. Med. Journ.*, May 15th, 1897.) Concerning the question of recurrence, Czerny believes that from 20 to 25 per cent. of these radical operations remain free from recurrence for about two years, and of these the larger portion are permanently cured.

In inoperable cases, *i.e.* where the disease has extended beyond the walls of the rectum, and contracted adhesions to neighbouring structures, and where the glands and lymphatics are obviously involved, I agree with Rose that an early colotomy is to be recommended. He says "a colotomy has generally been looked upon as a *dernier ressort*, only to be had recourse to at as late a date as possible, and consequently it was undertaken under the most unfavourable conditions."

Again, "where the disease cannot be eradicated, the surgeon must do his utmost to prolong life and to render existence more tolerable, and that this end can best be obtained by an early inguinal colotomy there is no doubt."

Belin (*Progrès Médical*, Oct. 2nd, 1897) advocates a special method of performing colotomy, as a supplement to trans-sacral rectal extirpation, as performed by Reverdin. This surgeon, after exposing the sigmoid in the usual manner, draws the bowel well out of the wound, and encircles the lower part near the inner angle of the wound with a ligature; still lower down the bowel is clamped. It is then cut across between the ligature and the forceps. The proximal end is dissected up from its mesentery and fixed in the upper or outer angle of the wound some inches from its orifice by a series of sutures. Its ligatured orifice is then opened, and a special glass tube is inserted and fixed within the gut by a ligature. A piece of rubber tubing is attached to this for conducting the contents of the bowels to a receptacle placed under the bed. The last step of the operation is to return the distal segment, after having carefully closed it with sutures. After the lapse of a week the portion of bowel which protrudes is removed by the thermo-cautery.

VENEREAL DISEASES.

By J. Ernest Lane, F.R.C.S.,

Surgeon to Out-Patients and Lecturer on Anatomy, St. Mary's Hospital; Surgeon to the London Lock Hospital.

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1. The therapeutics of syphilis.

Apart from the choice of a mercurial preparation, and the method in which it may be introduced into the system, a somewhat vexed question is the exact time *when* the treatment should be administered: whether the chronic intermittent treatment as recommended by Fournier should be adopted—that is to say, the administration of mercury in successive courses of six months, more or less, with periods of intermission; or whether the treatment should be pursued only whilst manifestations of the disease are present—the symptomatic treatment, as it is termed.

Schwimmer (*Wien. med. Presse*, No. 44, 1897) recommends that mercury should be given before the onset of secondary symptoms. The severity of the primary symptoms is no guide to the subsequent course of the disease, and consequently all cases should be submitted to the same medicinal treatment. The discovery of the organisms of the chancroid and of gonorrhœa had led to no improvement in the therapeutics of those diseases, and the possibility of a bacterial cause for syphilis should not interfere with its present empirical treatment. With reference to the duration of treatment, and to the time when marriage could be permitted, he mentioned cases in which, after prolonged treatment and freedom from symptoms, patients were permitted to marry; no infection of the wives took place, and each had healthy children. Notwithstanding, these patients eight years after infection showed further manifestations of the disease in the form of orchitis and periostitis. Prolonged treatment could not be depended upon to procure immunity from relapses; and as such a lengthy treatment as three or five years was very depressing, he considered two years sufficiently long, though marriage should not be allowed till the end of the third or fourth year.

Zeissl (*Wien. med. Presse*, Nov., 1897) advocated the symptomatic method, and considered that the syphilitic microbe, when

treated by the chronic intermittent plan, was analogous to the parasite of malaria when treated by quinine, the action of which drug had been shown to differ at different periods in the life-history of the same parasite. By treating syphilis by the chronic intermittent method we might be giving the drug at one time when it was not required, and withholding it when it might be of use. Mercury should not be given until the secondary symptoms were fully developed, and should not be prolonged after their disappearance, or until some other manifestation of the disease occurred. The course of syphilis remained the same now as when all sores, both hard and soft, were treated with mercury, and this was an argument against the commencement of treatment during the primary stage; moreover, if the primary sore was treated by the administration of mercury, much larger doses of that drug would be required in order to subdue the secondary symptoms.

Neumann (*Wien. klin. Rundschau*, 47 and 48, 1897) held that no treatment could be relied upon to ward off the onset of constitutional symptoms in syphilis, though very exceptionally abortive treatment was successful. Mercury and iodine were antagonistic to the products of the syphilitic virus, though they were incompetent, as were all other drugs, to remove the poison. The abortive treatment, *i.e.* the administration of mercury and iodine during the primary stage, would, if those remedies acted on the cause of syphilis, completely destroy it before it could take possession of the whole human organism. But of 100 cases treated thus prematurely, there was not one in which the secondary phenomena did not subsequently show themselves. Saturation of the organism with mercury and iodine did not prevent relapses, and these had occurred up to fifty-five years from the date of infection. Late syphilitic manifestations occurred most frequently on the sites of the early lesions, which would be impossible if the cause of the disease had been destroyed. Whatever the treatment, in from 6 to 22 per cent. of cases of syphilis the disease reached the tertiary stage, indicating that mercury and iodine were not effectual in every case. Neumann concluded that the symptomatic treatment of syphilis was the sole rational one, and that it acted by establishing a temporary or permanent immunity to the ever-present cause of the disease, and that its results were as favourable as were those obtained by the chronic intermittent treatment.

[The above brief extracts appear fairly to represent the opinion of Viennese experts on the subject, and it will be seen that they are unanimously opposed to Fournier in his advocacy of the chronic intermittent treatment usually practised in France and in Great Britain. At the same time, though agreed as to the superiority

of the symptomatic treatment, they are not in accord as to the stage when this treatment should be commenced. Schwimmer would begin it during the primary stage—that is to say, when the diagnosis was yet in doubt; for induration of the initial lesion cannot be considered an unequivocal sign of syphilis, any more than its absence, especially in the female sex, was an indication that the sore was not a syphilitic one. Zeissl and Neumann, recognising this difficulty, would wait for unmistakable signs of constitutional infection before commencing the treatment. The advocates of the symptomatic treatment present the disease in a somewhat unfavourable light, for according to them the patient is liable to relapses till the close of his existence; they did certainly concede that the disease was not transmissible to the offspring for more than four or five years from the date of infection, and it would seem evident that if the virus retained its transmissibility for an indefinite period the whole community would ultimately become syphilised. There must be some limit to the activity of the virus, and it seems reasonable to think that this limit will sooner be reached by the chronic intermittent form of treatment than by the symptomatic.]

2. When should mercurial treatment be commenced in syphilis?

Neumann (*Med. Press and Circ.*, July 6, 1898), in a clinical lecture delivered in Vienna, expressed the opinion that the preventive treatment of syphilis by mercury might be briefly disposed of as valueless so far as the destruction of the virus was concerned; excision of the initial sore was equally fallacious. The character and course of syphilis were consistent with its parasitic origin, mercury and iodine being specifics which induced a temporary immunity by acting either on the germ or on its products. There was no proof that mercury or any other drug would annihilate the germs of syphilis; for then the first course of anti-syphilitic treatment would be sufficient to eradicate the disease. Mercury and iodine were equally powerless in preventing the sequelæ or other forms of tertiary syphilis, and at intervals of ten or even fifty years after anti-syphilitic treatment the germ or toxin, for a long time quiescent, might manifest itself suddenly and in some unexpected form, having been present in the organism for possibly half a century without showing any outward signs of its presence. The so-called cure of syphilis was hypothetical, and was no absolute criterion of the destruction of the syphilitic poison. The question of how long mercury should be administered was even more indefinite, the usual advice being to continue it only whilst manifestations of

the disease were present; but Neumann advocated the continuance of the treatment over a definite period after the recession of all visible signs, with a view of preventing relapses, and he found that this method greatly modified the tertiary stage. The administration of mercury before the appearance of constitutional symptoms with the object of suppressing or modifying them had the effect of protracting the eruptive stage, whilst it did not mitigate the disease as a whole and did not influence its general course and severity. Another objection to the preventive form of treatment was the loss of efficacy which was entailed by the early introduction of mercury; the drug so given might abrogate the prodromal eruption of syphilis, but its specific action thereafter was greatly enfeebled or lost. With our present knowledge we could not lay down dogmatically any rule for guidance either as to the magnitude of the dose, or the length of time for which it should be continued. In comparing the symptomatic with the chronic intermittent treatment, Neumann considered that to adhere to the latter method as an undeviating rule was irrational; from the tables of Fournier it would appear that treatment extending over two or three years arrested the appearance of tertiary symptoms, but *per contra* excessive drugging with mercury rendered the mucous membrane of the mouth, throat, and ear-passages more vulnerable and more disposed to disease, and caused the alimentary tract to be more amenable to morbid changes, while the internal organs might become influenced on the slightest provocation by the intense anæmia pervading the whole system. Neumann summarised his conclusions as follows:—(1) There was no drug yet known that would act as a preventive cure of constitutional syphilis, or would avert the manifestation of symptoms at variable periods, although there were a few exceptions to this general assertion; (2) mercury and iodine were specific anti-syphilitic remedies, that modified the syphilitic products but did not destroy the virus.

3. The treatment of gonorrhœa by protargol.

The value of nitrate of silver in the treatment of gonorrhœa in all its stages has long been recognised by the profession, but its irritating effects upon the urethral mucous membrane have been a material drawback to its employment except in very dilute solutions, or, by means of the urethroscope, as a topical application to limited portions of the urethra. In chemical laboratories researches have for some time past been undertaken with a view of producing some compound of nitrate of silver which, while possessing the bactericidal effects of that salt upon the gonococcus, should at the same time produce a minimum of inflammatory

reaction upon the delicate mucous membrane to which it had to be applied. Preparations known as argentamin and argonin have been alluded to in "The Year-Book of Treatment" for the last three years; and though they have been found to yield good results in the hands of a few observers, yet the success they have met with has been by no means universal. Argentamin was found to have a decidedly caustic effect upon the urethra; and argonin, although non-irritating, did not seem to affect the gonococcus to the same extent as other preparations of nitrate of silver.

Recently, however, a salt known as protargol has been introduced by **Professor Neisser**, of Breslau, and described by him in the *Centralb. f. Dermatol.* (Oct., 1897). Briefly stated, the properties of protargol are as follows: it is a light yellow powder, differing from argonin in that it is freely soluble in water up to 50 per cent., forming a clear light brown solution; it contains 8·3 per cent. of nitrate of silver, whereas in argonin the proportion is 4·1 per cent. and in argentamin only 2·0 per cent. Its non-precipitation by solutions of albumen and chloride of sodium rendered it especially valuable in the therapeutics of gonorrhœa, and its neutral reaction offered a safeguard which enabled it to be applied to mucous membranes without setting up any appreciable irritation. It caused no irritation or pain, in spite of the large proportion of nitrate of silver it contained, though its bactericidal properties were remarkable. Its non-irritating properties recommended it strongly to Neisser, and to others who were opposed to the expectant treatment, and who recommended that every attack of gonorrhœa should be treated by anti-bacterial injections as soon as possible after infection. It was found possible to retain solutions of protargol in the urethra for a period varying from five to thirty minutes, and its retention saved the patient from the frequent repetition of the process. The injections should first be used three times a day, the fluid being retained, first, for five minutes, but at the third time for as long as half an hour; the treatment could be continued for three or four weeks if necessary, but the disease generally yielded sooner than this. In conclusion Neisser stated that he had never obtained such good, certain, and quick results as with this substance.

Barlow (*Münchener med. Woch.*, 45 and 46, 1897) fully endorses the favourable opinion expressed by Neisser. It was necessary to ascertain if the posterior urethra was involved or not; and always to commence the treatment as soon as possible after infection. He summed up his conclusions as follows:—

(1) Protargol produced excellent results in the treatment of acute gonorrhœa, and was easily tolerated by patients in almost every instance.

(2) The prolonged injections lasting for up to thirty minutes acted especially favourably in the course of acute gonorrhœa of the fore-part of the urethra.

3. When using protargol in the early stages of the disease, the posterior part of the urethra was certainly less frequently affected than when using other medicaments.

4. In gonorrhœa of the anterior urethra the treatment by irrigation was superfluous, injection of small amounts of the solution by a syringe being sufficient to effect a cure.

5. If the posterior part of the urethra were affected, the irrigation method of treatment was indicated.

Goldenberg (*New York Med. Journal*, Jan., 1898) found that the irrigation treatment of gonorrhœa was inconvenient, and in acute cases unsuitable, and quite agreed with Neisser in his opinion that protargol surpassed all other agents in the treatment of such cases. Should the disease be localised in the anterior urethra, the patient should inject 3 drachms of a 1 per cent. solution with an ordinary urethral syringe; should retain the solution from ten to fifteen minutes; and should repeat the practice three times a day. In posterior urethritis a solution of $\frac{1}{2}$ to 1 per cent. should be introduced into the deeper urethra by a Guyon's instillator. The treatment was found to be absolutely painless, and unattended by any evidence of local irritation or general disturbance. It had also been introduced in the powdered form by means of the endoscopic tube, but it was found that the irritation caused by the passage of the tube somewhat detracted from the remedial efficacy of the drug.

Fürst (*Fortschritte d. Med.* 1898, No. 4) has found protargol of great service in the treatment of gonorrhœal ophthalmia neonatorum. It had the advantage over nitrate of silver in that it had no tendency to decompose or to irritate, while it was perfectly easy of application, and its action was quicker and more reliable.

Fürst (*Therapeut. Monatsheft.*, April, 1898) further advocated the use of protargol in the treatment of gonorrhœa in women. He had treated thirty-six adult patients, consisting of fourteen cases of gonorrhœa of the cervix and body of the uterus, eight cases of gonorrhœa of the cervix only, five cases of gonorrhœa urethro-cystitis, three cases each of vulvitis and of bartholinitis, two cases of gonorrhœal endometritis, and one case of colpitis. He looked upon gonorrhœa of the vagina as a rare disease, but found that in a large majority of

cases the gonococci settle first in the uterine cavity; consequently, special attention should be directed in every case of infection to the careful treatment of the cervical cavity and of the endometrium. The use of protargol rendered it possible to kill the cocci without producing an inflammatory reaction, or effecting a revival of the discharge, or transporting the cocci into the Fallopian tubes. The principal indication in the treatment of these cases was to prevent as early as possible a spreading upwards of the gonorrhœa into the cavity of the uterus. The objection to intra-uterine applications was that they frequently produced severe irritation; but protargol could be applied to the whole uterine cavity with impunity, and a thorough washing of the endometrium could be effected by its agency. The treatment adopted in cases of cervical gonorrhœa was as follows: after cleansing and disinfection of the vulva and of the vaginal tube, the vaginal part of the uterus was carefully and slowly drawn downwards, and if necessary the os was dilated. After the introduction of a carefully sterilised glass uterine catheter with a sufficiently large flowing off pipe, the parts were washed out with sterilised tepid water in the first instance, in order to wash away all secretions or collections of cocci which might lie on the endometrium. This preparatory cleansing of the surface of the mucous membrane was necessary, as although the solution of protargol did not form any precipitate with the secretion, the removal of the latter enabled the drug to act in a more direct manner on the mucous membrane. The above process was followed by a prolonged rinsing with $\frac{1}{2}$ per cent. solution of protargol. If this was well tolerated, it was followed by a 1 per cent. solution, at least two litres of fluid being injected on each occasion. The vagina was then carefully cleansed with sterilised cotton wool, and a short conical bougie of protargol 5 per cent. was introduced into the cervix. This bougie, which was fixed by a large cotton wool tampon, would melt in fifteen minutes; after which the vagina was cleansed by a 10 per cent. solution of protargol, and then a tampon of the drug at the same strength mixed with glycerine was inserted. There still remained the possibility of reinfection of the uterus from the tubes; but the endometrium now offered a less favourable soil for the gonococcus, and such reinfection was rare except in acute cases. The treatment was continued for five or seven days, and if necessary the strength of the solution might be increased to 2 per cent., and after the first week the strength might be gradually decreased, while subsequently astringent injections could be employed. Gonorrhœal vaginitis and vulvitis require a much simpler treatment, viz. by

injections of the 5 per cent. solution and the introduction of the protargol glycerine tampon and gonorrhœal urethritis might be treated by vesical injections of a weak solution and the introduction of the protargol 5 per cent. bougies.

Finger (*Die Heilkunde*, March, 1898) considered protargol a very effective anti-gonorrhœic which, if applied early, would cause the disease to take a rapid and favourable course; it prevented all acute symptoms, caused the secretion and the gonococci to disappear quickly, prevented the process from extending to the posterior urethra, and gave good results even in a perfectly developed acute general urethritis. It might for some unascertainable cause fail in a small proportion of cases. The course of gonorrhœa was considerably modified by protargol, but the duration of treatment was not shortened very considerably, because not only a prolonged application in every injection was required but also a protracted treatment, assisted towards the end by antiseptic astringents such as argentamin, or sulphocarbolate of zinc was absolutely necessary in order to free the tissue from the gonococci and to prevent the relapses which often occurred, even after an apparently clinical cure, if the treatment had been discontinued too soon.

Fournier (*Journ. des Mal. Cutan. et Syph.*, June, 1898) was in the habit of prescribing a solution of protargol of strength from 1 in 400 to 2 per cent. directly the presence of the gonococcus was ascertained. The injections were given three times a day, the first one being retained for five minutes, the second for ten, and the third for fifteen minutes; while at the end of the first week one injection daily would suffice. He employed a syringe containing 10 cubic centimetres; and whilst of opinion that prolonged contact of the solution with the urethral mucous membrane was advisable, he thought this could be as well carried out by a repetition of the process as by its retention for half an hour as practised by Neisser. Phenomena of irritation were so rare that the treatment need not be discontinued, as was the case with nitrate of silver; it was true that in some cases a very copious discharge was set up by protargol injections, but the microscope did not display any micro-organisms, and the condition rapidly yielded to astringent applications. Protargol, employed by Neisser's method, effected a cure more rapidly than any other form of treatment, especially in acute cases and in first attacks, though in chronic cases and in recurrent attacks, as well as in posterior urethritis its action was not quite so certain.

[A considerable amount of space has been devoted to the consideration of the merits of protargol, but this seems to be

justified by the large amount of literature on the subject, emanating from such distinguished authorities as those above quoted. So-called specifics for any disease must always be looked upon with distrust, and will seldom respond to the test of time and mature experience. Protargol, however, is not vaunted as a specific, but is recommended as being the best method of introducing nitrate of silver to the urethral mucous membrane, while avoiding the injurious reactionary effects of that salt. From the experience of the writer, extending over nearly a year, protargol far surpasses any remedy yet introduced as an adjunct to the therapeutics of gonorrhœa. Every acute case in the wards of the London Lock Hospital and in the out-patient department of a general hospital has during that time been treated by the writer with this substance, and, though no actual figures can be given, with the result of shortening the period of treatment and of leaving the patient permanently cured. In a large number of the cases the presence of the gonococcus was verified on commencing the treatment, and with the apparent cure of the case no attempts were made to prove its absence by the recommendation of alcohol and coitus, as has been done by some practitioners abroad, recommendations which may be considered superfluous in the majority of hospital patients. The fact that none of the patients have presented themselves complaining of relapse may be taken as an argument against a return of the disease. In cases of chronic and of posterior urethritis similar good results have been met with, though in such cases the solution has been applied topically by means of the endoscope or by deep injections with a Guyon's syringe, and in a strength of solution of 20 or 30 per cent.]

4. Treatment of gonorrhœa by largine.

Pezzoti (*Wien. klin. Woch.*, 1898, p. 260) described largine as an albuminate of silver, in the form of a whitish grey powder, of light weight, containing 1 per cent. of nitrate of silver, dissolving very readily in water, and forming a clear yellow solution; it dissolved more easily in glycerine, serum-albumen, or peptone, but was insoluble in alcohol, ether, or benzol. Its reaction was slightly alkaline, and in coloured bottles it remained indefinitely without alteration, while the strength of silver remained constant, which was not the case with other albuminates; it was, further, as of destructive to the gonococcus as any of the other albuminates silver. The author made use of prolonged injections of solutions of largine of a strength of from $\frac{1}{4}$ to $\frac{1}{2}$ per cent., gradually increasing the dose; it was applied three times a day for periods of from five to thirty minutes. In twenty-seven cases of acute anterior urethritis treated from the commencement of the disease, the result was very satisfactory; the discharge rapidly decreased, and the gonococci disappeared by the end of ten days, on an average. The mean duration of treatment was thirty days, during which time there was no sign of posterior urethritis. The second group comprised eight cases of the same nature, in which the same treatment had been carried out from the commencement, but where it was found necessary to suspend it owing to the supervention of acute posterior urethritis. In the third group were six cases of acute or subacute posterior urethritis not submitted to this treatment till long after the commencement of the disease, and here the results were far from satisfactory. Out of forty-one cases treated, thirty-five had acute anterior urethritis, and of these, twenty-seven were cured with largine, a proportion of 77 per cent.; in six cases it produced no effect, and ultimately the disease spread to the posterior urethra. If these results were compared with those of Finger, when using protargol, it was found that out of thirty-four cases of recent anterior urethritis treated by the latter drug twenty-two cases were cured, while in twelve cases the disease reached the posterior urethra in spite of the treatment. The remedy was not an abortive of gonorrhœa any more than was protargol, but it was an addition to the number—small at present—of efficient and non-irritating applications, and it certainly was on a par with protargol as an injection.

5. The treatment of gonorrhœa by itrol.

Peroni and Picardi (*Giorn. Ital. del Mal. Ven. e del. Pel.*, 1898, fasc. 1, p. 14) have used this substance, which is citrate of silver, in sixty-five cases of acute and chronic gonorrhœa, in the form of injections of solutions varying from 1 ad 1,000 to 1 ad 2,500. Itrol could be employed locally from the commencement of the disease, for it provoked no reaction in the urethral mucous membrane, but, on the contrary, usually a remarkable diminution in the inflammatory phenomena. By reason of its anti-gonorrhœal action, and of its power to penetrate into the tissues, due to the fact that it was not precipitated by albumen, it was indicated as much in acute as in chronic cases, and the best way of employing it was by irrigation.

6. The practical use of the endoscope.

Herman G. Klotz (*Journ. of Cut. and Gen.-Ur. Dis.*, July, 1898) treats of urethroscopy as a means of diagnosis, and describes the appearance of the various pathological conditions to which the urethra is liable. He proceeds to the consideration of its practical value in the different morbid conditions met with. By its aid we can determine the nature and location of the disease,

and can select proper therapeutic measures; we can expose the diseased portions to the eye, and bring them within easy reach of the hand, and so admit of the application of stronger and more effective remedies, which would injure any but the affected portions; further, we can control the effects of any treatment, and can early judge whether it is successful or not. Endoscopic treatment is principally indicated in those superficial inflammations in which circumscribed patches of the mucous membrane have undergone certain changes which cannot be affected any more by the usual injections of astringents or parasiticides, because those remedies are powerless in the solutions which may be syringed into the urethra without injury to the portions remaining healthy or only slightly involved. By the use of a wool tampon twisted round a wire we can apply strong solutions, or powders, or even caustics, to the diseased area. Should the lacunæ Morgagni be involved, a condition but little affected by injections, they can be exposed to their full extent, and impregnated with strong solutions, or can be touched with solid caustic, or with the electro-cautery. After dilatation of the urethra, the lacunæ are converted into longitudinal slits, into which solutions may easily be applied. Solutions of nitrate of silver may be used in the strength of from 1 to 20 per cent., or the solid stick may be applied; sulphate of copper in 2, 5, or 10 per cent. solutions, tincture of iodine, liquor ferri perchloridi and glycerine, corrosive sublimate, trichloracetic acid, liquor plumbi subacetatis, iodoform, aristol, dermatol, or airol.

RECENT PUBLICATIONS.

"An American Text-Book of Genito-Urinary Diseases, Syphilis and Diseases of the Skin." Edited by **L. Bolton Bangs, M.D.**, and **W. A. Hardaway, M.D.** Illustrated with 300 engravings and twenty full-page colour plates. (Philadelphia: W. B. Saunders. 1898.)

"Traitement de la Blennorrhagie chez l'homme et chez la femme," **E. Delefosse**. (Coccoz, Paris. 1897.)

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Suarez de Mendoza, "La blennorragia." (Madrid. 1898. 59 pp.)

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Van Niessen, "Beitrag zur Syphilis." "Hygiene," **Hann Munden**. (1898. P. Werthes. 23 pp.)

THE DISEASES OF WOMEN.

By G. Ernest Herman, M.B. Lond., F.R.C.P., F.R.C.S. Eng.,

Senior Obstetric Physician to the London Hospital, etc., etc.

1. Tubo-ovarian hæmorrhage.

Dr. J. Wesley Bovée (*Amer. Gynecological and Obstetrical Journ.*, May, 1898) has written a valuable paper calling attention to some facts which there is a tendency just now to overlook. He says: "A few years back pelvic hæmatocele was a condition that every practitioner appeared to meet occasionally, and many were its supposed causes. When the study of tubal pregnancy was so universally taken up, some of the most aggressive investigators told us to search in every case of pelvic hæmatocele and we would find a ruptured tubal pregnancy." Dr. Bovée upon this remarks: "While we make no attempt to cast reflection upon the common ætiological relation to pelvic hæmorrhages of ruptured tubal pregnancy, nor upon its very frequent occurrence, we desire to offer some very conclusive evidence against the positive statements that have gone out to the effect that we will *always* find this condition in such hæmorrhages. There are many instances in which women are deeply wronged by such diagnoses. Oftentimes these hæmorrhages have occurred in virgins at a very young age and in widows above reproach." He says: "The frequency of hæmatosalpinx cannot be doubted, and ovarian hæmorrhage is by no means rare." He relates a case of hæmatosalpinx in his own practice, in which careful examination of the specimen showed not the slightest evidence of pregnancy. He has collected from other authors reports of thirty cases of tubal or ovarian hæmorrhage in which either pregnancy was impossible or no trace of it could be found, although expected and looked for. Dr. Bovée concludes his paper by saying that "to ignore such evidence of the frequent occurrence of hæmorrhage from the ovary and Fallopian tube, due to an inherent disease of these organs, and to continue to diagnose ruptured ectopic pregnancy without microscopical or other certain evidence, is to ignore scientific truths and to foster false pathology."

I agree with Dr. Bovée as to the fact that there are cases of hæmatosalpinx which are not due to ectopic pregnancy, and that

and can select proper therapeutic measures; we can expose the diseased portions to the eye, and bring them within easy reach of the hand, and so admit of the application of stronger and more effective remedies, which would injure any but the affected portions; further, we can control the effects of any treatment, and can early judge whether it is successful or not. Endoscopic treatment is principally indicated in those superficial inflammations in which circumscribed patches of the mucous membrane have undergone certain changes which cannot be affected any more by the usual injections of astringents or parasiticides, because those remedies are powerless in the solutions which may be syringed into the urethra without injury to the portions remaining healthy or only slightly involved. By the use of a wool tampon twisted round a wire we can apply strong solutions, or powders, or even caustics, to the diseased area. Should the lacunæ Morgagni be involved, a condition but little affected by injections, they can be exposed to their full extent, and impregnated with strong solutions, or can be touched with solid caustic, or with the electro-cautery. After dilatation of the urethra, the lacunæ are converted into longitudinal slits, into which solutions may easily be applied. Solutions of nitrate of silver may be used in the strength of from 1 to 20 per cent., or the solid stick may be applied; sulphate of copper in 2, 5, or 10 per cent. solutions, tincture of iodine, liquor ferri perchloridi and glycerine, corrosive sublimate, trichloracetic acid, liquor plumbi subacetatis, iodoform, aristol, dermatol, or airol.

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I agree with Dr. Bovée as to the fact that there are cases of hæmatosalpinx which are not due to ectopic pregnancy, and that

there is a tendency to overrate the frequency with which ectopic pregnancy is the cause of pelvic hæmatocele. Thus, **Cullingworth** (*Lancet*, June 19, 1897) says: "It is now pretty generally agreed that in at least nineteen cases out of twenty, the effusion, when not traumatic in its origin, is in one way or another the result of tubal gestation;" and further on, "it is abundantly clear that many of the causes of pelvic hæmatocele enumerated by the older writers are purely hypothetical, and that most of the cases attributed to menstrual disturbances, bursting of apoplectic ovaries, rupture of veins, and so on, when read in the light of our present knowledge, are easily recognised as having been misunderstood cases of early tubal gestation." Now Cullingworth has himself published in an earlier paper (*St. Thomas's Hospital Reports*, vol. xxi.) a report of seventeen cases of hæmatosalpinx carefully examined by himself. Of these there were only *two* in which the evidence of tubal gestation was complete. In no fewer than *ten* the evidence of tubal gestation rested mainly or entirely on the clinical history, no embryonic remains or other distinctive products of conception having been discovered in the parts removed. In *two* more, not only was no trace of pregnancy found, but the clinical history was inconclusive. In the remaining *three* there was evidence that the hæmatosalpinx was due to some cause other than tubal pregnancy. (In one salpingitis; one was in a woman of fifty-three; and one was a case of hæmorrhage into a tube, the other tube being pregnant). In brief, two certainly due to tubal pregnancy; three certainly not; twelve doubtful. It seems to me rather a large leap from the known to the unknown to assume that because two were due to pregnancy, twelve others of uncertain origin must have been also. And at most, the proportion is only fourteen out of seventeen, not nineteen out of twenty.

I think that the right way of putting it is that tubal gestation is the commonest of the known causes of hæmorrhage into the tubes; but that in many cases we do not know why there has been bleeding into the tube.

Doran (*Obst. Trans.*, vol. xl., 1898) has published a case of hæmorrhage from the tube without any evidence of pregnancy, or of dilatation of the tube. At the meeting of the Obstetrical Society in November, 1898, **Mr Bland Sutton** criticised this case. But his remarks upon it only went to show that the appearances present were not inconsistent with a previous tubal pregnancy. He was not able to point to any evidence, much less to prove, that pregnancy had been present. Doran expressed himself as unconvinced. This was not a case in which the possibility of pregnancy had been overlooked, for the specimen had been examined, and evidence of pregnancy searched for, by two skilled observers, but none found.

Further evidence that hæmatocele may occur without pregnancy will be found in the next paper which I quote, which aims at rectifying our present views on the common variety of pelvic hæmatocele.

2. Pelvic hæmatocele and ectopic pregnancy.

Fehling (*Zeit. für Geb. und Gyn.*, Band xxxviii.) has written an important paper on this subject. He says that increasing experience has led him to alter many of the views expressed in his text-book on Diseases of Women (published in 1893) and to oppose some teaching which is at present current.

While advanced ectopic pregnancy is rare, tubal rupture and tubal abortion are common, and Fehling holds that the differences between the two latter conditions are not sufficiently recognised. The frequency of tubal abortion is not yet appreciated. Fehling quotes from the literature of 1888-92, figures given by different authors which make it seem that tubal rupture is commoner than tubal abortion. He then gives his own experience, which is that tubal abortion is about eight times commoner than tubal rupture. His opinion is that the ovum when in the tube dies more readily than when in the uterus, because the mucous membrane of the tube is less fitted to nourish it than that of the uterus. He believes that primary death of the ovum is far commoner than any detachment or dislocation of the ovum by contraction or movement of the tube. An early ovum may, as **Leopold's** experiments have shown, be completely absorbed by the peritoneum. So that when tubal abortion occurs early, there is but small internal hæmorrhage and slight symptoms which quickly pass off. But there may be more considerable and repeated bleedings. In that case the peritoneum will absorb the fluid part of the blood, but the clot will remain, clinging about the tubes, the hinder part of the broad ligament, and Douglas's pouch; and it will excite inflammatory reaction, so that adhesions will form which will encapsule it. Fehling thinks that the old view of Nélaton, that the bleeding was primary, the adhesions secondary, was more correct than the later one of Schroeder, according to which the encapsuled space existed before the hæmorrhage. That hæmatocele is the direct consequence of tubal (mostly incomplete) abortion, is no longer doubted in Germany. It is possible that when tubal abortion has begun, rupture of the tube may yet take place. Fehling has seen two cases of this. He estimates that of intraperitoneal hæmatoceles, from 90 to 95 per cent. are due to ectopic

pregnancy. This opinion is based on the results of operations. But there are other causes, and Fehling relates cases exemplifying two: one sarcomatous growths in a woman aged 68; another, a case of blood cysts in both ovaries. Rupture of a gravid tube is often, in Fehling's opinion, due to a medical examination. The symptoms of tubal abortion are like those of tubal rupture, but are much less severe. He makes a strong statement, viz. that "*fatal internal hæmorrhage with complete tubal abortion is unknown.*" Incomplete tubal abortion, with recurrent attacks of pain and hæmorrhage, is much commoner; but Fehling says that he must decidedly oppose the statement made by others that these bleedings are dangerous to life and demand operation. He attributes the uterine hæmorrhage accompanying ectopic pregnancy to endometritis. [This, it seems to me, is not proved.] He disagrees with the statement commonly made that in tubal abortion the uterus is enlarged and vascular. In unruptured tubal pregnancy it is, but when tubal abortion has taken place, the uterus becomes small and hard. When a hæmatocele has formed, it is rare for subsequent hæmorrhage to take place in a patient who is lying at rest and is not examined. Fehling comments on the occasional difficulty of diagnosis between pyosalpinx and tubal abortion. He has four times operated for supposed ectopic pregnancy and found pyosalpinx. The converse mistake, diagnosing pyosalpinx and finding ectopic pregnancy, he has never made. He therefore asserts that the diagnosis of tubal abortion with hæmatocele can be made with the greatest probability, though never with absolute certainty. The statement of **Webster** that the result of tubal abortion for the mother is the same as that of tubal rupture, he rejects as false; the two conditions are quite different as to prognosis.

Fehling has had under his care ninety-one cases in which the diagnosis of tubal abortion and hæmatocele was made, and the treatment was expectant, and they all recovered. He quotes other statistics showing the very small danger attending pelvic hæmatocele when treated on expectant lines.

But what is the prognosis as to complete and permanent restoration to health? The time necessary for recovery is not weeks but months. In the Basel Clinic the average stay in hospital of such cases was 54·6 days. A woman of the labouring classes may require from six months to a year before she is again fit for her ordinary work. Fehling quotes a case related by **Kretschmar**, in which abdominal section was done thirteen years after the diagnosis of tubal pregnancy had been made, and the bones of a three-months' fœtus were found in the tube.

The prognosis, therefore, though favourable as to life is yet unfavourable as to health. The risk of the operative treatment of tubal abortion is now nothing like so high as would be thought if we judged from the earlier statistics. Fehling thinks it ought not now to exceed 5 per cent. The mortality of operation by the vagina, he thinks, is higher than is supposed; he puts it at 9 or 10 per cent. [Fehling's estimate is partly founded on his own experience, eleven cases with one death, from a wound of a branch of the uterine artery. But surely this is a preventable cause of death.]

Fehling's conclusion as to the proper treatment of pelvic hæmatocele is that it should be treated by absolute rest, with symptomatic treatment only, and without operation, except in one of the three following contingencies:—

1. Increase in size of the swelling,
2. Signs and symptoms of internal bleeding,
3. Signs and symptoms of suppuration.

A little pyrexia up to 101° is not an indication of suppuration; it often occurs in hæmatoceles that are not suppurating. He disapproves of the vaginal operation, not only on account of what he takes to be its danger, but because it is a blind proceeding, and because if a simple incision only is made, the diseased tube is left behind. If any operation is done, Fehling thinks it should be the removal by the abdomen of the diseased uterine appendages. The only exception to this rule is in cases of suppuration of the uterine adnexa. In all cases of doubtful diagnosis the abdominal operation should be chosen. Fehling thinks that a patient with one ovary, but without a uterus, is not so well off as one without either ovaries or uterus. He has several times had to remove a patient's sole remaining ovary, on account of troubles connected with it. He has also been obliged, after removal of a tubal abortion by the abdomen, to perform a second operation within a year for the removal of the other tube.

Cullingworth, in an address delivered to the Oxford Medical Society, on November 12, 1897, urges, like Fehling, that pelvic hæmatocele is rarely due to rupture. Out of twenty-five cases of hæmatocele operated on by him, in only one was the condition due to rupture. But Cullingworth gives a little different, and a more precise explanation of the ordinary mode of formation of a pelvic hæmatocele. His view is that the abdominal ostium of the tube is always open until the sixth or eighth week, and that the blood flows out through this open end slowly and in small quantity. This gives time for encapsulation, either by adhesions around the effusion, or the formation of a firm wall of clotted blood at its

periphery. Cullingworth, like Fehling, remarks on the temperature, and agrees with him on this important practical point. He says, "As a matter of fact, it is rare to meet with a case of pelvic hæmatocele without, at least, temporary rises, and sometimes the rise extends to several degrees, without any evidence of putrefactive or other morbid alteration of the effused blood." He speaks emphatically on an aid to diagnosis which has not hitherto received attention, and which is not mentioned by Fehling. It is that the hæmorrhage from the uterus [which he ascribes, not, like Fehling, to endometritis, but, as I think correctly, to the separation and expulsion of the decidua] is almost invariably *dark in colour, moderate in amount, thickish in consistence, and steady in its rate of flow.* Bleeding due to uterine abortion is copious, fitful in its rate, and variable as to colour and consistence; sometimes offensive, which the bleeding accompanying tubal abortion never is. Cullingworth's opinion as to the proper treatment of these cases is that "considering the appalling nature of the risks that have to be encountered by a patient with tubal gestation, and the signal success that has attended early operative interference," his strong conviction is that, with the exception of some few cases of very early tubal abortion accompanied with hæmatocele, the proper treatment is to operate at once in every case in which the diagnosis of ectopic gestation has been established.

Cullingworth's views as to treatment at first seem to differ widely from Fehling's. But the difference is rather theoretical than practical. Both would in practice let alone cases that are doing well, and operate in those in which there were the signs of coming trouble which Fehling specifies. The main difference is that while Cullingworth appears to think that operation is wanted to avert ulterior risk to life, in Fehling's view these risks hardly exist, and operation is indicated rather to prevent a long period of invalidism, than immediately to save life. I think Fehling's view is more in accordance with clinical facts; but in either view the correctness of his therapeutical advice is equally indubitable.

Passing from the conditions which lead to internal bleeding, I come to the inflammations of the tubes and ovaries. There is no longer doubt as to the frequency of these diseases, or as to the possibility of curing them by operation. The question now is, by what operation? In the pages which follow I bring together some of the opinions which are to-day held.

3. The treatment of pelvic inflammations.

This important subject was discussed at the meeting of the British Medical Association at Edinburgh. The discussion showed that experience is gradually bringing agreement out of discord.

One who read the debates on this subject ten years ago, would have gathered that there were two diametrically opposite methods of treating pelvic inflammations. One was to do nothing (unless an abscess was pointing), and the other was to open the abdomen and remove the uterine appendages without delay. Now, if either one of these practices is the best thing for the patient, the other is clearly a wrong-doing.

The truth is that in some cases, but not in all, surgical treatment is called for, although no abscess is pointing; and in some cases, if there be an abscess, it is not enough simply to incise it; the patient cannot be cured without more extensive surgery. The problem is to make precise the indications for the different lines of treatment. The discussion marks advance, in that it shows general recognition of the fact that different kinds of pelvic inflammation require different treatment.

The discussion was opened by **Cullingworth**. He spoke first of cellulitis, but not at length; for, as he said, there is close agreement among gynæcologists as to the treatment of this form of inflammation. The treatment is to let out pus as soon as it is discovered and is within reach.

With regard to peritonitis, Cullingworth considered two questions: (1) In what cases should we operate? and (2) When? He mentioned two others—viz.: (3) How? and (4) How much? His limit of time prevented him from answering these, but other speakers took them up.

Cullingworth stated that operative interference is not called for in simple catarrhal salpingitis, but is called for whenever there is pus. The problem, therefore, is to recognise the existence of pus. He gave the following conditions as those which indicate pus: The presence of a swelling in a posterior quarter of the pelvis, which is larger than that which could be formed by a Fallopian tube merely thickened and adherent to the ovary, and which increases in size in spite of treatment by rest in bed and warmth; the presence of a tense globular swelling in Douglas's pouch, bulging into vagina and into rectum; the recurrence of pelvic peritonitis; the presence of local physical signs, with symptoms of general septic infection.

Cullingworth then pointed out that there are conditions not attended with suppuration, such as hydrosalpinx, small ovarian cysts, etc., which properly call for operation. [About these there is no dispute.] Lastly, he said that operative treatment may properly be applied to cases of non-suppurative salpingitis, if the patient's circumstances are such that she cannot afford to have rest in bed for a lengthened period.

As to the time for operation, Cullingworth prefers to postpone it until acute inflammation has subsided. He is in this in accord with most surgeons. He quoted statistics from Mr. Clutton, showing the advantages of waiting before operating on cases of appendicitis until acute inflammation has subsided. In conclusion, Cullingworth referred hopefully to Durham's experiments (*Med. Chir. Tr.*, vol. lxxx.) on the immunisation of the peritoneum by the administration of antistreptococcic serum preliminary to an operation.

Doyen, who followed, spoke only on the question How? taking it for granted that surgical treatment is necessary. He said that any exclusive method should be rejected. There are two ways of operating—(1) vaginal, (2) abdominal. "If the inflammatory mass remains intrapelvic, and does not reach above the brim of the pelvis, vaginal operation. If the suppurated tumour passes the brim of the pelvis, and reaches the level of the umbilicus, abdominal section." By each of the above methods three distinct operations may be performed—(1) simple incision; (2) ablation of the adnexa, leaving the uterus; (3) total castration.

(1) If the purulent pouch is single, with thin walls, which he thinks will cicatrise easily, and in a young woman, Doyen contents himself with a large *incision* and tamponing the cavity. Recovery takes from four to six weeks. [I should not, from my experience, limit this treatment to cavities with thin walls. Recovery depends, not upon the thickness of the wall, but upon whether the cavity is single. A thick wall is chiefly important as indicating that probably there are other cavities. If there are, vaginal incision will not cure; but, as before the incision the parts were adherent, the incision will add no difficulty to a more radical operation later, if incision fails to cure.]

(2) *Unilateral ablation of the adnexa.*—This operation depends on the integrity of the ovary on the opposite side. If there is bilateral disease of the adnexa, Doyen cannot understand anyone removing them and leaving the uterus behind. The diagnosis can only be made in the course of the operation, and, therefore, before undertaking such an operation, the operator should get authorisation from the patient and her husband to remove as much as he thinks fit.

(3) *Total castration.*—If the appendages on both sides are purulent, this is necessary. When the abdomen is opened, occasionally an abscess cavity is cut into, which may then be drained. If the adnexa are diseased on one side only, they may be removed and the rest left. There are even cases of bilateral disease of the adnexa in which, when the parts are exposed by

abdominal section, the annexa may be left. If the uterus is healthy and not painful, and the woman much reduced in strength, the uterus may be left. If the disease is tuberculous, it is not necessary to remove the uterus. The vaginal method and laparotomy are not competing methods, for each has its own indications.

Jacobs, of Brussels, approached the subject statistically. His results are interesting as showing the risk of these operations in the hands of a competent and experienced operator, who uses modern antiseptic appliances and precautions. I quote his precepts as to the choice of operation, although I should myself not endorse such simple and sweeping rules. I think much more differentiation of cases is required. "(1) The vaginal route should be preferred in cases of old-standing pelvic suppuration, with fistula, adhesions, peri-uterine abscess, etc. (2) The abdominal route is the best in relatively recent cases in which there is no evidence that surrounding organs are seriously involved. By either route the result aimed at must be total castration—that is, extirpation of the uterus and appendages." Jacobs's results are as follows: Vaginal route, 432 cases, 8 deaths, or 1·8 per cent.; abdominal route, 98 cases, 3 deaths, or 3·06 per cent. This low mortality is satisfactory and creditable. But Dr. Jacobs, with commendable candour, adds the following casualties following operations which were not fatal: five ureteral fistulas, of which two healed spontaneously, and nine intestinal fistulas, eight of which required secondary operations.

Before these large numbers can be taken as representing the risk of the operation, we want to know the sort of cases in which it has been performed; for the risk of hysterectomy when some adhesions are the only disease present differs from that of hysterectomy when a large collection of infective pus is opened into. Jacobs has not forgotten this. Fifty-three cases of pyosalpinx operated on by the abdominal route resulted in 39 cases, 3 deaths (5·6 per cent.), and 10 in which another operation was afterwards required; 31 cases operated on by the vaginal gave 24 cures, 2 deaths (6·4 per cent.), and 7 in which a further operation was required.

Landau, who followed Jacobs, approached the subject from a different point of view. His paper was entitled "Vaginal Cœliotomy," and was an attempt to define the utility of this operation. Landau carefully defines the meaning of the term, which has not always been employed in the same way. Three things may be done by the vagina. (1) An incision may be made, but the general peritoneal cavity not opened. This is not vaginal

cœliotomy. With respect to it Landau remarks, "many vaginal cœliotomies have been performed, during which only one or two fingers were introduced into the abdominal cavity, certain resistances were felt and overcome, adhesions were severed, but their origin and connections could frequently only be imagined, not exactly determined. In other cases the finger opened cysts, from which the contents, fluid or viscid, transparent or turbid, and of all shades of colour, flowed into the vagina. Whether this fluid came from intraperitoneal or extraperitoneal sacs, from old or new cavities, remains obscure. On other occasions the finger, with difficulty, brings out ragged pieces of membrane and thick plates of exudation, while, at the same time, fluid from above comes into the vagina. Torn particles of pelvic organs, which have undergone complete inflammatory fibrous changes, so as to be reduced to cicatricial tissue, may follow. No efforts of the pathologist, no macroscopical or microscopical observation can disclose what the original process was that lead to these results." Landau points out, that so long as the uterus obstructs the opening into the pelvic cavity, "not even the most simple formation can be brought out without the most extensive and complete morcellation, except, of course, adnexa, which are normal or nearly normal in size—smooth emptied ovarian cysts or hydrosalpinges." Therefore, frequently proof of the exact nature and situation of the disease is absent.

Landau does not include these scientifically imperfect, although often therapeutically very useful, operations, under the term "vaginal cœliotomy." He includes (2) cases "in which the free peritoneal cavity was opened by a vaginal incision for the purpose of surgical interference with genuine tumours or inflammatory processes of the uterus, tubes, ovaries, or peritoneum." He does not include (3) cases of the complete removal of the uterus and its appendages.

Landau has performed this operation in fifty-eight cases without a death—the only mishap being a perforation of the bladder, which was closed at once. [Within the same period of time he has performed 208 vaginal radical operations—total castrations]. The results are instructive. The cases in which the operation was done for tumours or for ectopic pregnancy have all been completely cured. But of those in which the operation was done for inflammation, only 20 per cent. have been cured. Landau has seen in out-patient practice about fifty patients operated on by other surgeons, who came for treatment on account of new and constantly-recurring attacks. The worst permanent results were observed in the cases in which least was done. Cases of diffuse

inflammatory processes in the pelvis, can, in Landau's opinion, be cured only by vaginal radical operation; this alone permits of drainage and open-wound treatment.

Comparing the abdominal with the vaginal route for removing the uterine appendages, Landau says that the danger of the vaginal operation is undoubtedly less than that of the abdominal operation; convalescence is also quicker and pleasanter.

Landau lastly enters into the technique of the operation. He prefers a simple posterior incision. In movable retro-uterine tumours this is the best because the simplest. If the swelling to be dealt with lies in the anterior part of the pelvis, then a transverse anterior incision. If difficulties are met with, a longitudinal incision may be added to the transverse, and anterior and posterior incisions may be combined. Then the uterus is to be luxated forwards, either by a retractor or with a sound, not by a volsella, which is apt to tear it. If this cannot be done, it is better to split the anterior uterine wall by a median incision, than to run the risk of wounding it irregularly. Sewing the peritoneum afterwards is not important.

Finally, Landau considers the limitations of the operation. The size of the incision is limited, by the presence of the bladder, ureters, and rectum, and by the size of the vagina itself. Then only such tumours can be removed as lie in contact with the vagina, so that they are within reach of the finger, and have a pedicle which is accessible by the finger. The vaginal operation should not be performed for tumours liable to rupture, nor when there is ascites, nor in cases of doubtful diagnosis. Myomata up to the size of a child's head, can, by "morcellement," be removed by the vagina. A unilocular ovarian tumour of any size can be removed by the vaginal operation; but as it is impossible to be certain before operation that an ovarian tumour is unilocular, the abdominal operation has to be chosen. In case of malformations, abdominal operation should be done, because the condition present cannot be ascertained from the vagina. In every stage of ectopic pregnancy in which the gestation sac does not reach above the navel, whether there be a living ovum, a tubal abortion, or a ruptured tube, the vaginal operation triumphs. Landau cannot advocate the removal of inflamed appendages, either on one or both sides, by the vaginal method. Even if successful most cases are not benefited. [This applies also to removal by laparotomy.] The bladder and ureters are endangered. Vessels may be torn, and their ligature may be impossible. Many surgeons have begun to do this operation, and been obliged to proceed to complete extirpation of the uterus and its appendages in order to stop bleeding.

In the "Year-Books" for 1896 and 1897, I have quoted reports of the results of the removal of the uterus and its appendages in cases of bilateral disease of the latter organs. I still think that for incurable double salpingo-oöphoritis this operation is the best treatment. I quote now some later statistics.

4. The removal of the uterus and its appendages for severe chronic disease of the tubes and ovaries.

Buschbeck has collected the results of this operation obtained in the Dresden Clinic. The number of cases amounts to sixty-seven. The first twelve of these occurred in the years 1885-91 inclusive; the remaining fifty-five between 1892 and 1897. This operation has not been in Dresden the routine treatment for inflamed uterine appendages. Many have been successfully treated by long-continued palliative, or rather, expectant treatment. Unilateral cases have been treated by the removal of the diseased parts by abdominal section, the uterus and the healthy appendages on the opposite side being left behind. The vaginal removal of the internal genitalia has been thought to be indicated only in cases of severe, chronic, bilateral, suppurated or non-suppurated disease of the uterine adnexa. Judgment has been a little influenced by the social position of the patient; poor women needing to be made capable of earning their living within as short a time as possible.

The results are the following: Out of the sixty-seven cases there was only one death, a mortality of 1·5 per cent. Two others have died since the operation. This leaves sixty-four for inquiry as to the permanent effects of the operation. From sixteen no reply could be got. Of the remaining forty-eight, thirty-eight came personally for examination, and ten replied by letter. Of the forty-eight, thirty were free from all trouble. Of the eighteen who still had some complaint, in thirteen it was not enough to prevent them from doing their daily work, so that forty-three out of forty-eight, or 89·5 per cent. were made able to get their living. The eighteen in whom more or less trouble persisted comprised one who suffered from renal colic, and in whom Buschbeck therefore thinks the operation had better not have been done, as the pelvic disease was not the main source of suffering; and four who suffered from manifold severe nervous symptoms, which continued after as before the operation. Buschbeck concludes that in cases in which such symptoms are present, the indications for the operation should be more restricted than heretofore. There were five in which pelvic symptoms present before the operation were not completely removed by it, although they were very much lessened. Lastly, there were eight who

complained of menstrual molimina not present before the operation, and therefore, presumably, set up by it. But none of these last were prevented from working by the molimina, and they all said that these symptoms were not to be compared with the suffering they had been accustomed to have before and during menstruation, and that, moreover, they were diminishing. After ill-consequences due to accidents of the operation—such as fistulas, pelvic exudations—occurred in no case. The operation had no detrimental effect upon sexual feeling, for this was in most cases annulled by the disease.

In the foregoing pages the suitability of the vaginal and abdominal operation for cases of pelvic inflammation has been discussed. I quote now some opinions as to the main advantages and disadvantages of the vaginal road to the peritoneal cavity.

5. An estimate of colpotomy.

At the International Medical Congress held at Moscow in 1897, the subject of anterior colpotomy was discussed, and the general tenor of the speeches made was, in **Zweifel's** opinion, too eulogistic, and he said so. But his remarks were too briefly reported to express his views properly, and he has therefore published an article containing a critical estimate of the value of colpotomy (*Cent. für Gyn.*, 1898, No. 16).

First, he says that if an ovarian cyst in size from that of a fist to that of a child's head, is removed by the vagina, recovery is so much smoother that the advantage of colpotomy over abdominal section is not to be denied. But it must in every case be remembered that the well-being of the patient depends far more upon the faultless performance of the operation than upon the kind of operation chosen. Hæmostasis is more difficult with colpotomy than with abdominal section, but, from the point of view of pain, colpotomy has the advantage. What he has said of small ovarian tumours applies also to fibroids not large enough to rise out of the pelvis, and to fixation of the retroverted uterus.

But anterior colpotomy has also been recommended for enlargements of the tubes. Now these are almost always inflammatory, and therefore without exception adherent. The result is, and here Zweifel quotes from **Baum**, whose words he endorses: "The operator touches, and toilsomely reaches after, what he wants to get hold of, and finally, if he has enough patience, he grasps it; but the wound is bruised in a way that it ought not to be; parts are torn that the operator would rather have protected, suppurated cavities are broken into, and

parts smeared with pus; vessels are opened, and the operator cannot see whence the bleeding comes. The latter is especially apt to happen if the infundibulo-pelvic ligament, which is shortened by inflammation, is too strongly pulled upon in order that it may be tied." Each successful colpotomy tempts the operator to further ones; but when there are firm adhesions even of small tumours, it is a difficult, delicate, and hazardous undertaking, and in such cases much more dangerous than abdominal section. Not only death, but hæmorrhage externally (through the vagina), hæmatomata, and pelvic inflammations follow it much more frequently than they do abdominal operations.

Posterior colpotomy has been practised, although not under that name, for many years. Zweifel has long ago opened pelvic hæmatoceles and abcesses by that route. It is possible to remove healthy ovaries in this way, but it is better done by anterior colpotomy. For ovarian cysts, fibroids, and tubal swellings it is not suitable.

The remaining method of vaginal treatment is the extirpation of the uterus. When there is uterine disease that cannot be otherwise cured, this is correct practice. In bilateral disease of the appendages caused by gonorrhœa, Zweifel admits that this indication is complied with. But there are operators who, when they see the anterior surface of the uterus, cannot leave it in the abdomen. It is a horrible thing that a woman should be deprived of her uterus because she has a retroflexion. When the Fallopian tubes are adherent and diseased on both sides, Zweifel regards it as an open question whether the vaginal or the abdominal operation is the better. For himself, he fails to see the advantages of the vaginal operation. He does not think the abdominal operation is attended with greater shock. The risk of ventral hernia he thinks is over-estimated. In a recent paper by **Abel**, its frequency after operations was estimated at 9 per cent. Zweifel thinks this is too high an estimate.

In the discussion on Zweifel's paper, **Sänger** spoke of colpotomy with even less favour than Zweifel. He said he had often had to consider whether he should undertake the removal of diseased parts from below or from above; and he had often thanked God that he had operated from above and not from below. He pointed out that there are limitations to the practicability of vaginal removal of diseased parts, which apply not to the abdominal operation. He endorsed all that had been said by Zweifel and Baum, as to the difficulties and disadvantages of removing inflamed tubes and ovaries by the vagina, even when this is possible. He

did not even admit, with Zweifel, the advantages of removing small ovarian tumours by the vagina; for ovarian tumours giving such trouble that they are discovered while yet small are often dermoids, in the removal of which unexpected difficulty is common. For the removal of fibroids, anterior colpotomy, combined with median incision of the uterus, after the manner of **Doyen**, is certainly of striking utility. But even here, the uterine tissue may be so lacerated, or made friable by contusion, that the closure of the wound may be impracticable, and hysterectomy may have to be performed.

6. Primary cancer of the Fallopian tube.

Hofbauer publishes a case of this rare disease; one which until the last few years was practically unknown (*Arch. für. Gyn.*, Bd. lv.). Hofbauer's patient complained that menstruation had been profuse for three years, and that for one year she had had copious leucorrhœa, pain in the lower abdomen, and wasting. Examination showed that the uterus was fixed, and that there were lumps on each side of and behind it, which could not be distinctly differentiated from it. There was also an ulcer with friable surface in the cervix. Complete extirpation of the uterus and its appendages by the vagina was performed. The parts were adherent. The tubes contained warty, dendritic, and mushroom-shaped friable growths. There was also cancer of the cervix. Microscopic examination showed that the growths in the tubes were "cylindro-epithelial"; in the cervix, squamous epithelioma. Hence Horbauer infers that the disease in the cervix and that in the tubes were not related to one another. This case is the fourth published in which both tubes were affected. Hofbauer thinks that his case supports the opinion of Sänger, that "primary cancer of the Fallopian tube only arises from a basis of chronic salpingitis, which generally has been or is purulent, and has lasted a very long time; and this mostly about the climacteric period."

I cannot follow Hofbauer in thinking that his case supports the theory that chronic salpingitis is the antecedent of cancer of the tubes. The clinical history seems to me explicable on the view that the new growth was the primary change, and the inflammation produced by it.

The after-history of the case is not given.

Roberts (*Obst. Trans.*, vol. xl., 1898) has published a case of primary cancer of the Fallopian tube. The history dated eleven months before operation, and was of repeated attacks of severe abdominal pain, followed by discharge, at first yellow, then watery, and of progressive wasting. "The uterus was displaced to the left by a hard irregular swelling occupying the right fornix, which

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seemed more or less closely connected with the uterus, and to occupy the right side of Douglas's pouch. It was almost immovable and painless." The swelling appeared to be about the size of a hen's egg, and was not elastic. The diagnosis made was of pyosalpinx. Mr. Meredith removed the tube by abdominal section. The growth in the tube was a sessile friable papilloma. The tube was fixed by adhesions. There was no ascites. There was no involvement of ovaries, peritoneum, or glands. The patient recovered well, and was in good health ten months afterwards.

Doran has appended to Roberts's paper a bibliography of all the cases hitherto published. The results of treatment are not at present very encouraging; but as the diagnosis has not yet been made before operation, the disease has not been dealt with at an early stage.

7. The axial twisting of the uterus by tumours.

The twisting of the pedicle of an ovarian tumour is a not uncommon event, and its consequences are well understood. Twisting of the uterus by a tumour is much rarer. It is the subject of papers by **Schultze** (*Zeit. für Geb. und Gyn.*, Bd. xxxviii.) and **Frommel** (*Cent. für Gyn*, 1898, No. 22). Schultze has collected 32 cases—5 of his own, 27 reported by others. In 15 the uterus was twisted by a tumour growing from it, in 17 by an ovarian tumour. Schultze's first cases refute a current misstatement. It has been said that by the torsion of a tumour the body of the uterus may become separated from the cervix, and three cases have been quoted in support of this assertion. Schultze quotes the original records of these three cases, and shows that in not one of them was it the case that the body of the uterus was detached from the cervix. Although he has only been able to get together 32 cases, yet Schultze thinks that torsion of the uterus by tumours is not so uncommon as might be inferred from the paucity of published cases. Of the fifteen fibroids which caused torsion of the uterus, five were stalked and grew from the fundus, the stalk itself being in no case twisted, four were sessile, and four interstitial. [Information is lacking as to the remaining two.] Of the ovarian tumours, nine had twisted pedicles, six not. All the women had had children; whence Schultze concludes that the incidents of childbearing must produce conditions favourable to torsion. He discusses, too elaborately for quotation here, the mechanism by which a tumour may come to twist the uterus. The symptoms which attend axial twisting of the uterus are, according to Schultze, very difficult to distinguish from those directly produced by the tumours themselves, independently of pedicle twisting. They differ exceedingly in different cases. One patient, in whom

the uterus was twisted $4 \times 180°$, died from pulmonary embolism, peritonitis and hæmorrhage into ovaries and tubes being found on *post-mortem* examination. In another, the uterus was twisted to the same extent, but there were no acute symptoms, no inflammation, but only a cavity in the middle of the tumour containing broken-down tissue and reddish fluid. A fibroid in which there are symptoms caused by torsion of the uterus cannot at present be distinguished from an ovarian tumour with a twisted pedicle. Frommel republishes two cases, which have already been published in a journal of so limited a circulation that they escaped notice. In one case there was a cysto-myoma with enormous extravasation of blood into it, and venous hyperæmia. Frommel attributed these changes to the torsion for a quarter circle of the uterus, which was so twisted that the left ovary looked forwards, the latter backwards. In the other case there was ascites and old and recent extravasations of blood into the tumour. The uterus was so twisted that the left ovary looked backwards and to the right, the right backwards and to the left. Frommel regards these cases as showing that torsion of the uterus produces effects analogous to those of twisting of an ovarian pedicle.

8. Senile endometritis.

Halliday Croom (*Edinburgh Med. Journal*, April, 1898) records three cases of this rare disease. The name he prefers is "senile uterine catarrh." One of his patients was cured by applications of carbolic acid on a dressed probe; the others by curetting and packing with gauze. He distinguishes three forms of the disease: (1) those with fœtid discharge and no hæmorrhage; (2) those with leucorrhœa and slight hæmorrhage; (3) those in which hæmorrhage is the main, if not the only symptom. He points out the close resemblance of the symptoms to those of cancer of the body of the uterus, and the fact that the disease is often accompanied by cachexia like that of cancer. [He might with advantage have quoted Duncan's case, in which the cachexia advanced until the patient died, and on *post-mortem* examination no morbid change other than endometritis was found.] He points out that the diagnosis is quickly made by the result of treatment. If the disease is endometritis, improvement follows a week or two after treatment, but not so cancer. He thinks offensive discharge commoner in endometritis than in the early stages of cancer, and that the pain is so much more severe in cancer of the body that its character will help in diagnosis. Croom does not believe that endometritis tends to become malignant. He has never seen the disease become cancer. He recommends, besides curetting, the

internal administration of arsenic, strophanthus, and Chian turpentine.

Rosenwasser, in a paper entitled "Post-climacteric Conditions that simulate Advanced Uterine Cancer" (*Annals of Gynecology and Pediatry*, October, 1897), has well discussed the diagnosis of "atrophic, senile, or post-climacteric endometritis," and brought together reports of six cases, all of them quickly cured by dilatation of the cervix and curetting. He remarks: "It is generally conceded that tissues under chronic irritation, especially epithelial tissues, are liable to malignant degeneration. The records do not seem to corroborate this theory in patients subject to post-climacteric endometritis." Rosenwasser appends a bibliography to his paper.

Two questions are suggested by Rosenwasser's paper: (1) Does senile endometritis ever become malignant? This question cannot yet be answered. The other question is, Can early malignant disease of the body of the uterus always be distinguished from catarrhal endometritis? There are cases in which it is not possible to say whether or not the disease is malignant, in which there are no polypoid growths to be scraped off and examined; and even if there were, the microscope may be inconclusive. Therefore I think that, if a case of what appears to be senile endometritis is not quickly cured by intra-uterine treatment, the sooner the uterus is removed the better.

9. Steam in uterine therapeutics.

It is, I take it, a function of the "Year-Book of Treatment" to introduce novel therapeutic proposals to its readers, even though the desirability of closer acquaintance may seem uncertain. **Pincus** (*Cent. für Gyn.*, No. 10, 1898) has displayed much ingenuity in devising an apparatus by which a jet of steam can be injected into the uterine cavity. He modestly minimises his own merit, for he says that he was induced to take up the subject by **Snegirjoff's** communication on the arrest of hæmorrhage by steam. Pincus calls his instrument a "vaporisator." He claims that it is easy to work, and that it gives complete protection against burning of the vagina or the vulva. Burning of the cervix can be prevented by wrapping gauze round the instrument. He says that the operation is almost painless, and can be performed without anæsthesia. The apparatus consists of a kettle, strong enough to hold superheated steam at a temperature of 125° C. (257° F.), and provided with a safety valve lest that pressure should be exceeded, and a thermometer to show the temperature. The steam is conducted from the boiler by an indiarubber tube, strengthened with spiral wire, to a catheter. All connections are absolutely steam-tight. At the end of the

catheter are either three longitudinal fenestræ or a sort of trellis of openings, extending about two inches from the point. By this instrument steam is delivered into the uterine cavity. Pincus has also designed two other instruments. In one the steam is delivered into a hollow sound, which it heats; and in the other into the blade of a knife-shaped instrument. In each instrument a tube is provided for the escape of the steam after it has been used. To these instruments the inventor applies the name "vapocauter." To use the vaporisator, the boiler is heated until the steam within shows a temperature of 110° C. (230° F.). Then the lamp is withdrawn and the catheter put into the uterus. When it is in position, the lamp is reapplied to the boiler, and when the steam has regained the wished-for temperature (Pincus has worked with a temperature of 110°), the stopcock is turned and a jet of steam let into the uterus. From half a minute to a minute is enough.

Pincus finds this treatment especially good in climacteric hæmorrhages and post-climacteric leucorrhœa. It is also beneficial in endometritis, hyperplastic and other. It is contra-indicated by tubal disease, rigidity of the cervix, submucous or polypoid myomata.

Superheated steam probably has much the same effect upon the tissues as the actual cautery, but a jet of steam would attack every part of the uterine cavity, while the cautery might leave some small spots unvisited.

In a subsequent paper (*ibid.*, No. 22), Pincus reiterates his opinions of the value of this treatment in climacteric hæmorrhages, and in the early stage of infectious puerperal endometritis. He adds some cautions as to its application: (1) The protection of the cervix with gauze is necessary if the steam is used for longer than half a minute. (2) If the operation is repeated, it should not be till complete regeneration of the mucous membrane has taken place. The steam may be applied for one minute without stricture resulting. (3) The cervix should be held in position with forceps, the blades of which can be separated for cleaning and sterilisation. This is very important. Lastly, he describes some improvements in the instrument.

Fenomenow, Director of the Gynæcological Clinic at Kasan, (*ibid.*, No. 23) in a paper entitled "The Technique of Intraperitoneal Operations of the Uterus," calls attention to the familiar fact that many intraperitoneal operations, especially those in which the uterine cavity is opened, do badly because the peritoneum becomes infected from the uterus. Many ways of disinfecting the uterine cavity have been tried with varying

success. Fenomenow now prefers disinfection by steam, as recommended by **Snegirew**. He has used this agent with satisfactory results in putrid endometritis following abortion, and in two cases of fistulæ following operations, for ectopic pregnancy and pyosalpinx respectively. One had existed many years and healed quickly after steam cauterisation. Therefore he says that before undertaking an intraperitoneal operation in which the uterine cavity is likely to be opened, the inside of the uterus should be steamed. It may be done without anæsthesia. He applies the steam for from 45 to 60 seconds. That the application of steam to the inside of the uterus may do more than is expected, is shown by a communication from **Otto v. Weiss** (*Cent. für Gyn.*, 1898, No. 24). He quotes a case, published by **Baruch**, in which atrophy of the uterus followed the use of steam as a remedy against hæmorrhage. The bleeding stopped, the menses never returned, climacteric symptoms came on, and eighteen months afterwards the womb was found small and hard, and the cervical canal impassable. He relates a case of his own, that of a girl aged nineteen, into whose uterus a jet of steam was sent to arrest hæmorrhage, with the final result of obliterating the cervical canal. Pincus admits having had one case of cervical stenosis following steaming.

10. Some points in the technique of hysterectomy.

Fenomenow, in the remainder of the paper quoted above, makes some suggestions as to the ligature of the uterine arteries, which may prove useful.

He seizes the uterus with a strong volsella and pulls it up, and then ties the uterine and ovarian arteries. The ligature of the latter is easy. The uterine artery springs from the hypogastric about an inch and a half below the level of the pelvic brim. In its course it crosses the ureter, which lies below and behind it. Outside the ureter the artery lies for 3 or 4 centimetres in loose connective tissue at the base of the broad ligament. About 1½ centimetre internal to the ureter, the artery sends a branch down to the vaginal portion and vagina, and then runs to the side of the uterus. The artery may be tied at one of three places: (1) between its origin and its crossing the ureter; (2) between its crossing the ureter and its sending off the branch to the vaginal portion; (3) close to the uterus after it has given off the vaginal branch. The common way of securing the vessel is by the ligature *en masse*. Fenomenow disapproves this. He prefers the method devised by **Altnchoff** and **Snegirew**, of tying the vessel near its origin. The method is as follows: The abdomen having been opened, the round ligament is pulled forwards. An incision is

made through the anterior layer of the broad ligament, about a centimetre from the linea innominata, and carried towards the middle line for about 3 centimetres. This exposes the connective tissue of the ligament. About half or three quarters of an inch deep the vessel will be found, and can here be ligatured without risk of including the ureter. Pulling the round ligament forward pulls forward the anterior layer of the broad ligament, and with it the vessel, while the ureter remains behind. This operation, Fenomenow says, is difficult and takes a long time, especially in complicated cases. He prefers, instead of simply drawing the round ligament forward, to cut through it, which involves an incision in the anterior fold of the broad ligament. The proximal end of the ligament is tied and then the incision in the broad ligament carried outwards, the peritoneum fold being lifted forwards by pulling on the distal end of the round ligament. By manipulating deeply enough, the uterine vessels, which in cases of neoplasms are enlarged, can easily be felt. If the veins are compressed so as to empty them, the artery can be seen. When identified, the artery can be easily tied either inside or outside the ureter, and the operator should not go deeply enough to endanger the ureter. If the whole uterus, including the cervix, is to be removed, it is better to tie the artery outside the ureter. The same rule applies to removal of the uterus by the abdomen for malignant disease. Fenomenow does not advocate removal of the whole uterus for myomata, for he thinks that amputation of the body above the cervix is enough. He concludes his paper with some remarks on the great help in the operation that is given if the uterus is pulled or pushed up. An elevation of even a few centimetres is a great assistance. The uterus may be pushed up with a water bag in the vagina. Here he adds a caution by relating a case in which, by such a bag used for this purpose, the vagina was ruptured. He regards this rupture as due to a condition of the vagina special to that patient, one not likely to be often met with.

11. The treatment of cancer of the cervix uteri in the later months of pregnancy.

This is the subject of two thoughtful papers by **Fritsch** and by **Mittermaier** (*Cent. für Gyn.*, No. 1, 1898). Many cases have in recent times been published in which the pregnant uterus, with its cancerous cervix, has been removed entire. Fritsch has himself successfully performed two such operations. Concerning the propriety of this operation, he remarks that it is a right difficult, bloody, tedious, and extensive operation. It presents one surgical impropriety, that in his dealing with the

cancer the operator is working in the dark. He can only ascertain by touch whether he is cutting through healthy tissue. In both Fritsch's cases relapse soon took place. "Technique triumphed," he says, "but the patients died within a year." He had thought that the vaginal extirpation of the puerperal uterus would be a difficult operation; but he found that it is not. The puerperal uterus can be so easily dragged down to the vulva that the operator can do without a speculum; the adjoining parts can be distinguished from the uterus more easily than in the unimpregnated state, and the ligature of the vessels performed almost at the vulva. Bleeding is slight.

Fritsch's conclusion is that the complete abdominal extirpation of the pregnant uterus when affected with cancer of the cervix ought not again to be done; nor should the uterus be emptied by Cæsarean section or Porro's operation, and then the cervix removed from below. The proper treatment is to remove with the sharp spoon as much of the cancer as possible, so as to minimise obstruction to delivery; then to deliver with forceps or in any other way that the peculiarities of the case call for; lastly to deliver the placenta. After this has all been done, then to remove the whole uterus by the vagina.

Fritsch adds, as a kind of *obiter dictum*, that in rupture of the uterus the vaginal removal of the damaged organ will be found the best treatment. Bleeding will thus be controlled, free drainage is secured, and as the bladder is pulled up during labour, the ureter will be out of the way of injury.

Mittermaier remarks that it is the generally accepted view that, in cancer of the puerperal uterus which is still operable, the best course is to await involution before proceeding to extirpation of the uterus. He holds that, in the light of our present knowledge, this is no longer sound practice, but that in cancer of the puerperal uterus removable by operation, the operation should be done as soon as possible after delivery. In cancer affecting the uterus five or six months pregnant, the membranes should be punctured, and the uterus, thus diminished in size, extirpated by the vagina. If the pregnancy has advanced to the sixth or seventh month, the uterus should be emptied by splitting up the cervix, and then removed by the vagina. Mittermaier relates two cases, one in which the patient spontaneously aborted in the sixth month of pregnancy, and he removed the uterus next day; another in which a woman with cancer of the cervix was seven months pregnant, and he first emptied and then removed the uterus by the vagina, getting at the uterus by splitting up its anterior wall, and delivering the child alive. In each case the operation was easy,

the vascularity of the parts allowing the uterus to be pulled far down.

In a later number of the same journal (*Cent. für Gyn.*, No. 5, 1898) **Seiffart** relates a case in which he delivered a woman who had cancer of the cervix and was nine months pregnant, by vaginal Cæsarean section—that is, enlargement of the os uteri by incision—and afterwards extirpated the uterus by the vagina. The child was born still, but was soon revived by artificial respiration. The patient died on the following evening.

12. The operative treatment of prolapsus.

Sänger (*Cent. für Gyn.*, 1898, No. 2) has written down his opinions on this question. His reason for doing so is that the multiple methods of treatment now before the profession render choice difficult. Not only are plastic operations performed, but hysteropexy, cystopexy, and total extirpation of the uterus. Plastic operations have been undervalued because the operations done were so small and insufficient. Sänger says that a good plastic operation is more difficult than an abdominal section, and requires time, patience, and rigorous antisepsis. The true aim of a plastic operation is to bring the uterus back as nearly as possible to its normal position. Sänger holds that the great majority of cases of prolapse, the exceptions being few, can be cured by means of plastic operations. Great help is given by amputating high up the thickened, lengthened and hypertrophied cervix. This is far more useful, in Sänger's opinion, than Alexander's operation. In certain exceptional cases he employs it in conjunction with ventral fixation, doing the two operations at one sitting.

Sänger performs anterior colporrhaphy and colpo-perineorrhaphy according to a method of his own. In the paper I am quoting from, he describes this at great length, emphasises the points in which it differs from that employed by others, and vindicates his own priority. Space does not allow me to follow him in the details of his operation. I can only indicate its main features and refer those interested in it to Sänger's paper. Sänger, instead of dissecting flaps up in the ordinary way, makes a median incision in the anterior and posterior vaginal walls, seizes the mucous membrane on each side of this incision with pressure forceps, and then separates, mainly with a blunt instrument, the mucous membrane of the vagina from the rectum behind and the bladder in front. The knife or scissors may be wanted at the lower part, where the connection is closest. In this way he gets two flaps of mucous membrane extending from the vulva to the cervic uteri, separated from the tissue beneath "like gigantic butterfly's wings," he says. In addition to this operation on the

posterior vaginal wall, he denudes the vulva laterally, so that the hinder raw surface comes to be the shape of an anchor. The raised flaps of mucous membrane are then fully cut away, and the edges left brought together by transverse sutures. In this way a narrowing of the vagina throughout its whole length, as well as a contraction of the vulval orifice, is effected.

Sänger is not able to give a numerical statement of the final results in the cases thus operated upon. He confines himself to saying that he has had very few relapses. When anterior colporrhaphy is done without posterior colpo-perineorrhaphy, relapse is the rule. In two cases, Sänger has performed ventral fixation in addition to the operation described above. He has never extirpated the uterus for prolapse.

13. Vaginal shortening of the round ligaments.

The different ways of treating retroflexion surgically have each their disadvantages. Ventral fixation leaves an abdominal scar; Alexander's operation leaves two inguinal scars; vaginal fixation is said to give trouble should pregnancy follow. This is **Bode's** (*Arch. für Gyn.*, Bd. lvi.) reason for practising and recommending the shortening of the round ligaments by the vagina He performs the operation as follows:—The cervix is held down with a volsella. A transverse incision is made through the anterior vaginal wall, the bladder and ureters are separated from the uterus, and the vesico-uterine peritoneum is opened. Then the cervix uteri is pressed backwards, and the finger put in and hooked over the uterine end of the round ligament. This is brought into view, seized with forceps, and a silk ligature is passed through it at about 1 cm. from its uterine attachment, and tied. By means of this ligature the ligament can be drawn down and brought into view for nearly its whole length. The same thing is done on the other side. When these ligatures are pulled upon, the body of the uterus comes forward. The ligature is next passed through the ligament in a direction from the middle line outwards, so that its end may emerge 5, 6, 7, or 8 cm. farther from the uterus. The ligature is held in a forceps while a similar ligature is being put in on the opposite side. Then the ligatures are tied, thus shortening the ligaments and pulling the uterine body forwards. If the position of the uterus is found satisfactory, the ends of the ligature are cut short. If not, the ligature is again passed through the ligament still farther from the uterus, and thus still further shortening produced. When sufficient shortening has been effected, the ligature is cut short, the opening in the vesico-uterine peritoneum closed with catgut, and the vaginal wound also sutured.

Bode has found this operation successful in keeping the uterus in a proper position. He reports twelve cases; but with one exception, other treatment besides shortening the wound ligaments was employed; curetting; removal of a cystic ovary; perineorrhaphy; double salpingo-oöphorectomy; partial amputation of cervix. In three, adhesions were present, which had to be broken down before the uterus could be got into a normal position, and one of these patients died. In half of them, not only were the round ligaments shortened, but they were stitched to the vesical border of the vesico-uterine peritoneum. These complicating circumstances make it impossible to judge from Bode's cases of the therapeutical value of the operation. But as an ingenious and novel mode of correcting backward displacements of the uterus, I think it worth quoting. I do not see its superiority to vaginal fixation of the uterus, the objections to which are not to my mind so solidly established as Dr. Bode seems to think.

14. The sterilisation of women.

In cases of extreme pelvic contraction, it has often been thought desirable to sterilise women so as to guard them from the exceptional risk of another pregnancy. **Rühl** (*Central. für Gyn.*, No. 8, 1898) discusses this question. In order to sterilise patients, the Fallopian tubes have been tied and divided, and pieces have been cut out of them. But cases have been reported in which after ligature, division, and partial removal of the tubes, pregnancy has taken place. These measures are therefore not to be relied upon. Rühl holds that there is a further objection: that the occurrence of ectopic pregnancy is favoured. He quotes a singular case by **Wendeler**, in which, after complete extirpation of the uterus, pregnancy occurred in the tube which had been left behind. Rühl's own proposal is to suture the ends of the Fallopian tubes in the anterior vaginal wall. This will absolutely prevent either uterine or ectopic pregnancy.

Kossmann (*Cent. für Gyn.*, No. 14, 1898) takes up the question. He has sought to sterilise patients by ligaturing the tube in two places, and dividing it between the ligatures with the thermo-cautery. He says that if the tube is cut through with knife or scissors, the mucous membrane at the line of section projects, and in healing unites with the peritoneum, forming an open funnel, capable of receiving either ovum or spermatozoon. Hence, even cutting a piece out of the tube cannot be relied upon if done with a sharp instrument.

Neumann (*Cent. für Gyn.*, No. 24, 1898) distrusts even the proceeding of Kossmann. He thinks the difference between division with the knife and with the thermo-cautery is not so great as Kossmann thinks. His proposal is to cut a wedge-shaped piece out

of each corner of the uterus, and sew the cut surfaces together with a continuous catgut suture. Then to bring the ends of the tubes up to the abdominal wall, and suture them into the wound.

15. The transplantation of ovaries.

The consequences of double oöphorectomy sometimes so gravely affect the happiness of women's lives that attention has been directed to the possibility of supplying to the organism that of which it was deprived when the ovaries were removed. The simplest and easiest way is by giving ovarian tissue or ovarian extract by the mouth. **Muret** (*Revue Médicale de la Suisse Romande*, No. 7, 1896) has carefully observed the course of cases while taking it, and has collected similar observations by others. They come to this—that ovarian extract certainly does no harm, and in some cases improvement in symptoms has followed its use. But the improvement is not so constant, nor are the results in different cases so similar, as to warrant any definite conclusion as to the therapeutical value of ovarian extract.

The ovaries do not pour their secretion into the alimentary canal, and therefore it may cogently be said that putting ovarian extract into the stomach is not supplying the organism with ovarian secretion. Experiments have been made in the transplantation of ovaries. **Knauer** (*Cent. für Gyn.*, No. 8, 1898) has operated upon hares, by opening the abdomen, removing the ovaries, and transplanting them to another part of the peritoneum. He reports a case in which, sixteen months after this proceeding, the animal was delivered at the full term of pregnancy. **Grigorieff** had previously observed pregnancy following this operation. **Morris** (*New York Med. Journal*, 1895) has transplanted ovaries in the human subject. In one case, that of a patient aged twenty, with an infantile uterus, who had never menstruated, he grafted a piece of ovary from another patient on to the fundus uteri, with the result that the patient menstruated. In another, a patient aged twenty-six, from whom the uterine appendages had been removed on both sides, he grafted a piece of ovary into the stump of a Fallopian tube, with the result that the patient became pregnant, but aborted.

These observations show that it is in the surgeon's power to do more for patients whose ovaries are absent or ill-developed than has hitherto been thought possible.

There are considerations which men and women have to think of that are unimportant in the case of animals. Would a woman regard as her own a child conceived by the help of someone else's ovary? If the transplantation of ovaries proved a success, whence would healthy ovaries be got in sufficient number? Pregnancy

after transplantation of an ovary might be avoided by grafting the ovary outside the peritoneum, but would this have the same effect?

I can see no objection to the transplantation of ovaries *per se* that does not also apply to transfusion of blood, and in less degree to vaccination. But the possibility of subsequent pregnancy introduces the curious social questions that I have hinted at.

Frank (*Centralblatt für Gyn.*, 1898, No. 17) thinks that, if it is necessary to remove both ovaries, the uterus and tubes should also be taken away; for the uterus is no use without the ovaries, but only a source of disturbance. If the uterus is not removed, a bit of ovarian tissue should be left behind, in such a manner that pregnancy may be possible. He thinks that, notwithstanding the frequency of disease of the uterine appendages, cases in which the ovaries ought to be removed are rare. In most cases a bit of ovary can be left without disturbing recovery. He recommends that a bit of the hilum ovarii be left, and stitched in the ampulla of the tube; or, if the greater part of the tube has to be removed, the stump of the tube should be slit up, and the piece of ovary sewn into it. If the tube has to be cut out of the uterine cornu, then the bit of ovary should be sewn into the wound. He relates three cases—two of double pyosalpinx, one of hydrosalpinx—in which he acted on these principles. All of them menstruated regularly after the operation; two became pregnant, one of whom went to full term, and in the third there was probably ectopic pregnancy.

16. Ignipuncture of painful ovaries.

In last year's "Year-Book" I quoted Pozzi's paper on the ignipuncture of painful ovaries. I then said that I thought this operation promised to be a distinct addition to our therapeutic resources, for that I had in several cases performed it, and that the patients afterwards said they were better. I have now to add that this benefit proved only temporary, and that as a means of relieving ovarian pain this operation seems to me practically useless. If small cysts are met with, I think it better to excise a wedge-shaped piece of the ovary so as to include them, and sew the cut surfaces of the ovary together, than to destroy cysts with the cautery. This will at least cure incipient cystic disease. Whether it will permanently remove pain I know not as yet.

MIDWIFERY.

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I.—PHYSIOLOGY.

1. Position of the promontory of the sacrum as shown by frozen sections.

Freeland Barbour (at the Edinburgh Obstetrical Society, June 22nd, 1898), giving an abstract of a paper, said he had found there was a very great difference in the height of the promontory of the sacrum above the symphysis pubis. He had made measurements of the pelvis in 18 frozen sections. The anatomical conjugate was found to vary from 3·8 to 5·6 inches. The obstetrical conjugate, the distance between the promontory and the nearest point of the symphysis, varied from 3·44 inches to 5·28 inches. This showed the available conjugate for obstetrical purposes. The difference between the anatomical and obstetrical conjugates varied from 1-5th inch to 2-5ths inch. In order to ascertain accurately the height of the promontory above the pubes, a line is drawn from the upper part of the symphysis horizontally backwards, another line is drawn perpendicularly down from the promontory of the sacrum till it meets the horizontal line, and the measurement of the perpendicular line gives the height of the promontory above the symphysis. There is great variability in this measurement, the promontory standing as high as 5 inches, and as low as 2·4 inches above the pubes, the average being 3·7 inches. If the horizontal line is carried backwards till it impinges on the posterior wall of the cavity, it is found in 12 out of 16 available sections to strike the second coccygeal vertebra, or a point below it. From this it is learned that the whole sacrum and a portion of the coccyx is above the level of the upper margin of the symphysis. Another item of interest is the angle formed at the symphysis by the meeting of the anatomical conjugate with the horizontal line. This angle varies from 33° to 65°, and gives what Barbour calls the "set of the brim." He also gave measurements of the horizontal distance of the promontory backwards from the sacrum. These varied from 2·0 inches to 4·0 inches, with an average of 2·64 inches.

2. Frozen section of the first stage of labour.

Lusk (*Brit. Med. Journ.*, June 11, 1898) describes several

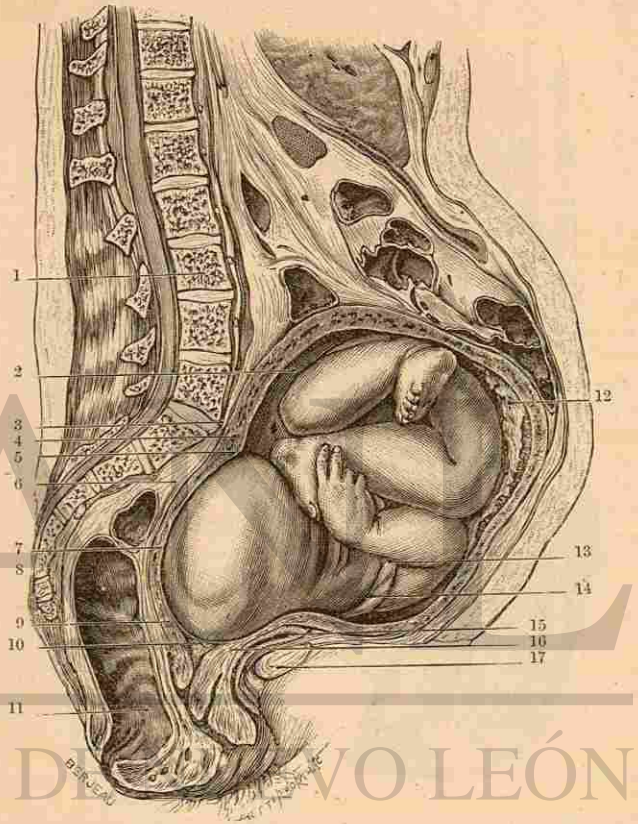

Fig. 1.—Frozen section of the first stage of labour (*Lusk*). (Quarter life size)
1, Third lumbar vertebra; 2, amniotic fluid; 3, retraction ring; 4, promontory of sacrum; 5, coronary vein (injected); 6, presacral pad of fat; 7, amniotic fluid; 8, fifth sacral vertebra; 9, *cul-de-sac* of Douglas; 10, membranes; 11, rectum distended with fæces; 12, symphysis pubis; 13, utero-vesical peritoneum; 14, bladder (slightly opened up); 15, umbilical cord 16, outer canthus of right eye; 17, placenta.

plates representing a frozen section of a multipara who died suddenly during the first stage of labour, and two of them are reproduced here (Figs. 1, 2).

He remarks that two conditions of particular interest are found—one, the presence of but a small amount of amniotic fluid (90 c.cm. or 5·5 cm.) within the ovum, and the other, the

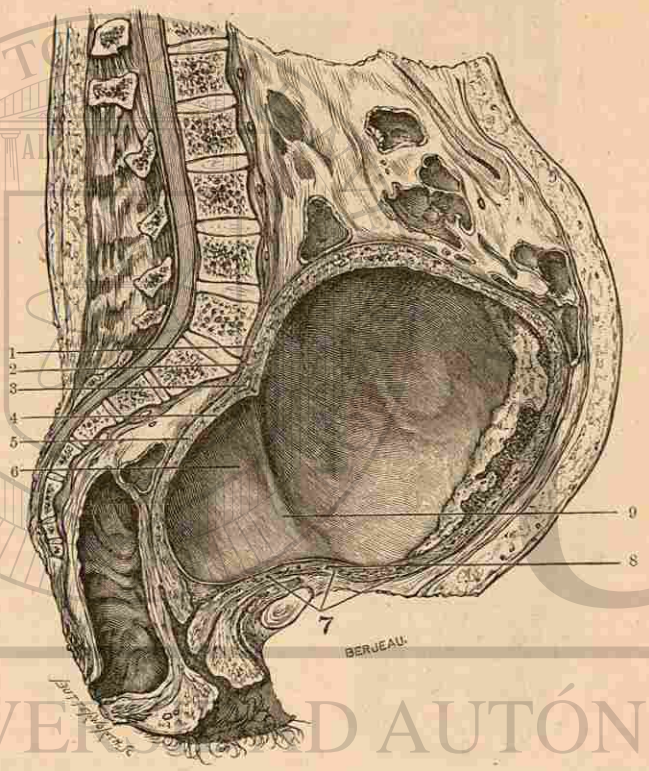

Fig. 2.—Frozen section of the first stage of labour (*Lusk*). (Quarter life size).
1, Retraction ring; 2, promontory of sacrum; 3, coronary vein (injected); 4, height to which membranes detached posteriorly; 5, impression of left ear; 6, impression of umbilical cord; 7, approximate location of three collapsed coronary sinuses; 8, height to which membranes detached anteriorly; 9, left limit of bulging.

considerable encroachment by the soft parts upon the size of the inlet. As a result of the former, the contained fœtus is subjected to unusual influences of pressure and counter-pressure from the surrounding structures. That the latter condition has here in effect converted this sizeable pelvis into a moderate justo-minor

seems unquestionable in the presence of certain supporting evidences. The uterus presents features characteristic of the contracted state. Its shape is globular, and the greatest transverse and antero-posterior diameters approximate equality. That the former diameter is narrowed to a minimum is evidenced by the close embrace of the fœtus laterally by the uterine walls.

3. The sagittal fontanelle.

Arnold Lea, at the Obstetrical Society of London, on July 6th, 1898, read a paper on the Sagittal Fontanelle in the heads of children at birth. He stated that abnormal fontanelles had been known to be present in the head of the fœtus at birth for many years. Several of these membranous spaces had been described (naso-frontal, cerebellar, medio-frontal, sagittal), of which the most interesting to obstetricians was the sagittal fontanelle, first described by Gerdy in 1837. Lea's observations were based upon the examination of 500 consecutive cases at birth. The sagittal fontanelle was situated 2 cm. in front of the posterior fontanelle, on a transverse line drawn between the two parietal eminences. Its average length was 1½ cm. and width 1 cm. It might form a space as large as the anterior fontanelle, or it might be developed on one side only. The edges of the membranous space were usually formed of well-developed bone, but at times there was deficient ossification of the posterior part of the parietal bones. He had found the membranous space present in 4·4 per cent. of his cases; he had not included those in which there was only a notch in the parietal bones. The fontanelle was bilateral in 17 cases and unilateral in 5; in 4 instances it extended up to the parietal eminence on each side.

Herman, in discussing the paper, indicated two practical points which arose from it; the first was that a sagittal fontanelle might mislead anyone who diagnosed the fœtal position by feeling the sutures and fontanelles; the second was that a sagittal fontanelle, indicating backward ossification, might invite a trial with forceps in a case which, with a very hard head, would call for perforation.

4. Labour in mature primiparæ.

De Koninck (*Revue Médicale*, Louvain, Oct. 30, 1897) has compiled an instructive memoir on labour in primiparæ married for some years and relatively mature. He gives 30 as the earliest year coming under "maturity," the "*primipares agées*" of French authorities. He sets aside as curiosities certain cases of primiparæ almost "aged" in the English sense of the term, such as Cohnstein's two women aged 50 and Steinmann's woman aged 52. It appears that in a genuine uncomplicated case of delayed impregnation the advent of catamenia is always found

to have occurred late in youth. Out of 401 such cases menstruation was retarded till 20 in 39 cases, till 24 in 4, and till 26 in 1. As to the retarded first pregnancy, abortion, ectopic gestation, twins, and special renal mischief are relatively frequent. Above all, lingering labour is specially common, statistics even exceeding guesses and *a priori* reasoning in this respect. In 12 out of 17 noted by De Koninck, labour lasted from 40 to 50 hours, the remaining labours being yet longer; one exceeded 90 hours. Feebleness of uterine contraction is absolute from first to last, and independent of any obstetrical combination. They also cause far more physical and mental exhaustion than the vigorous contractions of a young uterus, and at the same time are more painful. There are discrepancies in the "pains" seen in mature primiparæ of the same age, probably homologous with the great variations in the age of menopause observed in otherwise normal women. The uterus may be older in one woman aged 35 than in another of the same age. The forceps and other obstetrical operations are often required in the mature. Most of the above facts are easily explained. The excess of male infants borne by mature primiparæ (30 per cent.) is a less explicable phenomenon. Hecker considers the predominance of male infants as a speciality of all primiparæ, but Rumpe turns attention to the fact that in a family of children the predominance of males is commoner the further the mother is from her first menstrual period.

II.—PATHOLOGY.

1. Pregnancy complicated by chorea.

W. R. Dakin (*Practitioner*, Dec., 1897) writes on this subject, and gives detailed notes of seven such cases which have been under his care, with one in which the presence or absence of pregnancy was not ascertained.

He says that chorea is much more common in adult women who are pregnant than in those who are not, but he does not think that chorea is so fatal a disease in pregnant as compared with unimpregnated women as has been supposed, though it is a much more fatal complaint in pregnant women than in children. The general impression conveyed by his cases goes to confirm what is usually believed as to the greater frequency of chorea in first pregnancies than in later ones, and also as to the influence a former attack of chorea or of acute rheumatism has in producing a liability to these spasms in the first pregnancy succeeding such an illness. Six cases are in women under twenty-five. The moment of appearance of the spasms in each case was some time during the first six months of pregnancy. None of the cases

DR. DAKIN'S CASES OF CHOREA IN WOMEN.

No.	Age and civil state.	Parity.	Assigned cause.	Date of pregnancy.	Previous medical history.	Character of spasms. Heart.	Mania.	Treatment. Nature.	Treatment. Result to chorea.	Treatment. Result to mania.	Result to patient.	Temperature.	Post-mortem.
1	22. m.	2-para	—	3rd month	Scarlatina at 9 years, no chorea nor acute rheumatism	Began in R. side, became universal; severe. Bruit	Shortly before death	Induction (incomplete) $CHCl_3$	None	None	D	105·2° 4 hrs. before, & 110° at death	Bead-like vegetations on mitral valves, cloudy swelling of organs
2	23. m.	1-gravida	—	4½ months	Chorea at 17 years	General, severe. No bruit	On 4th day of chorea	Induction $CHCl_3$	Spasms diminished	Ceased	D	103·0° 4 hrs. before, & 106·4° at death	Adherent pericardium, sub-pleural and sub-pericardial ecchymoses. Vegetations on mitral valve. Cloudy swelling of organs.
3	18. s.	1-gravida	Fright	6th week	Acute rheumatism at 18 months, no chorea	Began in L. side, became general; severe. Bruit	3 days after induction	Induction $CHCl_3$ Hyoscin Morphia	Rapidly ceased	Hyoscin quieted her completely; morphia useless	R	99·8° on 4th day	—
4	23. m.	1-gravida	—	6th month	No illness	Severe, general. Bruit	On admission; recurred slightly on 4th day after delivery	Induction $CHCl_3$ Morphia	Ceased in a few days	Ceased	R	Normal	—
5	33. s.	1-gravida	—	6th month	Acute rheumatism and chorea at 15	Right arm and leg only; mild. Bruit	1 month after chorea began; recurred slightly 2nd day after delivery	Induction $CHCl_3$	Ceased gradually	Ceased	R	99·8° on 3rd and 8th days after delivery	—
6	23. m.	5-para	—	2nd month	—	Left side only; mild. ? Bruit	—	—	—	—		Normal	—
7	19. m.	1-gravida	—	2½ months	Chorea in childhood	Face and right arm only. Bruit	—	Arsenic and Bromides	Ceased in a month	—	—	—	—
8	21. s.	? Pregnant	—	?	Chorea at 8 years, acute rheumatism 6 wks. ago	Began in R. side, became general; severe. Bruit	—	—	—	—	D	106·0° at death, 99·8° for 3 days previous	None.

made any attempt at spontaneous abortion. In only four of the seven cases were the spasms very severe, and this observation goes to show that chorea occurring during pregnancy is a mild disease in a fair proportion of instances. All the cases but one were maniacal at one time or another. In Cases 1 and 3 the mania did not appear till after delivery. The patients who were maniacal before induction of labour became sane very soon after delivery, relapse taking place for a few hours in two of them. The choreic movements were not so easily affected by emptying the uterus; in only one case did they subside at all rapidly. The induction of labour gives the woman, in a severe enough case, the best chance of safety. Drugs have no influence while the woman is still pregnant, unless the attack is very mild indeed. This was proved in all the cases, for attempts had been made to relieve the spasms with bromides, arsenic, and morphia before Dakin treated the cases. Chloroform was useful as long as the patient was anæsthetised, but its effect did not usually last beyond the recovery of consciousness. The influence of hyoscin after delivery over the chorea and mania in Case 3 was very marked. The temperature in all the fatal cases suddenly rose to 106° just before death.

The prognosis in any given case would seem to depend upon the severity obtained within a week or so of the first appearance of the spasms.

Mania must never be overlooked, however slight it may be in its beginning, and labour must be induced at once when the patient's mind begins to wander, however mild the actual spasms may be at the time. Induction must also be undertaken if the spasms are sufficiently severe to keep the patient awake at night. The manipulations necessary for this purpose must be performed under an anæsthetic. Dakin says that in future he would immediately resort to the cold bath if there was a sudden rise of temperature.

2. Ciliary movement in the uterus.

Ludwig Mandl (*Centralblatt für Gyn.*, No. 13, 1898) remarks that many obstetricians are still teaching theories about impregnation and the causation of ectopic pregnancy which are based upon the erroneous belief that the uterine cilia strike upward. Mandl has therefore confirmed Hofmeier's work by examining uteri immediately after their extirpation. Small pieces were clipped from the mucosa and placed in warm saline solution under the microscope. Cilia were seen in acute movement, causing a current downwards from the fundus towards the cervix, in which blood-corpuscles were hurried along.

3. Toxæmia in pregnancy.

Rynoch, at the Edinburgh Obstet. Soc. (May 11, 1898) read a paper on this subject. By toxæmia in pregnancy was generally understood that condition which occurred as the result of the presence in excess of toxic material, and, as far as was known, the poison was of the nature of an alkaloid or alkaloids. The excretion of waste materials was mainly effected through the kidneys. **Clifford Allbutt** found evidence of a circulatory toxin in pregnancy, from the fact that healthy urine contained toxic material. **Bouchard** found that such urine, when injected into animals, produced symptoms ending in coma. The nature of the toxin was unknown, but it was not urea. **Chambrelent's** experiments proved the increased toxity of the blood in eclampsia. **Linderman** had reported a case of fatal vomiting where he found neuritis in several nerves and fatty degeneration of liver and kidneys in both mother and fœtus; he believed the cause of the vomiting to be an auto-intoxication.

4. Uterine hæmorrhage as affected by the climate of altitudes.

Septimus Sunderland (*Lancet*, Oct. 15, 1898) finds that a high, dry climate is beneficial to certain cases of chronic uterine hæmorrhage which do not respond to ordinary treatment, and recommends that residence at a high altitude should be tried for as long a period as possible in cases where operation is not absolutely necessary, or is inadvisable from various causes.

5. Deaths in child-birth.

At a meeting of the Royal Statistical Society held on June 21st, 1898, at the Royal United Service Institution, **T. A. Coghlan** read a paper on "Deaths in Child-Birth," collecting his data from the records of births and deaths registered in New South Wales in 1893–1896.

During the last three of these years there were 115,669 confinements, with 813 maternal deaths. Owing to the difficulty of obtaining accurate details in regard to the confinements of unmarried women, most of his statistics deal only with the married women to the number of 105,749 confinements, with 714 deaths. From these data, in his first table, the author deals with the mortality in consecutive confinements up to the twenty-third confinement, of which there were two instances. He finds that among married women the risk attending the first birth is greater than that at any subsequent one up to the ninth; the minimum risk would appear to be at the fourth. The great bulk of first confinements occur among women of twenty to twenty-four years of age. An examination of the first confinements at various ages shows that the risk attendant upon a first birth is at a minimum at the ages

of twenty-two and twenty-three years, when it is 0·0068 per cent., as compared with 0·0238, for instance, at the age of thirty-nine. An interesting table gives the average number of children to women marrying at different ages. If a woman marries at the age of twenty years the average number of children borne by her is 7·2, if at twenty-one years 6·8, at twenty-four years 5·6, at twenty-eight years 4·1, at thirty-two years 2 9, and at thirty-six years 1·7.

Taking the married with the unmarried for the four years, 153,090 confinements and 1,015 deaths, Mr. Coghlan comes to the conclusion that the risk of unmarried women in child-birth is at every age greater than for the married, the disproportion in the ratios being greatest at the lower ages.

6. Pregnancy in relation to life assurance.

John Playfair and T. Wallace, F.I.A., F.S.A. (*Brit. Med. Journ.*, Sept. 17, 1898) discuss the extra risk to an insurance company in the case of a female who at the date of the insurance is pregnant. They refer only to the extra risk in a current pregnancy. All published data refer to the death-rate of or in child-bed, and not the death-rate for the whole period, from the beginning of pregnancy onward through confinement until complete recovery has taken place. It is doubtful whether the statement that during pregnancy a woman is less liable than at any other time to contract diseases other than those peculiar to pregnancy is correct; and it must not be forgotten that diseases peculiar to pregnancy are themselves full of danger, and often prove fatal; besides which, where other ailments are contracted during pregnancy, they may assume an aggravated form, or they may cause abortion or miscarriage, with blood-poisoning. The period of gestation as well as the time of confinement and the puerperium should be brought under observation.

The authors give a series of tables which they have compiled from the Edinburgh Maternity Hospital Experience, during ten and a half years, of 10,038 cases. At present many insurance offices postpone consideration of proposals from pregnant women until after confinement. Most of the offices which do entertain such proposals usually charge an extra premium, uniform in amount for all ages, the extra for a first pregnancy being twice as much as the extra for a subsequent pregnancy.

The following conclusions were arrived at:—

(1) For the uniform extra premium at present charged, an extra, varying in amount according to age, should be substituted.

(2) The extra premium for a first pregnancy should be at least three times as great as that for a subsequent pregnancy.

(3) A proposal for insurance from a woman aged thirty or upwards, pregnant for the first time, should be delayed.

(4) A proposal for insurance from a pregnant woman, aged forty or upwards, whatever the number of the pregnancy, should be delayed.

7. Eclampsia ante-partum and post-partum.

Davis (*Amer. Journ. of Obstet.*, April, 1898) reports two cases of eclampsia. In the first, the patient, a primipara, aged twenty-one, was seven months pregnant, and when brought to the maternity was having severe convulsions at intervals of about ten minutes. The urine was of specific gravity 1020, reaction acid, urea 1·13 per cent.; serum albumin present in large quantity; pulse 120 to 140. She was put in a hot pack, normal salt solution was introduced continually under the skin for an hour, and 10 minims of veratrum viride were given hypodermically. Chloroform controlled the convulsions, which continued when the anæsthetic was suspended. Labour meanwhile was hastened and completed in about two hours. The child was still-born. The patient continued comatose, but recovered consciousness two days after admission. Treatment had been continued vigorously. The analysis of the urine was interesting; in the first specimen, secreted before convulsions were severe, the specific gravity was 1020, and the urea 1·13 per cent. After convulsions had continued several hours, the urea was 0·5 per cent., the specific gravity being unaltered. Forty-eight hours after admission the urea was 2·14 per cent. The patient made a good recovery.

In the second case the patient, a primipara, aged nineteen, seemed stupid when admitted in the first stage of labour. Delivery occurred normally, but some hours afterwards she developed severe convulsions, which continued at intervals of half an hour for six hours, when they ceased. Urine: specific gravity, 1002; acid, abundant albumin; urea, 0·51 per cent.; granular and hyaline casts. Good recovery. The author points out that it seems to be clearly demonstrated that toxins of unknown composition are the cause of eclampsia. These bodies are not found in the urine of eclampsic patients during the attack, nor are they found in great quantities in any urine; if they were present in the urine the patient would not have eclampsia. The percentage of urea is an index of the amount of waste successfully excreted: when it is high the patient is not forming poisonous compounds from it within her body. In the treatment time is most important; each half hour that passes without vigorous treatment is greatly to the patient's disadvantage. The hot pack and saline

injections under the skin and into the bowel should be given, whilst in the two cases related veratrum viride seemed of decided service.

8. Age-changes in the placenta.

Eden, at the Pathological Society of London on March 15, 1898, read a paper on the age-changes in the placenta and membranes, and said that the structure of the placenta at term differed widely from that of the young and growing organ. The life of the placenta was a short one; it developed rapidly and as rapidly grew old, and was finally shed like a withered leaf. The ripe placenta was a worn-out organ, showing marked structural changes which were to be regarded as senile degenerations, and must be carefully distinguished from pathological processes proper. Senile changes could always be detected in greater or less degree in the healthy placenta. The recognition of these changes was an essential preliminary of the study of the pathology of the placenta, which was at present in a state of confusion, this being to a large extent due to two causes—first, to the frequent citation of the senile changes here referred to as evidence of disease; and, secondly, to the fact that macerated fœtuses were generally selected for study. It was the object of the paper to endeavour to describe the structure of the placenta at all periods of gestation and to attempt to outline the changes which occurred in the organ when the fœtus perished *in utero*. It was convenient to regard the placenta as composed of two separate sets of structures and to describe first the fœtal and then the maternal elements. Attention would be limited to the human ovum, and the earliest specimens Eden had examined personally were from the end of the first month. At this period the chorionic membrane was fully developed, its surface was covered everywhere with arborescent villi, and the decidua reflexa completely enclosed it. Special reference was made to the remarkable activity of the superficial or plasmodial layer of the chorionic epithelium at this period; the proliferation or budding of this structure was the first step in the formation of new villi. These features were seen only in the early months of gestation, and their presence was pathognomonic of young placenta-tissue. Eden next described the structure of the decidua, with the changes which occurred in the serotina, and resulted in the establishment of the maternal circulation through the intervillous spaces. These changes consisted in the invasion of the serotina by the chorionic villi and the opening up of the maternal vessels largely through their instrumentality. About the mid-term of gestation the villi could be distinguished by their plumpness and the better development of their connective tissue, stroma, and blood-vessels. At this period also large stems (*Stamenzetten*) were found, from which villi arose. The budding of the plasmodial layer continued. The following senile changes could be detected in the placenta at term:—(1) endarteritis obliterans affecting considerable tracts of the middle-sized umbilical arteroids; (2) degenerative changes in the plasmodial layer of the chorionic epithelium and in the decidual cells of the serotina; (3) formation of "white infarcts;" and (4) thrombosis of a certain number of the sub-placental sinuses and serotinal vessels. The presence of these changes in placental tissue was sufficient to indicate that it belonged to the last two months of gestation. After the death of the fœtus, if the ovum was retained, the maternal circulation through the intervillous spaces was not at once suspended, but some sinuses in which the villi appeared quite fluid could often be found in placentæ that had been dead for many weeks. This was due to the fact that such villi remained in contact with the maternal circulation. Villi, which became shut off by thrombosis, rapidly underwent marked fatty degeneration. Ultimately they became reduced to structureless objects which retained none of their former characteristics except their shape. The blood-clot in the intervillous spaces did not become organised.

9. Rupture of the umbilical cord.

Albert (*Arch. f. Gynäk.*, vol. lvi., part i.) divides injuries to the umbilical cord into three classes: (1) rupture of individual vessels in the cord; (2) rupture of the cord as such; (3) avulsion of the cord from the child's abdomen or from the placenta.

(1) Rupture of vessels may be due to varix; of this the author has found record of two cases, one in the fifth and one in the sixth month. In the latter case the membranes ruptured, a little blood came away, and the child died. A varix the size of a hen's egg had burst, and three other varices were found the size of a hazel-nut. Three cases are on record in which the rupture occurred near the point of division of the vessels in the placenta. In one of them, narrated by Westphalen, the cord passed from the umbilicus to the left side of the child, and over the back to the right side of the neck, where there was a fairly tight knot. In a third group of cases of rupture of individual vessels, the site of the lesion may be an aberrant vessel associated with a velamentous placenta, of which Leopold saw an example, a vessel passing along the membranes to a succenturiated placenta, as in a case in the Dresden Clinic. The author has found three other cases with a velamentous, and one with a succenturiated, placenta. The rupture in most cases appears to have been incidental to the

rupture of the membranes. In every case the child died. It is noteworthy that in every case the labour was spontaneous.

(2) Rupture of the cord itself may be due to operative procedures; it has probably occurred more often than records show. Two cases were noted at the Dresden Clinic during extraction by forceps. More easily understood are the cases in which the cord is ruptured by the fall of the child on the floor, when precipitate delivery occurs when the mother is standing up. Koch collected 37 cases of such delivery, in 6 of which the cord was ruptured, and some 6 other cases of rupture under similar circumstances have occurred. Spontaneous rupture of the cord during delivery in the horizontal position has been reported by several observers.

(3) Avulsion of the cord from the skin of the abdomen has been reported by Weeder, Dupuys and Bontemps, and Perret. Of avulsion from the placental tissue the author has found no case in medical literature, but he relates a case that occurred in the Dresden Clinic: when the child's head was born the cord was tightly fastened round the neck. As the face was beginning to be cyanotic, and the cord could not be loosened, it was about to be divided and the ends secured, when a strong pain expelled the breech, and it was found that the placental end of the cord was free. It was at once secured with forceps. When the placenta had been expelled, it was found that the cord had torn away just at its insertion. Probably one of the vessels had given way shortly before the birth of the child, for the amniotic fluid contained blood, and the child was somewhat anæmic for some days after birth.

10. Thrombosis and embolism in child-bed.

Singer (*Arch. f. Gyn.*, vol. lvi., part i.) draws the following conclusions from the records of cases described by Mable and from those observed by himself:—(1) The formation of a thrombus is associated with a step-like rise in the pulse-curve, the curve coinciding with the completion of the thrombus and the appearance of lung symptoms. (2) The thrombus curve is characteristic: typically, the pulse-rate rises while the temperature remains normal, and then the former remains high while the latter rises. If œdema or lung-symptoms supervene, the highest point of both is reached, then the temperature falls, while the pulse-rate continues high. (3) If the temperature rises from the first, the thrombus is of the inflammatory type. (4) In such case the secretions should be carefully examined, and in many cases gonococci will be found, even where no internal examination has been made by either doctor or midwife before labour. (5) As regards treatment, the most important point is early recognition of the condition, and the patient should then be kept absolutely in the recumbent posture.

11. Appendicitis and pregnancy.

Pinard (*Sem. Méd.*, March 23, 1898) reports one and has collected 45 cases of appendicitis complicating pregnancy, the diagnosis being confirmed in 30 by operation or autopsy. He concludes from these that: (1) appendicitis may attack a pregnant woman at the beginning or at any time during pregnancy or the puerperium. (2) In most cases it causes abortion; the child dies as a rule very rapidly from infection, as the author's case proves from bacteriological examination. (3) It is only possible to save both the mother and child when the abscess is limited and encysted. (4) Every type of appendicitis may occur. (5) The diagnosis may be difficult owing to the enlarged uterus, or still more so during the puerperium, but is usually possible with care. (6) Treatment consists of operating as early as possible. A preliminary induction of premature labour is unjustifiable, since pregnancy is not always interrupted if the mother recovers. (7) Prophylaxis consists in operating in every case of relapsing appendicitis in a young girl or non-pregnant woman during the period of sexual activity, to prevent future complications during pregnancy.

12. Extirpation of pregnant fibroid uterus.

Marchthurn (*Wien. klin. Woch.*, No. 31, 1897) publishes full reports of four cases in Chrobak's wards. Only one ended fatally; the operation was done in the sixth month. The first of the successful cases was operated on during labour at full term, the second and third at the fifth and third months respectively. Marchthurn tabulates eighteen other cases of total extirpation of the gravid myomatous uterus, from 1893 to June, 1897. Of these, fifteen recovered. Out of the fatal cases, 1 (operation at the sixth month) sank from collapse, 1 (seventh month) died of sepsis on the third day, and 1 (fifth month) of ileus on the twenty-eighth day. One of the successful cases underwent operation during the first month of pregnancy, 1 in the second month, 6 about the third month, 1 in the fourth month, 2 in the fifth month, and 2 in the ninth month. In the two remaining cases the stage of pregnancy is not stated. Naturally, many points of importance, such as the size and position of the myoma, cannot easily be explained by statistics. Marchthurn adds two cases of myoma confined to the cervix. In the first, pregnancy had advanced to the fourth month; enucleation was performed by abdominal section, but the patient died in forty hours. In the second, labour was commencing at term; oöphorectomy and

conservative Cæsarean section were performed, the child being saved as well as the mother.

13. Pregnancy and cancer.

Reismann (*Centralb. f. Gynäk.*, No. 38, 1897) discussed the duty of the obstetrician in respect to the management of the later stages of pregnancy where uterine cancer, too far advanced for operation, existed. He had under his care a woman, aged thirty-six, in her tenth pregnancy, and subject for some time to fœtid vaginal discharge and hypogastric pain. He found the cervix extensively cancerous and the parametrium infiltrated. Considering the dangers of delivery by the natural way, and the abdominal section, Reismann intended to wait till labour set in, and then to perform Cæsarean section.

Bitásko related a case where birth occurred spontaneously, and the cancerous mass was torn in half during delivery. The puerperium was normal.

Von Rézmárszky stated that he had operated on a case of this kind, but without waiting for labour pains. The child died in two days; the mother survived for two months. He was against the practice of waiting till labour commenced, and found that the uterus contracted well enough before the puerperal process had actually set in. What was essential was a sufficiently patulous state of the os to admit of the free escape of the lochia after operation.

III.—EXTRA-UTERINE GESTATION.

1. Extra-uterine pregnancy.

John Taylor (*Lancet*, May 28, June 4, 18, 25, 1898), in a series of lectures, gives us what is known of this subject, and puts forward his views, based on previous records and his own observation.

After making some introductory and historical remarks, he says that no proof exists that an impregnated ovum can be arrested in the ovary; that arrest in the abdominal cavity between ovary and tube is probably always immediately fatal to the ovum; that arrest between the tube and the uterus may be regarded as arrest in the uterine part of the Fallopian tube, and that we have to deal with one kind only, viz., tubal pregnancy. All other varieties are secondary, and he divides them into:—(1) tubo-abdominal, in which there is secondary invasion of the abdomen; (2) tubo-ligamentary, in which there is secondary invasion of the broad-ligament and sub-peritoneal tissues; and (3) tubo-uterine or interstitial, where the uterus is invaded.

Taylor classifies the earlier disturbances of Tubal Pregnancy as follows:—(*a*) Early rupture of the tube from a pregnancy of two to six weeks' standing—an accident in which there is no warning of danger. There are often no physical signs, there is no symptom before that of sudden and copious bleeding, and history of pregnancy is either wanting or only represented by an account of menstruation delayed for one week or even less. The most usual seat of rupture is close to the uterus. In nearly all the cases there is some amount of non-development or atrophy of the tube. (*b*) The "Tubal Mole," where hæmorrhage occurs between the amnion and chorion, injuring or destroying the embryo. The "mole" in a few cases is extruded into the abdominal cavity, but in the majority remains firmly attached to the inner surface of the tube. Repeated hæmorrhages occur, though the abdominal ostium partially restrains the flow of blood into the peritoneal cavity. The enlarging tube falls usually behind the uterus and gradually fills the pelvis, displacing the uterus. The formation of an intra-peritoneal hæmatocele is then described. (*c*) Later rupture of the tube may take place from the first month onward, but is most common from the second to the fourth month. The hæmorrhage is not so immediately fatal as in the very early rupture, though more rapid than in cases of "tubal mole," where the outer layer of blood has time to consolidate, and form in some measure a "capsule."

(1) *Tubo-abdominal pregnancy.*—Taylor believes that the protection of an unruptured amnion is indispensable for the uninterrupted development of the fœtus, and describes fully a case in which he found a transparent membrane surrounding the fœtus, and protecting it in every direction. The membrane was very thin and not capable of separation or differentiation from the peritoneum except when it passed from one viscus to another, or from one coil of intestine to another. There are four different relations of the placenta to the main gestation-sac. In the first group the placenta is practically within the sac and covered by reflexions of the amnion; in the second, it has a fœtal and maternal surface of nearly equal dimensions, the fœtal surface being covered by the amnion and in immediate relation to the sac, while the maternal surface is growing from the spread-out remnants of the tube and from the peritubal tissues; in the third, the placenta remains within the tube and the maternal attachments are confined to the tube itself; in the fourth group the placenta is attached to the upper wall of a broad ligament sac outside the peritoneum, and the cord passes to the child through a hole in the ligament.

(2) *Tubo-ligamentary pregnancy.*—Fig. 3 represents a case of

conservative Cæsarean section were performed, the child being saved as well as the mother.

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(2) *Tubo-ligamentary pregnancy.*—Fig. 3 represents a case of

tubal pregnancy of four months' growth, which terminated by secondary rupture into the peritoneal cavity.

The tubo-ligamentary pregnancy may go on to full term, but owing to the higher position of the placenta and its liability to detachment, the patient is in a much more precarious condition than with a tubo-abdominal pregnancy. In both varieties the period of the third or fourth month is especially dangerous. He divides advanced tubo-ligamentary pregnancies into two classes: anterior-ligamentary or sub-peritoneo-pelvic, and posterior-ligamentary or retro-peritoneal.

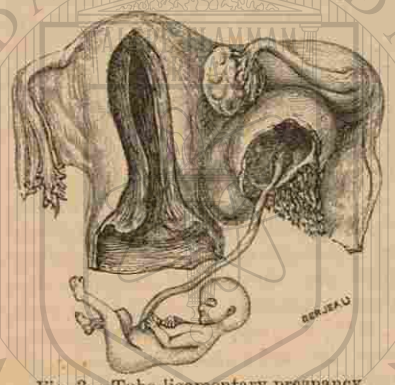

Fig. 3.—Tubo-ligamentary pregnancy.

On the question of diagnosis, Taylor goes on to say that in the case of early rupture with profuse hæmorrhage, the symptoms (of internal bleeding) are on the whole most reliable, that the history is of vast importance, and that physical signs are uncertain and practically wanting.

The elements which go to form a diagnosis of extra-uterine pregnancy before and during intra-peritoneal bleeding and hæmatocele formation are:—(1) A patient in whom pregnancy is possible; (2) she has recently been in good health; (3) it is more likely than not that several years have passed since her last pregnancy, if she had one; (4) there is a history of some amenorrhœa accompanied or followed by (5) irregular uterine hæmorrhage, dark in colour, moderate in amount, and persistent in its course; (6) with this there may be the history of the passage of some membrane; (7) on examination, pulsatory vessels may be felt in the side of the uterus in the vaginal vault; (8) on this side also, and closely investing the back of the uterus, there is nearly always a tubal tumour (exceptionally this may have a different situation); (9) the tumour enlarges markedly and suddenly by recurrent hæmorrhages and by the formation of a hæmatocele directly continuous with the original tubal tumour; (10) these hæmorrhages are signalised by sudden spasms of severe abdominal pain and by transient attacks of peritonitis; (11) the uterus is displaced by the hæmatocele at first backwards, afterwards to the opposite side of the pelvis, and sometimes forwards; (12) the uterus throughout, although slightly enlarged, may be proved to be empty.

On the subject of treatment, Taylor says that the aim of the operation at full term in tubo-abdominal pregnancy is the treatment of the placenta. He is of opinion that in all cases of true tubo-abdominal cases it is wise to remove the placenta: wherever the placenta is, there is the Fallopian tube from which it receives the greater portion of the blood-supply. In the tubo-ligamentary cases he recommends leaving the placenta in most cases, and sewing the sac to the abdominal opening.

An exhaustive table of cases is added.

2. Tubal gestation.

Dührssen (*Archiv f. Gynäk.*, vol. liv., pt. 2, 1897) has compiled a valuable monograph on this condition, based upon operative experience and anatomical research. He feels sure that the most frequent cause of tubal gestation is gonorrhœa, through the catarrhal salpingitis which that disorder sets up. He also shows, from a specimen, that polypus of the tube may likewise cause the same phenomenon. He figures a tubal sac, on the uterine side of which is a small polypus which obstructed the lumen, so as to prevent the fertilised ovum from passing into the uterus. The ostium is very patulous. A less familiar condition is held by Dührssen to be the cause of tubal pregnancy when evidence of inflammation or mechanical obstruction is absent: he finds that in seven of his cases the abnormal followed within a year a normal pregnancy; he carefully examined the tube in one of these cases, and found the most definite evidence of atrophy of its walls; this puerperal atrophy damages the peristaltic action of the tubes, and as the lumen is dilated, the entry of spermatozoa is favoured; the weakened tube then fails to propel the fertilised ovum into the uterus.

3. Primary peritoneal pregnancy.

Picqué and **Rochard** (*La Médecine Moderne*, Oct. 30, 1897) claim to have observed a genuine example of this disputed type of ectopic gestation. A woman, aged 25, was suspected to suffer from salpingitis, and abdominal section was performed. A sessile tumour was found in the iliac fossa, and was extracted without much difficulty. The tube and ovary on the same side were normal, and on the strength of this fact it was concluded that the tumour, which bore a small embryo, was a primary gestation sac. **Hartmann**, in discussing this case, said that he had once examined a peritoneal or abdominal pregnancy, and found on strict scrutiny that it had been grafted on the peritoneum by a little pedicle which was a fimbria of the Fallopian tube. He suspects, therefore, that many cases of so-called primary abdominal or peritoneal pregnancy originally developed on a tubal fimbria,

afterwards lost or transformed beyond recognition. **Rochard** further related a case of what he termed an abdominal fœtal cyst of tubo-ovarian origin. He diagnosed uterine fibroid, and did not know the true nature of the disease till he had opened the abdomen. A dead macerated fœtus filled the cyst, in the walls of which was the ovary.

4. The history of pain and the menstrual history of extra-uterine pregnancy.

Barton Cooke Hirst (*Amer. Journ. of Obstet.*, April, 1898) has analysed 22 cases of extra-uterine pregnancy, to elucidate the value of the history of pain and of menstruation for diagnosis. He gives three cardinal symptoms: (1) Pain, characteristic in nature, manner of occurrence, and situation; (2) irregularity of menstruation, often with the discharge of what the patient calls "pieces of flesh"; (3) the following physical signs: for the first two or four weeks a swelling in the tube, no bigger than the end joint of one's thumb, and unadherent; later, an exquisitely sensitive mass fixed in the pelvis by thick velvety adhesions.

Pain has been the most helpful symptom in guiding the author to a diagnosis. It may be defined as a pain described by the patient in the strongest terms; occurring in paroxysms with free intervals; appearing at any time from a few days to months after a normal menstruation; situated often in the groin, though often referred to the lower abdomen, and sometimes shooting down the leg or up to the epigastrium, and so severe as to occasion profound systemic disturbance, such as syncope and excessive shock, which the author attributes to pain rather than hæmorrhage. The characteristic menstrual history of extra-uterine gestation is one of irregularity, and often not of cessation at all. In 27 per cent. of Hirst's cases there was no cessation, in 18 per cent. more a menstrual period was only delayed ten to twelve days. Prolonged uterine bleeding, on the other hand, preceded or followed by the discharge of decidua, is the almost universal rule at some period in the history of a tubal pregnancy.

5. The tubal mucosa in tubal gestation.

Clarence Webster (*Amer. Journ. of Obstet.*, Sept., 1897) like Fraenkel and Abel, claims to have detected a true decidua in the tube in cases of tubal pregnancy. **Bland Sutton** denies that a tubal decidua exists. **Webster** insists that Fraenkel, Abel, and himself did not endeavour to prove that a decidual foundation might develop in the gravid tube, but, on the contrary, discovered decidual tubes in examining tubes purely with the object of defining their histology. **Pavy's** theory, on which Sutton's views are based, is a mere hypothesis and there is no

reason to believe that he ever examined a section of pregnant tube through the microscope. Webster further maintains that if the placenta be examined in the case of an early pregnancy where escape into the peritoneal cavity has occurred, it presents appearances much the same as those found in the placenta of a miscarriage from uterine pregnancy, the maternal surface being covered with the thin superficial layer of the decidua serotina, irregular in its thickness and distribution. This irregularity is more marked in the case of the tubal than in the uterine placenta.

IV.—OPERATIVE DELIVERY.

1. The obstruction of labour by ovarian tumours in the pelvis.

McKerron (*Obstet. Soc. of London Transactions*, 1897 and 1898) had a paper dealing only with those cases where the ovarian tumour occupied the pelvis during labour. He had collected 183 instances of this complication, which he arranged in 9 tables, according to the treatment adopted. Two unpublished cases were detailed.

McKerron refers to the various publications on the subject, and points out that considerable divergence of opinion still exists as to the most satisfactory treatment. He says that the mere comparison of deaths and recoveries following an individual treatment tends to lead to erroneous conclusions. In many of the fatal cases the untoward result is to be ascribed, not to the operative measures, but to the preceding exhaustion from delay, which, as their history shows, might in many have been avoided. The infrequency with which the existence of any abnormality was suspected during pregnancy is surprising. In 33 only, or 18 per cent., was ovarian disease discovered previous to the onset of labour. It follows that radical measures during pregnancy were possible in only a small percentage of cases. As to the character of the tumour, in 70 cases the evidence is insufficient to form a reliable opinion. In 113 the nature of the tumour is comparatively certain; in 49 the enlargement was a simple or multilocular cyst, while it was a dermoid in 46, in one of which the other ovary, enlarged and cystic, also occupied the pelvis; in 9 the tumour was malignant; in 5 a fibroma; in 2 colloid; in 1 fibro-cystic, and in 1 a cystic adenoma. In 49 cases where the ovary was cystic, 10 deaths occurred; while in 46 cases of dermoid, 18 deaths are found—a mortality almost double. The total number of maternal deaths is 56, or 30·5 per cent. The mortality in the earlier cases, however, was greater than in more recent years; since 1876, in 48 cases, the mortality was only 12·5 per

cent., while in the 135 earlier cases the mortality was 37 per cent. This difference is not only due to the introduction of antiseptics, but also to the earlier resort to treatment, and the greater frequency with which reposition has been attempted and effected. Rupture of the cyst occurred during labour in 15 cases, death resulting in 9; in 5 the cyst ruptured spontaneously.

In 5 cases there occurred what Playfair terms "natural ovariotomy," the tumour prolapsing through a rent in the recto-vaginal septum.

Of the 183 cases, the termination of labour was left to the natural powers in 35, with a fatal result to the mother in 12.

Reposition was effected in 41 instances, with only three deaths attributable to the treatment, 3 other deaths being due to accidental causes; 7 children were still-born, and 6 not recorded.

Puncture or incision of the tumour was resorted to 43 times, resulting in the deaths of 8 mothers and of 24 children. The convalescence of the mothers was also much less satisfactory.

In 17 cases version formed the sole treatment, with a maternal mortality of 6.

In only 14 cases was the forceps alone relied on; with the death of 8 of the mothers.

In 18 cases labour was terminated by embryotomy alone, with the recovery of 10 mothers.

On 10 occasions Cæsarean section was performed, when only 2 mothers recovered.

Abdominal ovariotomy was performed twice *intrapartum*, and both mothers made excellent recoveries.

In 3 cases the ovary was removed per vaginam with successful results.

McKerron continues that the diagnosis presents, as a rule, little difficulty, the important point being to be aware of the possibility of an enlarged ovary occupying the pelvis. Diagnosis should at once be followed by an attempt at reposition, which should not be delayed till the membranes are ruptured; pressure should be steady and continuous to avoid as far as possible the danger of rupturing the tumour, as the proposition that forcible reposition, even though rupture be induced, is safer than puncture from the vagina, cannot be entertained. Where all attempts at reposition fail, active intervention is in all cases imperative, as the risks involved in leaving the case to nature are very great. Where the tumour is entirely cystic, puncture per vaginam, with a good-sized trocar is, on the whole, the safest method of treatment, though there is the risk of infection. Fritsch prefers incision to puncture of the cyst. He makes an incision $1\frac{1}{2}$ inch long, and in the mesial line,

beginning at the posterior lip of the os uteri, and at once secures the cyst wall to the vagina by a suture. The incision is then enlarged and the edges of the cyst united with the edges of the vaginal wound.

Version, forceps, and ovariotomy are contra-indicated as the means of treatment; the two latter may follow reposition, puncture, or ovariotomy when the obstruction has been removed, but version should never be performed.

Briefly, the indications for Cæsarean section are an irreducible tumour which puncture has failed to remove completely, which does not meet the conditions for vaginal ovariotomy, and which, on abdominal section, is found to be extensively adherent in the pelvis. The operation should be performed as early in labour as possible.

Two successful cases of *intrapartum* abdominal ovariotomy have been recorded by Sir John Williams, which demonstrate the utility and safety of this method. The cases, however, to which the operation is applicable are limited, as in the majority of cases when reposition has been found impossible, pelvic adhesions exist which render the removal of the tumour in the presence of a full-term uterus a measure of the greatest difficulty.

Extirpation of the tumour per vaginam is a procedure still on its trial. Hande defines the cases for which the operation is suited as being those where a tumour lies wholly and deep in the pelvis, is movable, pedunculated, with no, or but slight, adhesions, and whose upper limit is accessible from the vagina. McKerron agrees that in certain circumstances the operation affords the readiest and safest means of terminating labour.

As regards the after-treatment, McKerron gives the following conclusions:—(1) Where the delivery has been effected by Cæsarean section the tumour should, if possible, be coincidentally removed. (2) Where the cyst contents are proved or strongly suspected of being infectious, or where the tumour has been subjected to long-continued pressure, abdominal ovariotomy should be performed immediately, or within a few hours, after delivery. (3) Where the tumour has been subjected to considerable pressure before reposition, and is believed to be adenoid, its removal should be effected at the end of the first week of the puerperium. (4) Where reposition has been successful early in labour, or where puncture reveals the tumour to be a simple cyst, expectant treatment should be adopted, but the supervention of severe inflammatory symptoms should at once be followed by laparotomy.

McKerron concludes with a detailed analysis of the 183 cases.

In the discussion on the paper, **Herman** said he thought that Fritsch's method of treatment deserved fuller consideration and commendation—viz. the making an incision into the cyst from the vagina, and stitching the opening in the cyst to the margin of the vaginal incision. In this way the emptying of the cyst contents outside the peritoneum was secured. If the cyst were a dermoid, simple tapping was attended with much danger of the cyst contents escaping into the peritoneal cavity and setting up peritonitis. He did not advise this procedure for tumours that could be pushed up; nor for those in circumstances suitable for ovariotomy. The time when reposition became impossible was in the second stage of labour, when the tumour was driven down by the advancing presenting part; then prompt treatment was necessary, and incision and suture the best course for an inexperienced accoucheur. If the tumour was driven down into the pelvis there was usually tension of its pedicle calling for extreme care in its ligaturing, for if hæmorrhage resulted there would be great difficulty in stopping it by vaginal treatment.

Playfair thought removal of the cyst by the vagina was preferable to vaginal incision and suturing. Reposition was risky if the tumour had been long subjected to incarceration and contusion. He recommended aspiration in cases where the tumour was jammed down by the presenting part.

Horrocks was of opinion that abdominal ovariotomy was preferable to the original operation, and that if the abdominal operation were not possible, incision and suturing were preferable to aspiration.

Spencer thought that ovariotomy was the proper treatment when practicable. If incision *per vaginum* was made (tapping usually would be of no use), he was not in favour of stitching the cyst wall to the vaginal opening; it would be most difficult to perform owing to the head coming down; he advocated plugging the cyst, as a temporary measure, with iodoform gauze, and removing the tumour as soon as possible after the labour, either by vagina or abdomen.

2. The use and abuse of forceps.

Milne Murray (*Brit. Med. Journ.*, Aug. 20, 1898) at the annual meeting of the British Medical Association opened a discussion on the use and abuse of the midwifery forceps. He summed up their misuse as follows:—(1) The forceps are often used at the wrong time; (2) they are sometimes not used at the right time; (3) they are often badly used at both times. Their dangers were: (1) the mother's parts may be bruised, lacerated, or otherwise injured by mechanical violence; (2) the too sudden emptying of the uterus may be followed by imperfect retraction and dangerous hæmorrhage; (3) the fœtal head may be unduly compressed, lacerated, or otherwise damaged. He said that a direct indication for the use of the forceps arises whenever—and only whenever—we are assured that the danger of interference has become less than that of leaving the patient alone. At the same time Milne Murray took up the position that the forceps lessened pain and minimised injury, and said that he would have no scruple, could he do so with safety, in abolishing every pain after the first, and reducing the duration of labour to a minimum, though, unfortunately, this was not practicable, as physiological labour consisted of phenomena which required time for their development; but if after dilatation of the os the advance of the head was blocked by the size of the head, the resistance of the canal, or the feebleness of the pains, he would not wait a moment before using the forceps.

After considering the general indications against their use, Milne Murray said he considered that forceps were abused by being badly used (1) by not employing the most efficient instrument, viz., the axis-traction forceps, which he advocated as by far the most efficient at the outlet, as well as in the cavity, and at the brim of the pelvis; and (2) by applying the forceps in the pelvis transverse without reference to the diameter of the head, instead of applying them to the biparietal diameter of the head, wherever situated.

W. S. Playfair took exception to the main thesis laid down at Montreal by Sinclair, that gynæcology had become so largely developed as the direct result of surgical intervention in midwifery. The introduction of the forceps had led to the practical disappearance of vesico-vaginal fistula and an enormous diminution in the number of cases requiring craniotomy. **Smyly** said that safety in the use of forceps lay in adhering as closely as possible to their employment under favourable conditions. The high forceps was not an operation to be taken lightly in hand, and the importance of time in moulding the head to the brim should not be forgotten. A head might come through with moulding which could not have been brought through with forceps at an earlier stage.

Fehling said that the chief mistake was to employ forceps in the absence of strict indications. In ordinary cases three points must be insisted on: the head must be under the brim, well rotated, and the os dilated. It was only justifiable to operate in the absence of these three conditions, if there were any danger for mother or child.

Munro Kerr protested against the teaching generally found in text-books, to the effect that as long as the forceps were applied in the transverse pelvic diameter, it did not matter how the head was grasped; the forceps should be applied with reference to the diameter of the child's head.

Byers agreed with the rule "wait until you can see what nature can effect; don't interfere till she fails."

Handfield-Jones thought it would be unwise to teach students that the forceps were to be applied simply with reference to the position of the fœtal head rather than in relation to the lateral pelvic wall, as in attempting such an application it was often difficult to lock the blades, and much harm might be done by efforts in this direction. In cases in which the cervix remained undilated it was most important to ascertain carefully the softness and distensibility of the lower uterine tissues, as when this was marked forceps might be much more safely and readily applied than in cases where the tissues were thickened and rigid.

3. The use of the high forceps operation.

Toth (*Arch. f. Gyn.*, vol. lv., part i., 1898) deals with this question, with special reference to the contracted pelvis. He refers to the fashions that prevail in the use of the forceps, the frequency in head presentations varying from 1 or 2 to 11 or 12 per cent.

In Buda-Pesth, among 7,775 births in 15 years, the forceps was used 155 times—that is, in 1·9 per cent. of the cases. Forty-four cases of high forceps came under the author's observation, falling into three groups: (1) with normal pelvis, 10 cases; (2) with contracted pelvis, 24 cases; (3) unsuccessful applications followed by craniotomy, 10 cases. In the first group, indications were uterine inertia, protracted second stage with danger to mother or child, undue stretching of the lower uterine segment, with risk of rupture of the uterus; 7 of the children were saved, 2 of the others weighing 11¾ lb. and 12¾ lb. respectively. In the second group 21 children were saved and 23 mothers. In the third group perforation was performed on the living child seven times, and on the dead child three times; one mother died of rupture of the uterus and peritonitis; in this case the assistant, contrary to the practice in vogue at this clinic, turned after the high forceps had failed, and then had to perforate the after-coming head. The indications were—delayed dilatation and failure of the head to engage, 2 cases; threatened uterine rupture from undue stretching of the uterine segment, 7 cases; embarrassed breathing with severe nephritis, 1 case.

After quoting and comparing many statistics, the author sums up in the following conclusions:—(1) The use of the high forceps is not so dangerous, either for the mother or the child, as commonly supposed; on the contrary, it gives undeniably better results for both than turning, especially from a head to a foot presentation. (2) In general, where labours must be terminated in the interest of the mother, then, if conditions are no longer applicable for turning, the high forceps should be tried before perforation of the living child is resorted to. (3) In cases of generally contracted pelves of the first and second degrees, where the narrowing especially affects the upper straits, the high forceps should have the preference over turning after a due period of waiting has shown that a spontaneous termination of labour is impossible. The same principle should guide us in those cases where the disproportion is due to a relatively large child, while the pelvis is of normal size. (4) In cases where the high forceps has failed, further waiting is not permissible, but perforation must at once be resorted to. Under favourable circumstances, symphysiotomy may be considered as an alternative, but turning (into a foot presentation) is contra-indicated, and must be decisively rejected. (5) The high forceps operation can be performed with any instruments of convenient length, but the author has been repeatedly convinced of the superiority of Tarnier's axis-traction over other high forceps.

4. Symphysiotomy.

Varnier (*Ann. de Gynéc. et d'Obstét.*, September, 1897) issued at the Moscow Congress a report of his conclusions in regard to this operation, based on 86 cases performed at Paris in six years. The momentary widening of the pelvis, arrived at after Pinard's method, reduces the rate of fœtal mortality in contracted pelvis to the rate of fœtal mortality after forceps delivery where the pelvis is normal. This widening does not cause hæmorrhage, nor any lesion of the sacro-iliac synchondroses liable to compromise the safety or health of the patient. Damage to the bladder or urethra is exceptional, and possibly due to the forceps and imperfect dilatation of the pelvis. With antiseptic precautions and a healthy patient free from previous sepsis, the momentary widening of the pelvis involves no more risk than other obstetric operations. Beyond accidental complications, independent of this method of intervention, the mortality of patients after symphysiotomy is chiefly due to puerperal septicæmia. The operation is followed by perfect restoration of functions, but not with any enlargement of the contracted pelvis. It causes no trouble in future labours and may be safely repeated. Varnier would extend the operation beyond cases of pelvic

contraction to cases of dystocia from great bulk of the fœtus, or from certain abnormal presentations (brow, etc.) in normal pelves.

Symphysiotomy should replace induced premature labour, the forceps and version in cases of contracted pelvis. Varnier continues that he does not add to this list of older obstetric operations many for embryotomy practised on the live child, as it is no longer advocated.

Symphysiotomy is the only effectual process for enlarging the pelvis. Walcher's "hanging position," which stretches the sacro-iliac synchondroses, is worthless, being all but impracticable on real patients, and experiments on the dead body show that the difference between the extreme of dilatation and compression of the synchondroses as affecting the conjugate diameter of the pelvis amounts to but six millimetres (or not quite a quarter of an inch or 0·234 in.) on an average. Symphysiotomy should be confined to the widening of the bony pelvis. It is dangerous to have recourse to this operation in order to facilitate dilatation of the soft parts. The widening of the pelvis should be momentary; when the soft parts are at fault it has to be kept open for some time. Varnier and Pinard admit that this happened in one of their own cases. Twelve hours were wasted, the wound suppurated, and the patient died of septicæmia. Symphysiotomy must not be attempted for dystocia caused by tumours of the soft parts. Ante-partum septic infection of the mother, and distinct evidence of death of the fœtus, are also contra-indications.

5. Cæsarean section followed by vaginal amputation of the artificially inverted uterus.

V. Duchamp (*Loire Méd.*, No. 9, September 15, 1897) has had an opportunity of giving effect to a proposal which he made eleven years ago. He has modified the Porro-Cæsarean section by artificially inverting the uterus into the vagina after having emptied it of its contents by the abdominal incision; with the aid of the elastic ligature the body of the organ is then amputated, and the abdominal cavity closed in front by suturing the walls, and below by the bringing into contact of the serous surfaces gathered together and united by the elastic ligature. The patient upon whom he was enabled to demonstrate the simplicity and ease of the operation was a primipara, aged forty-three years, with an irregularly-formed and slightly-flattened pelvis. After he had with some difficulty and by a large uterine incision emptied the uterus, he carried out its inversion as follows: a pair of long catch-forceps was introduced per vaginam through the cervical canal into the uterine cavity, and with this one of the margins

of the uterine incision was seized; a second pair of forceps was similarly introduced and attached to the other margin of the incision; and, finally, both pairs of forceps were drawn down into the vagina and the uterus was brought down with them in an inverted state. The rest of the operation was easy, and save for a slight attack of broncho-pneumonia the recovery was perfect. The infant was extracted alive. Duchamp claims for his modification that it excels Porro's in regard to the complete closure of the serous membrane, and that it does not expose to hæmorrhage as does a hysterectomy. Further, it can be performed by any practitioner, and requires no elaborate preparations such as are only possible in a large hospital.

6. The induction of premature labour by means of glycerine.

Heinrich Saft, in the *Deutsche medicinische Wochenschrift*, Jan. 20, 1898, has published an account of a method which he has devised for the induction of premature labour by means of glycerine. After enumerating various other procedures employed for this purpose, such as irrigation with hot water, introduction of bougies and indiarubber bags full of fluid between the uterus and the fœtal membranes, and the use of the colpeurynter, he says that they may require some days or even a week to produce the effect, and that glycerine is the most efficient substance at present known. Glycerine has a strong affinity for water, easily withdrawing it from the animal tissues and in this way irritating the uterine ganglia and nerves so that muscular contractions are produced. Its application is not free from danger, as it has been found to injure the parenchymatous substance of the kidneys and to cause hæmoglobinuria, destruction of the red corpuscles, shivering fits, and spasmodic dyspnœa. Various modifications have been suggested for the purpose of obviating these dangers.

Teilhaber used rods about four inches long, coated with a mixture of glycerine, gelatin, and tricresol. **Flatau** replaced these rods by elastic bougies. **R. A. Simpson** injected three ounces of glycerine into the undilated os uteri of a primipara suffering from eclampsia and subsequently packed the cervix and vagina with plugs soaked in glycerine; but labour did not ensue, and another injection had to be given. Small quantities of glycerine are useless, and large quantities are dangerous. Saft therefore endeavoured to devise a method by which a large amount of glycerine might be introduced into the uterus without more than a very small proportion of it being absorbed. He passed a catheter, covered with an empty animal-membrane bag, between the membranes and the

uterus: for the animal membrane he used the swimming-bladders of fishes fastened to the catheter by thread tied round its mouth. When in position he introduced the glycerine through the catheter. Saft succeeded in inducing labour by this method without any ill effects to the patients. Diffusion takes place through the swimming-bladder, the glycerine withdrawing water from the uterus and fœtal membranes, thereby stimulating the uterine nerves and ganglia so that labour ensues. At the same time some glycerine diffuses outwards through the membrane, but the quantity is too small to be productive of injury. The swimming-bladders are prepared by being freed from fat by treatment with ether and are afterwards sterilised with an alcoholic solution of corrosive sublimate. The quantity of glycerine injected is about 3½ oz. The bladder must not be pushed high up into the uterus, but must lie directly over the internal os, and, finally, the vagina is packed with iodoform gauze, which prevents the catheter from being pushed out. No ill effects to either mother or child were observed.

Of seven patients treated in this way four had injections of from 1½ to 2 oz. of glycerine, and the average duration of labour was about 108 hours; the other three had injections of 3½ oz., with an average duration of labour of fifty-two hours. Saft considers that glycerine exerts a specific influence in consequence of its affinity for water.

The Edinburgh Medical Journal for January, 1898, contains an account of a case in which 3 oz. of pure glycerine were injected into the uterus in the fifth month of pregnancy. The patient very soon had an intense rigor lasting more than forty minutes; her face was cyanosed and wore a frightened expression; her pulse was 45. These symptoms passed off, labour pains set in, the ovum was expelled entire, and the patient made an uninterrupted recovery.

V.—THE PUERPERAL STATE.

1. Serum-therapy in puerperal septicæmia.

Wallich (*Annales de Gynécologie et d'Obstétrique*, Nov., 1897) concludes an important report as follows: (1) From an experimental point of view, employing Marmorek's serum on animals inoculated (in their blood) with streptococci derived from puerperal infection, Wallich has not obtained regularly either preventive or curative results, especially with the serum used on women in 1896. (2) From a clinical aspect, Wallich fails to find sufficient modifications in regard to septicæmia, morbidity and mortality in the Baudelocque Clinic in 1896 to justify any definite opinion.

Marmorek's serum was there employed most methodically. A much longer experience is required. The value of preventive serum-therapy is absolutely unknown. Therefore, intra-uterine treatment, which has been well tried, must not be cast aside in favour of curative serum-therapy by anti-streptococcic serum. The bacteriological diagnosis of puerperal infection is as yet hard to make in any clinical fashion.

At the Obstetrical Society of London on October 5th, 1898, the question of anti-streptococcic serum in puerperal septicæmia was discussed. **J. Walters** related a case in which he attributed recovery to the use of serum.

Amand Routh said that of five or six cases treated by himself, one had recovered by the use of anti-streptococcic serum alone. He advised ascertaining the presence of streptococci before administering the serum, on which point **Eden** agreed. **Cullingworth** thought the serum should be administered without waiting for bacteriological examination. **John Phillips**, out of several cases, attributed recovery to one, in which, however, bacteriological investigation gave a negative result.

2. Premonitory symptoms of puerperal infection.

Ferré (*L'Obstétrique*, September 15, 1897) lays stress on the success of intra-uterine treatment for puerperal fever. This success stands in direct ratio to the earliness of intervention. Hence very careful clinical researches have been made in lying-in hospitals in order to detect true prodromata. The true rigor, local pains, and conspicuous pulse and temperature are known to all and, when combined, indicate more or less advanced infection. Ferré denies that these symptoms ever come on suddenly, though certain milder types of infection now observed may represent sepsis modified by antiseptic agents. These milder types, however, will assuredly develop into deadly septic infection if neglected. Ferré finds, after long clinical research, that even the severest form is preceded for a day or two by distinct elevation of temperature and pulse and by insomnia. An evening temperature of 100° in the axilla, with a fall of about a degree in the morning, without a corresponding drop in a somewhat rapid pulse, is a distinctly suspicious symptom. The rise in the pulse-rate often precedes the rise in temperature; the observer must therefore make sure that acceleration of the heart's action is accounted for even in a patient who seems otherwise convalescent. Reaction after the fatigue of labour, hæmorrhage, and emotions all send up the pulse. Insomnia, Ferré has noted, is often observed in the earlier stages of infection; distinct want of sleep without restlessness is usual for a day or two before bad septic

uterus: for the animal membrane he used the swimming-bladders of fishes fastened to the catheter by thread tied round its mouth. When in position he introduced the glycerine through the catheter. Saft succeeded in inducing labour by this method without any ill effects to the patients. Diffusion takes place through the swimming-bladder, the glycerine withdrawing water from the uterus and fœtal membranes, thereby stimulating the uterine nerves and ganglia so that labour ensues. At the same time some glycerine diffuses outwards through the membrane, but the quantity is too small to be productive of injury. The swimming-bladders are prepared by being freed from fat by treatment with ether and are afterwards sterilised with an alcoholic solution of corrosive sublimate. The quantity of glycerine injected is about 3½ oz. The bladder must not be pushed high up into the uterus, but must lie directly over the internal os, and, finally, the vagina is packed with iodoform gauze, which prevents the catheter from being pushed out. No ill effects to either mother or child were observed.

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Marmorek's serum was there employed most methodically. A much longer experience is required. The value of preventive serum-therapy is absolutely unknown. Therefore, intra-uterine treatment, which has been well tried, must not be cast aside in favour of curative serum-therapy by anti-streptococcic serum. The bacteriological diagnosis of puerperal infection is as yet hard to make in any clinical fashion.

At the Obstetrical Society of London on October 5th, 1898, the question of anti-streptococcic serum in puerperal septicæmia was discussed. **J. Walters** related a case in which he attributed recovery to the use of serum.

Amand Routh said that of five or six cases treated by himself, one had recovered by the use of anti-streptococcic serum alone. He advised ascertaining the presence of streptococci before administering the serum, on which point **Eden** agreed. **Cullingworth** thought the serum should be administered without waiting for bacteriological examination. **John Phillips**, out of several cases, attributed recovery to one, in which, however, bacteriological investigation gave a negative result.

2. Premonitory symptoms of puerperal infection.

Ferré (*L'Obstétrique*, September 15, 1897) lays stress on the success of intra-uterine treatment for puerperal fever. This success stands in direct ratio to the earliness of intervention. Hence very careful clinical researches have been made in lying-in hospitals in order to detect true prodromata. The true rigor, local pains, and conspicuous pulse and temperature are known to all and, when combined, indicate more or less advanced infection. Ferré denies that these symptoms ever come on suddenly, though certain milder types of infection now observed may represent sepsis modified by antiseptic agents. These milder types, however, will assuredly develop into deadly septic infection if neglected. Ferré finds, after long clinical research, that even the severest form is preceded for a day or two by distinct elevation of temperature and pulse and by insomnia. An evening temperature of 100° in the axilla, with a fall of about a degree in the morning, without a corresponding drop in a somewhat rapid pulse, is a distinctly suspicious symptom. The rise in the pulse-rate often precedes the rise in temperature; the observer must therefore make sure that acceleration of the heart's action is accounted for even in a patient who seems otherwise convalescent. Reaction after the fatigue of labour, hæmorrhage, and emotions all send up the pulse. Insomnia, Ferré has noted, is often observed in the earlier stages of infection; distinct want of sleep without restlessness is usual for a day or two before bad septic

symptoms. The lochia may remain free from odour in the premonitory stage of puerperal septicæmia, nor are the discharges always fœtid when the disease is established.

3. Puerperal tetanus.

Kuhnau, of Klast's Clinic (*Berl. klin. Woch.*, July 11th and 18th, 1898) first gave an account of the literature of this rare affection. Of 24 cases examined since the recognition of the tetanus bacillus, this microbe has only been found in 3. Chantemesse and Widal proved its presence in pieces obtained by the curette from the uterus after death. Heyse found it in the lochia, both morphologically and by experimental investigation. Sterne produced tetanus by inoculating pieces from the endometrium into animals. The author then records a case in a woman, aged 42, very carefully investigated. The labour appeared to be quite normal. The patient had a vaginal douche on the sixth day and then got up. Two days later there was an offensive vaginal discharge, and ten days after delivery headache and difficulty in swallowing supervened. Attacks of spasm came on when attempts at swallowing were made. On admission the next day there was much cyanosis, retraction of the head, trismus, and the risus sardonicus. Attempts to swallow brought on attacks of spasm, when the breathing stopped and the face became blue. The attacks lasted about three minutes and consciousness was not lost. Behring's antitoxin was injected direct into the veins. Death followed in this desperately severe case shortly afterwards. At the necropsy the spleen was found enlarged, and the uterine cavity contained discoloured tenacious secretion. The endometrium presented a greyish-green appearance. Several microorganisms, including the streptococcus, etc., were found by cultivation in the lochial discharge during life, but not the tetanus bacillus. Bacilli resembling tetanus bacilli were found in the endometrium, and a number of microbes, including the tetanus bacillus, were also obtained by cultivation from it. Four out of twelve animals inoculated developed tetanus. Inoculation of animals with the earth obtained from the cracks in the floor, also with straw taken from the mattress, as well as with splinters from the patient's abode, gave positive results. Injection of the urine produced no result. Injection of blood serum from the patient also induced tetanus. The nervous system was comparatively healthy. The spasm of the glottis, which ultimately produced death, reminded one of hydrophobia, and was a striking feature of the case. The case was characterised by a mixed infection with bacteria of putrid decomposition, septic microbes, and the tetanus bacillus. The finding of the tetanus bacillus in the neighbourhood of the patient explained the origin of the disease. The author thinks that the patient was infected by means of the vaginal douche.

4. Puerperal tetanus.

Rubeska (*Archiv. f. Gynäk.*, vol. liv., pt. i., 1897) describes at length six unpublished cases of tetanus in childbed. All ended fatally, and definite organic lesions were found in all. He also notes three other cases recently published by Pipek in a paper written in the Bohemian language; these were also all fatal. Rubeska issued in 1890 an earlier report of eleven cases, none of which recovered. He notes, however, Irving's case (*New York Medical Journal*, Sept. 17, 1892), when tetanus set in on the eleventh day after delivery, remained acute for a fortnight, and then passed slowly off, the patient ultimately recovering. The earliest date for the onset of tetanus is the sixth, the latest the eleventh day. It begins in puerperal cases by trismus and dysphagia, and not by tetanic contractions of muscles near the pelvis. Narcotics, antispasmodics, and serum treatment, as well as, in one case, immediate extirpation of the uterus, proved unavailing in the 20 fatal cases collected by Rubeska. He discusses the bacteriology of this form of tetanus. Heyse has shown that streptococcus infection does not predispose to secondary infection of the genital tract by the tetanus bacillus.

5. Secondary operations for rupture of the perineum.

Kholmogoroff (*Vratch*, No. 19, 1898) advises the performance of secondary operations for ruptured perineum during the puerperal period, that is, from the second to the twentieth day after labour. He performed the operation in 25 cases during that time, and in all cases obtained primary union. There is no danger of lochial infection of the raw surfaces if suitable precautions are taken. The operation is undertaken in those cases where immediate suturing after labour has not been done, or where, if done, it has not been successful. The patient's vagina is carefully washed out with corrosive sublimate solution, and a tampon of sublimate gauze inserted to take up the discharge. The tampon is removed first before the operation, the vagina washed out and a fresh tampon inserted which remains *in situ* for twenty-four hours. This prevents the lochia from coming in contact with the wound until some adhesion of the raw surfaces has taken place. After this the tampon is unnecessary, and careful vaginal douching is sufficient. The operation consists in first making out the extent of the raw surfaces, and then removing the granulative or cicatricial tissue with a sharp spoon

within that limit. The sutures are then inserted in the usual way, and the raw surfaces brought together. The sutures are removed on the seventh day. The temperature generally remains normal after the operation, but there may be a slight rise. In this way many a perineum can be repaired during the time the patient is under observation after labour, and this does away with the necessity of her applying for advice in six weeks afterwards, which many of them fail to do through either fear or neglect.

VI.—NEW DRUGS.

Schäller (*Centralblatt für Gynäk.*, April 13, 1898), taking advantage of Mering's investigations, showing that sugar is found in the urine after the administration of *phlorizin*, has devised a new method of demonstrating that the fœtus passes urine in utero. His idea is that, if phlorizin be given to the pregnant woman, some of it will enter the circulation of the fœtus, and will cause the presence of sugar in any fœtal urine which may be passed into the liquor amnii. The presence of sugar in the liquor amnii will then show that fœtal urine has been added to it. Schaller's results are as follows:—In the fourth to sixth month of pregnancy the results were negative; when phlorizin was given to the mother right up to the commencement of labour, sugar was found in liquor amnii in fourteen out of twenty cases. Sugar disappears from the maternal urine in about eight hours after the last dose. Sugar was found in the urine of the child in all cases, disappearing in about thirty-two hours.

Carnevin has stated that by giving phlorizin to cows the percentage of sugar in their milk can be doubled. But **Cremer** (*Münchener med. Woch.*, No. 5, 1898) gave the substance to a cow which was kept on a regular diet, and found that the percentage of milk was not nearly so much increased as in Carnevin's experiments, while the total quantity of milk was so much reduced that the total output of sugar was actually less than before. Sugar was found in the urine in considerable quantities. Cremer refers to experiments made on a goat by Pappenheim with similar results to his own.

Joiachim (*Centralblatt für innere Med.*, March 12, 1898) gives details of fifteen cases in which he gave *somatose* to mothers whose supply of milk was failing. He found that the result was good in those cases in which the somatose improved the appetite and general condition. On the other hand, in the smaller number of cases where the entire organism was not influenced by somatose, and where the general health continued bad, the secretion of the mammary glands almost remained unimproved. He does not, however, agree with the opinion of Drews of Hamburg, who states that somatose has a specific influence on the secretion of the mammary glands.

Fürst of Berlin (*Fortschritte der Medicin*, No. 4, 1898) has utilised *Protargol* in cases of gonorrhœal ophthalmia neonatorum, and considers that it possesses many advantages over lunar caustic. For ophthalmological purposes he uses a 10 per cent. solution of protargol, made by mixing 10·0 of protargol with 10·0 of glycerine into a thick paste, and then by means of a water-bath effecting the complete solution with 90·0 of water. For gynæcological purposes, he finds aqua. dest. and glycerine in equal parts more satisfactory.

He summarises the result of his observation as follows:—(1) Protargol possesses in the prophylaxis and therapeutics of ophthalmia gonorrhoica neonatorum the following advantages over nitrate of silver, viz. non-decomposibility and non-irritability, and also of being easier of application.

(2) As a rule, the washing of the eye with protargol is prophylactically sufficient; nevertheless, when there is evidence, or a suspicion, of maternal gonorrhœa, a preparatory washing of the vagina, together with the application of the lotion and the instillation, is indicated.

(3) This washing with the solution of protargol deserves to be compulsorily introduced into the lay practice of midwives, at whose disposal the solution should be placed gratis as a necessary prophylactic precaution.

(4) With regard to the ophthalmia prophylaxis in clinical medicine, the washing of the conjunctival membrane, and also the washing of the eyelids, is at least of equal value as the instillation of lunar caustic.

(5) In the therapeutics of opthalmia gonorrhoica protargol, either in the form of lotion or instillation, is more certain, somewhat quicker, and of a less irritating action.

VII.—MECHANISM OF DELIVERY.

1. Fronto-anterior positions of the fœtal head.

George Roper, at the Obstet. Soc. of London, July 16, 1898, read a note on this subject, in which he stated that in labour considerable difficulties arose with a child beyond the ordinary size, or with a small or contracted pelvis. He thought that these difficulties were due to the position of the child's trunk, and

recommended, after a moderate trial with forceps, podalic version in the treatment of these cases.

Herman said that the position of the trunk caused extension of the spine, which led to extension of the head.

Peter Horrocks agreed that the tendency in these cases was at first towards extension, but after further descent into the pelvis the head tended to be flexed by the uterine forces. The treatment depended upon the mobility of the fœtus; when there was little or no mobility the proper treatment was not rotation, nor version, but craniotomy.

2. Retraction of the uterus in labour.

Demelin (*L'Obstét.*, January 15, 1898), has published some instructive observations on this serious phenomenon. Putting aside cases where ergot is abused, retraction is observed (1) just before expulsion of the placenta, whether Bandl's ring or the whole uterus retracts and incarcerates the placenta; (2) when the fœtus is still in the uterine cavity, entirely or partially above Bandl's ring; (3) before rupture of the membranes. Of the third and rarest condition Demelin gives two cases. The first patient was a phthisical primipara with great pelvic deformity. Labour set in spontaneously during the seventh month. Demelin detected two tumours, one above the other. The superior tumour extended to above the umbilicus; it felt like contracted uterus, and no fœtal outlines could be distinguished. The lower one fluctuated, and was taken for a distended bladder till the use of the catheter made no difference to its bulk. The membranes were found filling the vagina and presenting at the vulva. The os was completely dilated. The hand was passed with ease into the lower flaccid segment of the uterus. The membranes were then ruptured, and a great quantity of liquor amnii, stained with meconium, came away. A small fœtal head was found, feeling like the clapper of a bell, at the top of the lower segment, Bandl's ring constricting its neck and the prolapsed funis. The head was seized with a basiotribe, and the dead fœtus delivered after strong traction. The placenta came away naturally.

The second case was a very similar one.

3. Peritoneal symptoms in breech presentations.

Crouzat and **Lop** (*Annales de Gynéc. et d'Obstét.*, June, 1897) were called to see a multipara suffering from severe symptoms. For a fortnight she had been troubled with incessant vomiting, great abdominal tenderness, dry tongue, profound debility, and the facies of peritonitis. The temperature was subnormal, the pulse 140. Lop succeeded in effecting version by external manœuvres, and at once all the bad symptoms disappeared, and the patient

was delivered normally at term. **Grynfelt**, in discussing this case, remarked that undoubtedly such grave complications were not the rule in breech presentation, but admitted that the treatment proposed by Lop and Crouzat had not been thought of before. **Budin** knew of a case of breech presentation where hypochondriac pain caused by the fœtal head was overlooked, an imaginary pleurisy being treated with promptness and vigour.

4. Apnœa of premature infants.

Audebert (*Journ. de Méd.*, September 12, 1897) describes a new method of treatment for this condition. The method is a simple one, and can be continued for a long time without fatigue. The operator sits in a low chair with his knees crossed, and the child is laid on its back across the upper knee, so that the head and shoulder project to the right and the pelvis to the left. The head and neck are supported by one hand, whilst the lower limbs are passed into the other. The head and neck are both drawn downwards, so as to put the child's body in a position of opisthotonos. The thorax is thus made to project, and the diaphragm descends. The head is then raised up so that the chin comes in contact with the sternum, and at the same time the legs are also raised and the flexed thighs pressed into the abdomen. These two movements, which represent inspiration and expiration, should be executed gently and regularly eight or ten times a minute. In the apnœa of premature children Audebert combines this treatment with the subcutaneous injection of ether.

DISEASES OF THE SKIN.

By Malcolm Morris, F.R.C.S.Ed.,

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There is no marked progress to record in 1898 in the therapeutics of the skin. The tide of progress flows more strongly at one time than at another, and this year has been a period of slack-water in dermatology. The Dermatological Section at the annual meeting of the British Medical Association in Edinburgh was more largely attended than on any previous occasion of the kind. Dr. Allen Jamieson's presidential address on "The Application of Rest in the Treatment of Diseases of the Skin" was remarkable alike for its philosophic breadth of view and for its practical usefulness. The discussions were well sustained, and the proceedings were followed with keen interest by numerous practitioners whose sphere of professional activity is not confined within the comparatively narrow limits of diseases of the skin. Another noteworthy dermatological event of the year is the publication of the "Transactions of the Third International Congress of Pathology held in London in August, 1896" (Waterlow and Sons, 1898). The Editor, Dr. J. J. Pringle, the General Secretary of the Congress, is to be congratulated on the great ability with which he has discharged the most troublesome and too often thankless task of collecting, arranging, and seeing through the press so large and heterogeneous a mass of material in various languages.

Another book which has appeared during 1898 deserves particular mention. This is **Dr. L. Brocq's** "Traitement des Dermatoses par la Petite Chirurgie et les Agents Physiques" (Paris: Georges Carré et C. Naud). The minor surgical methods described are local anæsthesia, scraping, scarification, and the cautery. A section is devoted to electricity, and the uses and indications of electrolysis, galvanisation, faradisation, sinusoidal currents, statical electricity, franklinisation, currents of high frequency and intensity are fully discussed. The therapeutic uses of the X rays, of light, and of hot air are dealt with in separate chapters. The book is a most valuable contribution to dermatological therapeutics.

I propose to review very briefly, first, some contributions to the general therapeutics of the skin; secondly, some new methods which seem to be of importance; thirdly, some new remedies.

1. Rest in the treatment of skin diseases.

In his presidential address on this subject at Edinburgh, already referred to, **Dr. Allan Jamieson** began by pointing out that perfect rest in the sense of absolute inactivity is impossible in the case of the skin. The renewal of the integument and the secretion of its glands are uninterrupted during life. Rest consists in the removal of irritants, internal or external, mental or bodily. Therefore all external causes which may be suspicious are to be eliminated, by correction of dietary, by cutaneous sedatives, of which antimony may be taken as a type, by hæmatinics, and by agents which influence metabolism, such as arsenic, or flush the sudoriferous canals, as pilocarpine. In seborrhœa, where the quietude of the skin is disturbed by increase of secretive energy in the glands, rest must be procured in the first place by removal of the accumulation of oil and degenerated epidermic scales, but besides removing these causes of irritation, anæmia must be corrected by toning up the soil, not merely by iron to enrich the blood, and by mercury to neutralise the syphilitic virus, should that be present, but by ergot or ichthyol to constrict the vessels of the periglandular plexuses; locally sulphur, which has a desiccating effect quite apart from any antiparasitic one, and the astringent action of cold water should be employed. Hyperidrosis weakens the tissues "by converting the integument into a swamp." The keratoplastic properties of small quantities of salicylic acid, 3 per cent., in a bland pulverulent medium as powdered talc or orthoform will "give rest to the weary sole." In itching conditions of the skin in children, *e.g.* lichen urticatus, Jamieson prescribes either mere ablutions with gruel or with a superfatted naphthol soap; cotton or flannelette to be worn next the skin, with inunction of starch made with double the quantity of glycerine of that in the Pharmacopœia, medicated by the addition of naphthol, camphor, chloral, tumenol, or resorcin. Internally antipyrin, in small doses at night, is valuable in promoting sleep. In senile pruritus, pilocarpine internally is useful. Glycerine of starch is likewise a valuable adjuvant, and temporary relief at least can often be procured by gentle ablutions with a superfatted menthol soap. Eczema should be treated on the same principles, as far as these can be applied, as an internal catarrh. "Just as in bronchitis we endeavour to soothe the inflamed and irritated

mucous membrane by keeping the air of the apartment moist and warm, so in eczema we envelop the raw, denuded, leeting surface with a soft bland aseptic medium, a starch jelly with which is combined a proportion of boric acid, the least irritating, if perhaps the weakest, of our available correctors of putrefaction." The infiltration which is one of the most obstinate characteristics of eczema, often melts down marvellously under the continued employment of the boric starch jelly. When a limb is the part affected one of the most efficient methods of causing absorption of the infiltration is by closely enveloping it in strips of the salicylic soap plaster introduced by Pick. In the treatment of erysipelas Jamieson speaks highly of ichthyol, which he has never known to fail. It should be applied in the form of a 25 per cent. ointment made up with chalk and vaseline, the part being afterwards covered with cotton wool.

2. Therapeutics of diseases of the skin.

In a presidential address before the Dermatological Society of Great Britain and Ireland, **Crocker** (*Brit. Journ. Derm.*, July, 1898) reviewed some of the principal improvements made during the last twenty years. In looking over the therapeutic gains he took as an example, first, the common boil. Previously, some thought boils were the effect of too high living, and kept the patients down with restrictions as to diet and alcohol; others again, held that they were the sign of vital depression, and kept the patients up with tonics, port wine, etc. A number of empirical remedies, *e.g.* calcium sulphide, yeast, etc., were used by some—why, no one knew, and, lastly, the pernicious habit of poulticing was adopted by many. When the discovery was made that boils were due to the local invasion of pus cocci into the follicles of the skin, then the mystery of the ætiology became clear, and treatment was simple. Persistent local disinfection of each boil is now the treatment, which, as a result is considerably shortened to what it used to be. Affections allied to boils, viz., carbuncles, ecthyma, impetigo contagiosa, etc., are treated similarly. So the aim in all this new treatment is to destroy the pus cocci which set up the inflammation. Whenever the skin is disturbed by inflammation or other lesions, it is liable to be invaded either from without by various bacteria, or from organisms normally dwelling in the skin itself. Examples of this are shown in multiple gangrene of children following varicella, vaccinia, etc. Treatment similar to that described for boils and carbuncles is applicable here.

The part played by secondary invasion of organisms is of importance in chronic eczema, and explains the success of Hebra's tar bath in these cases. Thyroid extract, which has proved

successful in some diseases, is a drug which had a marked effect on the nutrition of the skin. Crocker asked whether, since external antiseptics had been so successfully used, similar effects could not be obtained by internal remedies. Something had been done in this way, *e.g.* by intramuscular injections of mercury. Other diseases, viz., leprosy, psoriasis, and lupus, had also been treated in a similar manner, but at present with only partial success. He also referred to the fact that some drugs which broke up in the body and set free substances which had a microbic action were of use in some skin diseases, *e.g.* salicylin, which set free salicylic acid in the circulation, and ichthyol, which set free sulphur. Foul perspiration had been shown to be due, not to the excretion of foul sweat, but to the decomposition of the sweat after excretion by the bacterium fetidum, and local antiseptics should prevent this. Sulphur administered internally both prevents the smell and diminishes the excess Since sulphur is eliminated by the skin, it therefore practically sterilises the sweat. With reference to the toxins, *e.g.* tuberculin, the results are as yet too uncertain to make any definite statements.

3. The use and abuse of internal remedies in the treatment of skin diseases.

In an address which I had the honour of delivering to the Pathological Society of Reading on October 6th, 1898, I pointed out that, though on account of their convenience and precision in application, local remedies are now largely used in dermatological practice, internal medicines are useful when employed in response to definite indications, and not administered more or less at random on the chance of hitting some blot in the constitution on which the cutaneous affection may be supposed to depend. The alteratives most generally of service in my experience are arsenic, antimony, and mercury. Arsenic does good in chronic eczema and similar conditions, but should never be given in acute cases. Antimony, on the other hand, is beneficial in subduing inflammation. Ichthyol has a peculiar property of controlling vascular tension, and is, therefore, useful in rosacea and other conditions characterised by vaso-motor disturbance.

4. Concentrated light rays.

At the Congress for the Study of Tuberculosis held in Paris in the summer of 1898, **Bang** said that Niel R. Finsen, of Copenhagen, when making microscopic observations of the circulation in the living tadpole's tail, noticed that under the influence of light (the effects of heat rays being excluded) the flat elliptic red corpuscles become spherical and smaller. Bang confirmed these experiments, and found, moreover, when

the rays were sufficiently powerful, the corpuscles became fragmented and gave rise to part of the pigment deposited in the skin. In another research, Finsen found there was some relation between the quantity of hæmoglobin in the human blood and the chemical energy of the sun according to season. As early as 1859 Charcot expressed the opinion that eczema solare was not due to the heat of the sun's rays, but to the chemical luminous rays. This has since been demonstrated by other observers. These and other experiments led Finsen to treat smallpox by means of red light, the blue, violet, and ultra-violet rays being excluded. This method has now been applied in some 200 cases by various medical men, and always with good results, when the directions laid down by Finsen were followed. The temperature falls and no scars are left. This may be called negative photo-therapy, as the essential thing is to exclude certain rays. Three years ago, however, Finsen introduced a positive photo-therapeutic method by directly employing the electric rays to the following ends:—(1) To produce a specific reaction in the skin; (2) to endeavour to destroy the micro-organisms. The bactericidal influence of light is now a well ascertained fact—thanks to the work of Downes, Blount, and others. This led Finsen to use the electric rays in the treatment of lupus vulgaris in those obstinate cases which had resisted other measures. (See *Brit. Journ. Derm.*, October, 1898; *Monatsh. f. prakt. Derm.*, Bd. xxvii., July, 1898; and *Presse Médicale*, No. 65, 1898.)

Finsen's method consists in the concentration of sunlight or luminous rays from an arc lamp through a series of powerful lenses, between two of which is placed a solution of methylene blue, which shuts off the hotter but less chemically active rays—to wit, the ultra-red, red, orange, and yellow. The arc lamp is hung in the centre of four similar pieces of apparatus so that four patients can be treated at the same time. The bactericidal action of the light is found to vary as its concentration; with a strength of current of 25 ampères Finsen was able to weaken bacteria in four or five minutes, and kill them in fifteen to twenty. He found that the penetration of the tissues by light was impeded by the blood, and he therefore rendered them anæmic by pressure before exposing them. He has applied the method to the treatment of lupus vulgaris in 59 cases, in 23 of which a complete cure is claimed, while in all the rest, without exception, great improvement has taken place. His plan is merely to expose a portion of skin about the size of a halfpenny to the concentrated light for one or two

hours a day, the treatment lasting from a few days to several weeks. If recurrence is noted after some months, a further course is prescribed. The application of the rays causes an immediate hyperæmia of the parts treated, and at times a formation of vesicles followed by desquamation. When a lupus nodule or patch has been subjected to this treatment for a sufficiently long time, the raised edges become level, the hyperæmia disappears, and the skin recovers its normal aspect. Ulcerated patches cicatrise. Extension of the disease is said to be always checked by the treatment. So hopeful is the method considered to be that the Danish Government has endowed Prof. Finsen's institute with a sum of 20,000 kroner. Strong testimony to the success of the treatment is borne by Dr. Emil Popper in a recent number of the *Wiener medicinische Presse* (No. 46, 1898).

5. The Roentgen rays.

Dr. E. S. Schiff, at a meeting of the Imperial Royal Medical Society of Vienna on November 11, 1898, showed a case of lupus erythematosus which had almost entirely cleared up after two months' treatment with the Roentgen rays; one portion of the disease which had been left untreated served by contrast to illustrate the value of the remedy. Dr. Schiff stated that he had had good results in the treatment of lupus vulgaris by this method, which was applicable to much larger surfaces than that of Prof. Finsen, the value of which he was also able to substantiate. Prof. Kaposi spoke highly of both methods and attributed their action partly to the hyperæmia induced, as in the case of insolation, and partly to chemical changes set up in the cells.

Kümmell (*Arch. f. klin. Chirurgie*, Bd. lvii., Heft 3) has treated ten cases of lupus with the X rays. He says that recovery proceeds with more certainty and rapidity in proportion as we avoid burning the skin by the rays, this accident always necessitating interruption. Favourable results are not to be explained by the dermatitis which sometimes occurs, nor by any specific action. The strength of the rays and nearness of the tubes have no special significance therapeutically. The rays have some direct action upon the lupus tissue; possibly electro-chemical or trophoneurotic. The foregoing propositions may also be affirmed of the concentrated light, and the therapeutic results are equally as good. The scarring which follows the rays is far smoother than that which follows any of the older plans, and up to the time of writing the author has observed no contractions in connection with scarring.

6. Serum-therapy.

Fileti and **La Mensa** (*Giorn. Ital. delle Mal. Ven. et della Pelle*, Fasc. i., 1897, p. 89 ; *Brit. Journ. Derm.*, October, 1898) tried the effects of Maragliano's anti-tubercle serum in ten cases of lupus and scrofulodermia. Both subcutaneous injection and local application of the serum were made use of in different cases. In one case, a healthy child of nine years, whose lesion consisted in a patch of lupus on the hand, complete cure resulted in a period of forty-six days, during which time six injections of serum were given, and latterly local application of the serum was employed. In none of the other cases, however, did any good appear to result from the treatment, so that probably in the one case apparently benefited, the recovery was only a coincidence. The authors conclude that either serum treatment of local tuberculosis is useless, or that these affections, commonly regarded as tuberculous, are not so in reality.

Brocq (*op. cit.* p. 263 *et seq.*) cites cases reported by other observers in which the Roentgen rays have been used with benefit in acne, rosacea, and lupus vulgaris. He thinks the results so far obtained are sufficient to show that the method will be of real service when the mode of application is better understood.

7. The new tuberculin.

In "The Year-Book of Treatment for 1898" (p. 352 *et seq.*) an account was given of the results of a trial which in conjunction with Dr. Arthur Whitfield I made of Koch's TR. in six cases of lupus vulgaris. I there stated that I had never seen any treatment do anything like so much good. "The change for the better in the affected parts was in most cases a veritable transformation." Further on, however, it was stated that, as the pages of the "Year-Book" were passing through the press, "in all the cases but one the good effect seems to have become exhausted." I have only to add that further experience has confirmed the feeling of disappointment with the new tuberculin hinted at in the words which have been quoted. As far as lupus vulgaris is concerned, the new tuberculin is little, if at all, better than the old.

8. Treatment of psoriasis and eczema by scarification.

Jacquet (*Bull. Gén. de Thérap.*, Jan., 1898) records successful results obtained by him from the superficial scarification of patches of psoriasis and eczema in certain cases. The patches are scarified in parallel lines, one to one and a half millimetre apart, in one direction only, with a very pointed instrument, penetrating to the superficial layer of the dermis. Bleeding is encouraged, and the scarified layers are bathed with boiled water, and then covered with tarlatan dipped in boiled water. When the patient reaches his home cold potato starch poultices are applied until the next sitting—generally three or four days later. A reaction is set up in the patches, but no scars result. Before commencing the treatment the patches are prepared by the application of continuous cold plain starch poultices. Six to sixteen sittings suffice to effect a cure. It is a treatment for special cases characterised by isolated discs in limited number. Infants bear the treatment without any discomfort.

9. Thyroid extract in sclerodermia.

In a paper on diffuse sclerodermia (*Journ. Cut. and Gen.-Urin. Dis.*, Feb., 1898), **Prof. William Osler** reviews the thyroid treatment of sclerodermia. In some of the cases treated with extract of the gland, the result was apparently successful, in others the treatment failed. In six cases under his own care the patients took thyroid gland extract for periods ranging from ten days to nineteen months. Altogether, his personal experience and the results recorded by others, do not, in his opinion, favour the treatment of the disease by the thyroid gland extract. "It may be tried without harm, and, should it fail, frictions and saline preparations should be used."

10. Treatment of lupus erythematosus.

In the Dermatological Section of the British Medical Association, one of the discussions was on "The Nature and Treatment of Lupus Erythematosus" (*British Med. Journ.*, Sept. 10th, 1898). The most notable contribution from the therapeutic point of view was made by **Unna**. As regards internal remedies, he said he could point to favourable results from the use of carbonate of ammonia, ichthyol and salicylate of soda in all cases in which a tendency to œdema and hyperæmia of the skin paralysed the effect of external applications. He added, however, that he would not like to state that the disease had in a single instance ever been cured by any of these internal remedies alone, without the aid of external means. He divided the external remedies in use in the treatment of lupus erythematosus into six categories. Three of these include mild remedies, which may be recommended in all cases : (1) The drying, (2) the compressing, and (3) those remedies which tend to reduce hyperæmia. Next there are two categories of much more doubtful value : (4) The necrotising, and (5) the inflammatory, and to these may be added (6) the specific remedies, still to be marked with a point of interrogation. The drying remedies rightly deserve a very wide application, either in

powder, paste or wash, with powdery precipitate. He is in the habit of giving, after a strong night treatment, the following mild powder of skin colour during the day :

Oxide of zinc
Boli rubræ
Boli albæ āā 2, 0.
Carbonate of magnesia āā 3, 0.
Amyli oryzæ 10, 0.
M. f. Pulvis cuticolor.

This can also be used with advantage round an obstinate and vigorously-treated patch, where peripheral œdema and extension are feared. Among the pastes the most important is the zinc sulphur paste, with the addition of ichthyol or cinnabar ; then the lead vinegar paste (litharge boiled in vinegar) or the following paste, which is very drying :

Past. zinci sulphuratæ 20.
Resorcini
Ichthyoli āā 1.
M. f. Pasta.

The compressing remedies form a second group, which act mildly and always effectively. The best of these is collodion. Next to this we have gelanthum, zinc gelatine, and, lastly, the compressing bandages introduced by Engmann and Unna. Most to be recommended are collodion and gelanthum, more so as vehicles for other good remedies—ichthyol, soft soap, and salicylic acid with collodion, and the same and caustic potash (1-1,000) with gelanthum, have proved of special value. It is necessary to take care that the collodion is perfectly neutral, as in many instances the collodion of commerce has a strongly acid reaction. For more indolent cases Unna prescribes

Collodii 20 Sap. virid. 2-4 M.	or	Collodion 20 Sap. virid. 2 Acid. salicylici 2 M.

For irritable cases :

Collodii 20 Ichthyoli 2	or	Collodii 20 Ichthyolsulfon. 2

A third group is formed by mild remedies which produce hyperæmia, induce dryness of the cutis without causing dryness of the surface or mechanical pressure. Among these are pyraloxin, chrysarobinum, oxydatum, ichthyolsulfon, mercury, pyoktanin, and, lastly, the soaps and alkalies. Pyraloxin, which Unna introduced two years ago for the treatment of lupus erythematosus, psoriasis and eczema, is a pyrogallol modified by oxidation, which has lost its inflammatory and toxic properties on the healthy skin, but yet lessens hyperæmia and inflammation in the diseased parts. Pyraloxin, oxidated chrysarobin, and mercury must be applied in the dry form of plaster mulls or pastes, and may be combined with drying remedies, namely :

Pasta zinci 20
Pyraloxini 2-5.
M. f. Pasta.

They may also be mixed with soaps, lathered on the skin, and then covered with a wet bandage.

Sapon. kalini unguinosi 20.
Ichthyol sulfoni 2-5.
M. f. Sapo unguinosus
S. Salve Soap.

Of the necrosing, ulcerative, and inflammatory groups of remedies, Unna does not speak with much favour.

J. Hutchinson (*Arch. of Surgery*, Jan., 1898) records a case of lupus erythematosus, presumably cured by the continued topical use of undiluted carbolic acid. The acid was painted over the edges of the patches once or twice a week, and boric acid ointment (gr. xx. to ʒj.) applied daily, and especially after applying the acid. Three-minim doses of Pearson's solution of arsenic were also given with nux vomica and tincture of orange peel. Hutchinson has repeatedly recommended carbolic acid as the safest and most effectual form of caustic to use for patients with forms of lupus, etc., who are not under close observation.

11. Injections of calomel in lupus.

Asselbergs (*Annales de Dermatologie et de Syphiligraphie*, vol. ix., No. 1, p. 10, Jan., 1898 ; *Brit. Journ. Derm.*, June, 1898), having treated twenty-five cases of lupus by injections of calomel, is led to the conclusion that their action upon true lupus is indubitably beneficial. All the cases treated have undergone various modifications, from simple reduction to complete disappearance of all lupic elements. The retrogressive influence is most marked after the first injections, and the infiltrations and ulcerative processes are the phenomena earliest and most successfully combated. It is chiefly in the treatment of old, ulcerative, turgescent, and deeply infiltrated lupus that the calomel injections render most service. In forms of erythematous lupus, erythemato-tuberculosis, and tuberculosis non-exedens, there is less hope from this remedy. The action of the injections upon the tuberculous nodules is uncertain. In many of Asselbergs's cases the cure was complete ; in others tuberculous nodules persisted, and had to be removed by galvano-cautery, etc. In two cases fresh foci of disease appeared after the cessation of the

remedy. On the whole, Asselbergs regards it as a valuable adjuvant to treatment. Certain cases, where ordinary therapeutics have failed, can be greatly benefited, if not cured. Other cases require a mixed treatment, viz. injections and cauterisations combined.

12. Thyroid colloid in lupus.

Pearce Gould showed not long ago to the Clinical Society (*Brit. Med. Journ.*, Nov. 5th, 1898), a woman, aged 47, who for years had suffered from lupoid ulceration of the face, with tuberculous lesions in other parts. The administration of tabloids of thyroid colloid caused complete healing over in three weeks. He stated that he had seen similar but less rapid improvement in other cases. **Pringle** expressed the opinion that thyroid colloid tabloids effected more improvement than anything else, but pointed out the tendency to relapse unless the treatment were continued indefinitely.

13. New remedies.

E. Kromayer and **H. Veith** (*Monatshefte für praktische Dermatologie*, Bd. xxvii., No. 1, July, 1898, p. 11) have been working at some new products derived from pyrogallol, chrysarobin, and resorcin; they are lenigallol, engallol, and saligallol (which are acetyl or salicylate compounds of pyrogallol), and lenirobin and enrobin (which are similar derivatives of chrysarobin). Their general conclusions are as follows :—

1. Lenigallol and lenirobin are at least as valuable as the substances from which they are made, and in addition they possess to a much smaller degree, or not at all, their unpleasant properties, such as poisonousness, tendency to cause irritation of the skin or conjunctiva, and staining of the clothes. It is evident, therefore, that they can be widely used. Lenigallol is extremely useful in acute and subacute cases of eczema, especially in children.

2. Engallol and enrobin are the most powerful "reducing" substances known; but, as they possess all the undesirable qualities of the substances from which they come, they must be used with great precautions.

3. Saligallol has the action of pyrogallol, but to a slighter degree. Its value is, however, due to its resinous consistence, so that it forms an excellent skin varnish, which can be used as a vehicle for engallol and enrobin, or for other drugs.

14. Chinosol.

A. Beddies and **W. Tischer** (*Allgemein. med. central. Zeitung*, 1896, Nos. 59 and 60; *Treatment*, Oct. 27, 1898), in a paper on the various uses of this antiseptic, give the following prescription for its employment in some skin diseases :—

For Sycosis.

Chinosol	2 parts.
Ichthyol	1 part.
Acid. salicyl.	1 ,,
Lanolin	40 parts.

For Acne, Comedones, Etc.

(*a*)	Chinosol	1 part.
	Amyli	10 parts.
	Vaselin	10 ,,
(*b*)	Chinosol	5 parts.
	Hydrarg. perchlor.	1 part.
	Vaselin	200 parts.

For Eczema, Herpes, and Psoriasis.

(*a*)	Chinosol	1 to 20 parts.
	Pulv. amyli	50 ,,
	Zinci oxidi	50 ,,
	Lanolin	80 ,,
(*b*)	Chinosol	1 to 10 parts.
	Pulv. amyli	10 ,,
	Zinci oxidi	10 ,,
	Vaselin	10 ,,

For Alopecia.

Chinosol	1 part
Resorcin	1 ,,
Zinci oxidi	1 ,,
Amyli	1 ,,
Vaselin	3 parts.

For Hyperidrosis.

Chinosol	1 part.
Amyli	9 parts.
Talc	40 parts.

DISEASES OF THE EYE.

By Henry Power, M.B., F.R.C.S.,

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The use of the Röntgen rays in ophthalmology.

At the sixty-sixth annual meeting of the British Medical Association (*Brit. Med. Journ.*, Aug. 20, 1898, p. 481) **Dr. Mackenzie Davidson** gave a demonstration of the employment of the cathodic rays in ophthalmology. He stated that he had used these rays in forty-one cases of foreign bodies with satisfactory results. His method was based on getting the three co-ordinates of any point; if these were found, the position of the point could be ascertained. In the apparatus two knitting needles, one horizontal, the other vertical, were used as two of the planes; the photographic plate made the third plane. The patient's head was fixed in the apparatus, and he was directed so to look that his visual axis was parallel to the horizontal needle. A loop of lead wire was previously fixed to the patient's lower eyelid by sticking-plaster; the point of the wire projected upwards and formed the landmark from which the position of the foreign body in the eye was calculated. The Crookes tube was placed on a sliding scale, and two plates were taken, the tube being moved forward 6 cent. for the second exposure. The two photographs thus obtained could be placed in stereoscopic relief. The tube used must emit the light from a very fine point, and the exposure must be short. He had been very successful in determining the location of the foreign body by this means. Mr. Cargill, Mr. Treacher Collins, and others, had employed the same apparatus, and bore witness to the accuracy of the results obtained. In the discussion that followed, Dr. Reeve, of Toronto, spoke of Dr. Sweet's success with an instrument he had devised, consisting of an aluminium frame to hold the sensitive plate, which was fastened by bands to the side of the head corresponding to the injured eye. It also carried two metallic indicators—wires ending in tiny knobs, set so that one was opposite the centre of the cornea, the other being towards the outer canthus on the same horizontal plane. Two negatives were taken, one with the tube and the two indicators on the same level, and the second with the tube 30°

below. The tube was somewhat in front of the plane of the eyes, about 13 inches from the plate, and on the opposite side of the head to the latter. Two diagrams (circles) were drawn on paper of the size of the globe, one a horizontal section and the other vertical, and the three necessary measurements were made out from the relative position of the knobs and foreign body in the two skiagraphs. Dr. Reeve stated that Dr. Leonard, of Philadelphia, had succeeded by a different method—namely, by utilising a fixed point on the temple, taking several skiagraphs, and then making calculations based on a series of triangles.

NEW REMEDIES.

1. Euphthalmin.

This drug, obtained from a chemical firm (formerly Schering's, in Berlin), is recommended on various grounds by **Dr. Winselmann.** He has used it in solution containing 5 and 10 per cent., and finds that in the course of six minutes the 10 per cent. solution, in experiments made on himself, begins to produce mydriasis, and in nine minutes the mydriasis is complete. The accommodation was scarcely affected, and there was hardly any disturbance of vision: so little, indeed, that he was able to read for four hours continuously without inconvenience, after complete mydriasis had been established. Euphthalmin mydriasis is not accompanied by any change in intra-ocular pressure. The drug does not produce any poisonous symptoms, nor has it been observed to excite any irritation in the conjunctiva or cornea. The dilatation of the pupil produced by it quickly passes away.

2. Protargol, or proteinate of silver.

Dr. Ed. Pergens (*Zehender's klin. Monatsblätter*, Bd. xxxvi., April, 1898, p. 129), of Brussels, describes protargol as a yellowish-white powder, soluble in two parts of water, producing a brownish solution, and containing 8·3 per cent. of silver. It is chiefly composed of proteids. It is not decomposed by either acids or alkalies, nor by the alkaline sulphides. It is not precipitated by sodium chloride, bromide, or iodide, but it is precipitated by chromic acid. It can be obtained from F. Bayer & Co., Elberfeld. It is said to be serviceable in cases of catarrhal conjunctivitis, in 2 per cent. solutions applied five or six times daily, also in cases of blennorrhœa neonatorum, and of dacryocystitis. The time required to effect cures in these cases, however, seems to be considerable, and to show that the remedy is not a very potent one. **Dr. Darier** (*La Clinique Ophtalmologique*, 4e Année, No. 6, 1898, p. 61) nevertheless strongly recommends it in cases of conjunctivitis with purulent secretion, and especially as a means of effecting a rapid cure in

cases of purulent ophthalmia caused by the gonococcus—the more rapid, in fact, in proportion to the concentration of the solution and the frequency of its use. It is superior to silver nitrate in having no corrosive or caustic action on the conjunctiva, even when the strength of the solution is 50 per cent. It does not precipitate the albumin, nor is it precipitated by the sodium chloride of organic liquids, but diffuses itself into the epithelial cells, where it enables the silver to exert its fatal action on the bacteria. Dr. Darier finds it to be not only almost a specific for gonorrhœal ophthalmia, when its use is commenced at an early period, but he has also found it very serviceable in conjunctivitis of all degrees of severity, from simple conjunctivitis to trachoma, and even in inflammations of the lacrymal sac. He usually commences the treatment with 5 per cent. solutions, the strength of which is gradually increased.

3. Hydrobromate of arecolin.

At the meeting of ophthalmologists at Moscow (reported in the *Archives of Ophthalmology*, vol. xxvii., p. 104, 1898) **Signor Lavogna**, of Monaco, recommended the use of this drug as a myotic, which he states he has found to possess all the good qualities of eserin, whilst it acts more quickly. It produces extreme contraction of the pupil in ten minutes, and this remains for twenty-five minutes. It is somewhat irritating to the conjunctiva.

4. Holocaine.

In a paper read in Edinburgh before the Ophthalmological Section of the British Medical Association, of which an abstract is given in the *British Med. Journal*, Sept. 3, 1898, p. 619, **Dr. James Hinshelwood** gives the results of his observations. Holocaine is a derivative of paraphenetidin, and is a strong base insoluble in cold water, but readily soluble in alcohol and ether. The chlorohydrate is recommended by Täuber, by whom it has been introduced into practice as an excellent anæsthetic for the eye. The advantages claimed for it by Dr. Hinshelwood are that in 1 per cent. solution it produces complete anæsthesia of the cornea and conjunctiva in from fifteen to thirty seconds after instillation; that the anæsthesia produced lasts about ten minutes; that it only produces a slight feeling of burning and hyperæmia on instillation, which rapidly passes off; that it does not produce any alteration in the size of the pupil; that there is no disturbance of the accommodation; that there is no alteration in the tension of the eye; and lastly, that it does not in the slightest degree cause any change in the corneal epithelium. Dr. Hinshelwood has found it very serviceable in operations on the eye, and also as a means of relieving pain and blepharospasm, and thus facilitating

the examination of the eye in cases of conjunctivitis, phlyctenular affections, and keratitis. The chief objection to the remedy is that it requires to be freshly made up, as it spoils in the course of a week. The merits of holocaine in 1 per cent. solution as a substitute for cocaine were also advocated by **Dr. Natanson**, of Moscow (see "Report of Moscow International Congress" in Knapp's *Archives of Ophthalmology*, vol. xxvii., p. 108, 1898), who finds that its action is rapid and permanent without pupillary dilatation, paralysis of accommodation, desiccation of the cornea, increase of tension, or dilatation of the palpebral fissure. It is also cheaper than cocaine.

5. Atroscin (*Zehender's klin. Monatsblätter*, January, 1898, p. 22) is a remedy proposed by **E. Schmidt** of Marburg, and is allied to scopolamin, differing only in the different proportions it contains of water of crystallisation and its optical properties, the optically inactive atroscin bearing the same relation to the active scopolamin that the optically inactive atropin bears to the optically active hyoscyamin. Atroscin acts more readily than scopolamin in producing both dilatation of the pupil and in paralysing the accommodation, and much more vigorously than atropin. Thus in iritis a 0·1 per cent. solution of atroscin acts more energetically than a 1 per cent. solution of atropin, and a single instillation will sometimes break down synechiæ that have resisted scopolamin for days. The use of atroscin requires care, as toxic symptoms, faintness, and slight vertigo are sometimes felt.

6. Long known and recent mydriatics.

Dr. C. H. de Bourgon (a report of whose paper, contributed to the Congrès des Sociétés Savantes, 1898, is contained in the *Recueil d'Ophtalmologie*, 3 Ser., 20e Année, No. 7, July, 1898, p. 398) observes that the use of mydriatics is mentioned by Hippocrates, Aristotle, Celsus, Scribonius Largus, Pliny, Aretæus, Galen, and others amongst the ancients, hyoscyamus being specially referred to by the last-named author. Seventeen centuries later, MM. Wecker and Landolt, in their "Traité Complet," mention five mydriatics—atropin, homatropin, duboisin, hyoscyamin, and gelsemin. M. Bourgon has ascertained the mydriatic power of the following:—Aconitin, obtained from Aconitum napellus; echujine, a glycoside from the Adenium Bœhmianum, one of the family of Apocynaceæ; the active principle of anemone pulsatilla, a neutral substance; the active principle of anemone pratensis (Pulsatilla nigricans); apomorphine; atropin; berberin, which can be extracted from many plants besides the common barberry, as from the ranunculaceous plants

xanthorhiza apiifolia, helleborus teeta, hydrastis canadensis, and thalictrum flavum, and from several menispermaceous plants: caffein; cicutine, from conium maculatum, one of the Umbelliferæ; cocain, from erythroxylon coca, one of the Linaceæ erythroxylaceæ; daturin, from datura stramonium, a solanaceous plant; delphin, from delphinium staphisagria, one of the Ranunculaceæ; digitalis, from digitalis purpurea, one of the Scrophulariaceæ; duboisin, from duboisia myoporoides, a solanaceous plant; ephedrin, from ephedra vulgaris, one of the Gnetaceæ; ethylatropin; gelsemin, from gelsemium sempervirens, one of the Loganiaceæ; helleborein, from helleborus niger, one of the Ranunculaceæ; helleborin, a glycoside extracted from helleborus viridis, one of the Ranunculaceæ; homatropin hygrin, from erythroxylon coca; hyoscyamin, from hyoscyamus niger and H. albus, belonging to the Solanaceæ; hyoscin, from the same plant; isatropylcocain, an alkaloid obtained from coca; japaconitin, obtained from aconitum japonicum; jervin, an alkaloid extracted from veratrum album, one of the Liliaceæ; narceine, one of the opium alkaloids; nitro-atropin and nitro-daturin, obtained by the action of fuming nitric acid on atropin and daturin; narcissin; napellin or nepalin, the alkaloid of aconitum ferox, one of the Ranunculaceæ; pseudo-ephedrin, existing together with ephedrin in ephedra vulgaris; piturin, obtained from the bulbs of duboisia Hopwoodii, one of the Solanaceæ; rotoin, or scopolin or scopolein, a glycoside contained in the root of scopolia japonica or roto, one of the Solanaceæ; santonin, obtained from the flowers of the composite plant artemisia maritima; solanin, obtained from several solanaceous plants, as solanum nigrum ferox, dulcamara and lycopersicum; spigelin, from the stems of spigelia marilandica, one of the Loganiaceæ; an alkaloid obtained from sucupira or Bowdichia major, one of the papilionaceous-leguminous plants; thalictrin, from the ranunculaceous plant, thalictrum macrocarpum; tropa-cocain, from erythroxylum japonicum, one of the Erythroxyleæ; tulipin, from the liliaceous plant; tulipa vulgaris ulexin or laburnin, found in the leguminous plants ulex europæus and cytisus laburnum; veratrin, found in veratrum sabadilla and v. viride, belonging to the Ranunculaceæ, and veratrum album, one of the Colchicaceæ; yerba del perro, a Mexican composite plant; and zigadenus venenosus, a South American plant belonging to the Colchicaceæ. Some of these alkaloids are identical, as scopolin and rotoin, and several, as atropin, hyoscyamin, hyoscin, duboisin, scopolein, and daturin, are isomeric, having the formula $C_{34}H_{23}NO_6$. Some of them paralyse both the sphincter iridis and the ciliary muscle.

7. Action of atropin in epileptics.

MM. Ch. Féré and **Ch. Laubry** (*Recueil d'Ophtalmologie*, No. 7, July, 1898, p. 385) remark that the paralyses which succeed epileptic attacks are now generally admitted to be due to exhaustion of the cerebral cortex. M. Féré has elsewhere shown that not only voluntary movements are weakened after an epileptic attack, but most of the organic functions. Amongst these, the reaction of the iris to atropin may be mentioned. The authors of the article have made some researches on this point. They employed a watery solution of atropin sulphate containing 0·00076 grm. to each drop, which was dropped into one eye only. They observed on several occasions after the lapse of five or six minutes a slight contraction of the pupil in the eye receiving the drop, though both eyes were equally exposed to the light. Two or three minutes before the pupil expanded on exposure to light, it was found to be more dilated than the other when the lid was raised, and remained dilated longer. Twelve patients had a drop of the solution instilled into one eye, once at a period remote from the epileptic attack; seven had an instillation made about one hour after an attack; seventeen had two instillations—the first time just after an attack, and the second time several days after an attack; eleven patients had two instillations, the first a long time after an attack, the second time just after an attack. The results of the experiments showed that in all the cases the dilatation is more prompt when the instillation is made just after the attack than when it is made at a remote period. The paralysing action of atropin is therefore favoured by the attack.

8. The mode of employment of pilocarpin.

Dr. E. Herbert Burnham, of Toronto (*Archives of Ophthalmology*, edited by Dr. Knapp, Dr. Schweigger, and Dr. W. A. Holden, vol. xxvii., No. 2, p. 175, 1898), is of opinion that pilocarpin is a remedy possessing great possibilities when used either alone or combined, not only in cases of eye disease, but in affections of other parts of the body. He holds, however, that a certain routine should be followed if the best results are to be obtained. The strength of the solution he uses is 5 grains to 1 drachm of water; the dose varies from $\frac{1}{12}$ gr. to $\frac{1}{4}$ gr. By always dipping the needle into a lotion of carbolic acid containing one part in twenty, he finds the same formula can be injected for the whole group without perceptible soreness. The injections are given daily in groups varying from six to twenty-one, unless nausea, headache, or oppression over the cardiac region is experienced, in which case it is stopped for one or two days. No stimulants

are required. The temperature of the room should be about 75° F. Flannel sheets are put on the bed with the ordinary amount of additional bedclothes only. The patient is clad in a flannel suit of underclothing, with a mug to catch the saliva. The injection is then made and the patient well tucked in. Profuse perspiration of the whole body with a free flow of saliva should always follow. In the course of two or three hours the reaction has, as a rule, quite disappeared. On rising, he is wiped dry with warm towels. He is allowed to go about the house, but not into the open air. A moderate meal is then to be taken. The interval between the groups of injections varies from three to eight weeks. Pilocarpin has, he believes, a strong and direct action upon the nerve centres, influencing the absorbent processes, rendering them very active and also exceedingly sensitive to external and internal impressions. One cause at least of the beneficial action of pilocarpin is the power of arousing very greatly increased physiological activity. The apparent inertness or the very limited effect in the case of many medicines—as, for example, potassium iodide and mercury—may be due to the inability to arouse this increased physiological activity. As soon, however, as a medicine is added which can do this, then immediate good results follow. Hence, in order to get the best results from pilocarpin, it should be associated with other medicines suited to the disease.

9. Subconjunctival injections.

A discussion on the therapeutic value of subconjunctival injections was introduced by **Prof. Pflüger** at the Ophthalmological Session of the Moscow Congress (see Report by A. Nieden, in Knapp's *Archives of Ophthalmology*, vol. xxvii., p. 106). This mode of treatment was first proposed by Prof. Donders. The strength of sublimate solutions should not be greater than 1 : 40,000 or from that to 1 : 4,000. Amongst other substances that have been employed are cyanide of mercury, salicylic acid, iodine trichloride, sodium salicylate, and ordinary salt solution. The best results are obtained where such injections are used in cases of infectious processes occurring in the eye or cornea. Prof. Darier considered that mercuric chloride and cyanide used as injections possess marked antiseptic power. The fluid he injected consisted of mercury cyanide 0·1, sodium chloride 10, and water 500, a drop or two being injected at a distance from the cornea. In infectious corneal ulcers they afford, with the galvano-cautery, a rapid and sure means of saving the healthy tissue and restoring what is diseased. In cases of macular choroiditis, Prof. Darier has found that a few injections often restore vision promptly and cure

rapidly. Dr. Alonso, of Mexico, had found them serviceable in cases of retinal detachment, as in infectious corneal ulcers and in chronic choroidal and retinal disease.

10. The treatment of trachoma.

Professor Dr. Hoppe remarks (*Zehender's klinische Monatsblätter für Augenheilkunde*, Bd. xxxvi., July, 1898, p. 225) that excellent results are said in reports to have been obtained by very different methods of treatment of this disease. Unfortunately, however, the benefits do not appear to last much longer than the period during which the patient is detained in hospital. He has been able to follow up no less than 272 cases in which excision of the tarsal fibro-cartilage had been practised for trachoma. Of these, 34·3 per cent. were cured, 12·8 per cent. had catarrh, 40 per cent. follicular inflammation, 8·1 per cent. follicular disease and pannus, and 4·8 per cent. pannus and catarrh. The best results were observed in young subjects, especially if the disease was recent, and in such cases the cure was effected upon the average in forty-three days. Bad results were rare, and complete loss of the eye occurred in only three cases, and in two of these it appeared to be due to intercurrent measles. The operation does not confer immunity from recrudescence of the trachomatous state if the patient be placed under unfavourable hygienic conditions. It should not be adopted indiscriminately; but when other measures have been adopted and have failed, Prof. Hoppe thinks it is deserving of trial.

11. Therapeutic indications afforded by bacteriological examination of the conjunctival secretions.

M. Darier (*Société d'Ophtalmologie de Paris*, June 7, 1898; *Recueil d'Ophtalmologie*, No. 7, 1898, p. 413), in a paper read before the French Ophthalmological Society, states that for two years he has made a practice of examining the secretion of the conjunctivæ in various cases presenting themselves in the clinic of M. Abadie. He finds that acute catarrhal conjunctivitis is characterised by the presence of Week's bacillus, and is in general cured in two or three days by daily cauterisation with protargol. Sub-acute conjunctivitis accompanied by the diplobacillus of Morax is at first rapidly ameliorated with the protargol, but relapses are frequent, the membrane appearing to become habituated to it. The treatment in such cases should be changed, and M. Darier has tried zinc sulphate, but it did not prove satisfactory, and he exchanged it with good results for acetate of lead and ichthyol to one-tenth, either in watery solution or in oil.

In the case of purulent gonococcic conjunctivitis brilliant

results were obtained from the protargol treatment employed twice daily even in the most virulent forms. At the same time if the treatment was intermitted before fifteen days the disease reappeared. In two cases of acute pseudo-membranous conjunctivitis which were not diphtheritic, protargol effected complete disappearance of the false membranes in three or four days. In the course of the discussion which followed the reading of the paper, **M. Parent** stated that he had obtained excellent results in cases of purulent ophthalmia from the use of nascent silver iodide recommended some years ago by Dr. Sedan, the action of which is obtained by the double decomposition of an alkaline iodide, and a silver salt introduced simultaneously into the *cul-de-sac* by means of glass rods. **M. Morax** stated that he had found a solution of sulphate of zinc in the proportion of one to forty very serviceable in cases of sub-acute conjunctivitis. It occasioned sharp pain, but if that were borne recovery quickly followed. **M. Darier**, in reply, maintained his point, urging that no ulcerations of the cornea nor production of false membranes followed the use of the proteinate of silver or protargol, as occurred not infrequently from the abuse of silver nitrate or other cautery. He had given up entirely the use of weak solutions, and now preferred to employ the protargol in the proportion of one part in two parts of water, which formed a syrupy liquid that should be applied with a brush, and which gave very little pain. The cauterisation should be performed twice daily, and once or twice in the intervals a drop of a weaker solution should be instilled to keep up the action. This plan effected a rapid cure of all cases of conjunctivitis due to the gonococcus or to Week's bacillus. On the other hand, those forms of conjunctivitis which resulted from the diplobacillus of thoral were more effectively treated with zinc sulphate and ichthyol.

12. Rodent ulcer of the cornea.

A careful study of a case of this intractable affection has been made by **Dr. Ahlström** (*Zehender's klinische Monatsblätter*, Bd. xxxvi., p. 170, 1898). It occurred in a day labourer, aged forty, sickly-looking, but presenting no symptoms of constitutional disease. The ulcer was typical in its characters, and progressed from bad to worse in spite of the application of a pressure bandage, scraping the base of the ulcer, the employment of the thermo-cautery, irrigation, cauterisation with carbolic acid, iodoform, atropin, hyoscin, and subconjunctival injections of sublimate. Dr. Ahlström on repeated occasions had recourse to bacteriological investigations, employing agar, gelatine, and serum, and examining the tissue of the cornea in advance of the ulcer, but was unable to find any

micro-organism except those that are generally present in disease, and even in the healthy conjunctival sac, the most frequent being staphylococcus aureus and s. albus, whilst amongst the rarer forms were streptococci and diplococci, and occasionally bacilli. Puncture experiments with material obtained from the ulcer in the cornea of the rabbit never produced any other type of disease than the ordinary infiltration ulcer, which presented none of the features of the rodent ulcer. He regards the disease as a progressive necrosis of the superficial subepithelial layers of the cornea, and suggests that special attention should be paid to determine the degree of sensibility of the cornea, in view of its being possibly a neurotis. Most cases of rodent ulcer end in total loss of vision. Fuchs believes that the progress of the ulcer can always be arrested by the application of the actual cautery, but several cases are on record where this remedy has failed in competent hands.

13. Tattooing the cornea.

This proceeding is of great service in removing the white spots which follow ulcerations of the cornea and which are disfiguring, but it is not always successful; and **Dr. H. Villard**, of Montpellier, has recently ("Rapport de la Société Française d'Ophtalmologie, Congrès de 1898," in *Recueil d'Ophtalmologie*, June, 1898, p. 376) undertaken a series of experiments to demonstrate the histological changes that take place in the normal cornea after tattooing, and in cases of artificially produced leucomata. In both instances the effects were followed at first hour by hour, and subsequently day by day. Tattooing the normal cornea caused immediate disappearance of the epithelium. The perforations of the laminæ of the cornea by the needle were visible. The laminæ were dislocated, and between them layers of Chinese ink were arranged with tolerable regularity. Some hours after the operation the anterior part of the corneal tissue becomes infiltrated with leucocytes, which are most numerous in the vicinity of the tattooed area. These leucocytes serve for the nutrition and reparation of the injured region. The epithelium quickly undergoes renewal, and in the course of twenty-four hours covers the whole of the tattooed part. The cells proliferate, surround the masses of Indian ink, become charged with minute black particles, and at the end of two months complete reparation has taken place, and the pigment grains are tolerated by the corneal tissue. The same series of phenomena are observed when leucomata are tattooed. The strata of pigment are, however, somewhat less regularly disposed, and both leucocytes are more numerous and persistent than in the case of normal cornea, and the fixed corpuscles and cells become much more hypertrophied, whilst the pigment granules disappear more rapidly. These effects

are due to the presence of vessels in the leucomata. Hence it follows that to obtain a good and durable effect in tattooing, care should be taken only to tattoo leucomata unprovided with vessels.

14. The ætiology of regular corneal astigmatism.

Dr. Evers, of Leipzig (*Zehender's klinische Monatsblätter*, Bd. xxxvi., p. 240), points out that whilst corneal astigmatism was formerly regarded as a congenital and unalterable affection, it is known to be induced by many different causes, and to be liable to increase and diminution under different circumstances. Thus it may be the consequence of cataract operations, of iridectomy, of perforating wounds of the cornea or sclera, of pterygia, and of ulcerative processes. According to Steiger, who examined 3,170 eyes for astigmatism, the degree in seven-eighths of the whole varied from 0·25D. to 1·25D., and of these a large proportion became reduced or even normal at about the age of forty in women and of fifty in men. As Dr. Brailey has shown, there is a relation between glaucoma and astigmatism; and Pfalz has shown that about 80 per cent. of glaucomatous patients are astigmatic, usually against the rule. A remarkable case of induced astigmatism is recorded by Parker, in which a coastguardsman, who originally had no astigmatism, but developed the affection as a result of six hours' daily observation with the right eye, the left being closed, and therefore subject to the pressure of the orbicularis muscle. It does not appear that tenotomy, for strabismus, of either the external or internal rectus, has any influence on the curvature of the cornea, but Dr. Evers has observed astigmatism produced by keratitis interstitialis.

15. Suture of the cornea after removal of the lens.

This proceeding has been once more advocated by Dr. W. H. Bates (*Archives of Ophthalmology*, vol. xxvii., No. 2, p. 181), of New York. Originally practised by Dr. H. W. Williams, and subsequently by Suarez de Mendoza, Kalt, and others, about 150 cases have been reported, with about 4 per cent. of prolapse of the iris, and only one or two cases of suppuration. In some instances the suture was applied by passing the needle through the superficial layers of the cornea after the extraction; in others a preliminary incision was made in the cornea, the needle passed through the edges, the loop of thread drawn aside, and the cut for the extraction made to traverse the space between the limbs of the loop. Dr. Bates's experiments were made on seventy-eight rabbits, animals that have eyes not very well adapted for such experiments on account of the lacerability of the conjunctiva, the thinness of the cornea, the gaping of the wound after section, and the prolapse of the iris, which cannot be returned. Moreover, the eye is not steady, and it is almost impossible to apply a bandage, as it is quickly scratched off by the animal. The constant prolapse of the iris in the rabbit seems to be due to the incurvation, and therefore non-adaptation, of the edges of the section. It was found the best plan to insert the first suture before the section was made, and before the removal of the lens, a loop being left, otherwise loss of vitreous usually occurred. The needle was half an inch long and was used with a needle-holder. The finest black silk was used, without, however, any aseptic precautions. From three to ten sutures were employed, and they were allowed to remain from three days, which was all that in most cases was necessary, to fourteen days. The suture was found to be very serviceable in controlling prolapse of the iris, in effecting the return of the prolapsed vitreous, and in preventing intra-ocular hæmorrhage. Primary healing occurred in 80 per cent. of the cases, with a clear central and nearly circular pupil.

16. Extraction of cataract.

Prof. C. Schweigger (*Archives of Ophthalmology*, vol. xxvii., No. 3, p. 255, 1898) adduces facts and figures to prove that the simple extraction downward, as performed a hundred years ago, gives better results than any of our present methods. He recommends that the incision should be made with Richter's broad knife, sharp on both edges to about 2 millimetres from the tip, the back straight and thin, but not cutting, and the surfaces of the blade a trifle convex. The width of the blade increases gradually from the point, so that at about 15 millimetres from the latter it is 6 millimetres wide, and remains so up to the base. The edge is not straight, as in Beer's knife, but a little curved. This form of knife, it is claimed, keeps the wound closed until the section is completed, preventing too early escape of the aqueous, and doing away with the necessity of sawing. Prof. Schweigger has devised a new instrument for fixation, instead of forceps; it is a kind of two-pronged fork, with buttoned ends 4 millimetres apart, and he maintains that the fork prevents rotation or deviation of the globe, and permits a useful resistance to the knife in finishing the section. He uses the ordinary capsulotome, but capsular forceps when a capsular cataract is present. If the cortex is soft, he often removes the lens in the capsule, the lens in that case being delivered by pressure on the upper portion of the cornea with a spoon. He operates without iridectomy; and out of 1,223 cases he finds he has had 5 per cent. of total losses with iridectomy, and only 3·8 per cent. without. He generally bandages both eyes.

17. Sudden and recurrent ocular hæmorrhages in the young.

In a paper read before the French Ophthalmological Society (*Archives d'Ophtalmologie*, t. 18, p. 456, 1898) **Dr. Abadie**, of Paris, called especial attention to these hæmorrhages, which differ in their ætiology, nature, and treatment from those of mid-life and advanced age. Von Graefe noticed that in many cases they were preceded by violent epistaxis. Eales and Nieden considered that the blood proceeded from the equatorial region of the eye, and that they were in general benign. Panas applied to them the term intra-ocular epistaxis. In this form the treatment to be adopted is the same as in the epistaxis of puberty—that is to say, attention to general hygiene, tonics, especially quinine, the preparations of iron, citric acid and sulphuric acid, lemonade, and the preparations of ergot. There is a second form of intra-ocular hæmorrhage in youth, named dyscrasia by Dr. Abadie, which comes on insidiously, and is sometimes scarcely noticed till the fundus can no longer be explored with the ophthalmoscope. When, however, it is seen early, delicate hæmorrhagic striæ may be observed along the sides of the vessels, and particularly of the veins of the retina, which gradually enlarge into spots of considerable size near the macula. Their formation is not accompanied by pain, nor by any inflammatory reaction of the conjunctiva, and the tension of the globe is normal. The absence of any definite scotoma distinguishes them from cases of detachment of the retina. The treatment required is nearly the same as in the foregoing class of cases—viz. iron, quinine, and ergotin, with citric acid or sulphuric acid, lemonade, and perhaps dry cupping. Analogous hæmorrhages occur in pregnancy, hæmophilia, phosphaturia, azoturia, oxaluria, dilatation of the stomach, progressive pernicious anæmia, leukæmia, paludal intoxication, and influenza. There are still other forms which are distinguished by Dr. Abadie, and described as occurring as a secondary condition in retino-choroiditis, and as constituting apoplectic retinal hæmorrhages, the latter being serious, and usually leading to loss of the eye. Such cases are associated with disorder of the sympathetic system of nerves. In the discussion which followed the reading of the paper, **Dr. Gouvea**, of Paris, contended that in a large proportion (42 per cent.) of his cases of ocular hæmorrhage there was lesion of the vascular walls due to hereditary or acquired syphilis; and **Dr. Dor**, of Lyons, called attention to the occasional existence of troubles of menstruation in these cases.

18. The after-consequences of the different modes of treating glaucoma.

(*Beitrage zur Augenheilkunde*, Herausgegeben, von Prof. D. R. Deutschmann, Heft 32, 1898.) Whilst all text books give the immediate results of the different methods of treatment recommended for the relief of glaucoma, but little information can be obtained from them in regard to the permanency of their good effects, and it is still uncertain whether iridectomy, sclerotomy, or the employment of myotics, is to be on this ground preferred. **Dr. Sidler-Huguenin**, of Zurich, has endeavoured to obtain some facts by an examination of seventy-six cases of glaucoma occurring amongst 25,000 patients in the practice of Dr. Haab, of Zurich, of which twenty-one were cases of acute and chronic glaucoma, thirty-six of glaucoma simplex, ten of glaucoma hæmorrhagicum, and nine cases that were treated exclusively with eserine or pilocarpin. The cases, which were often difficult to trace, were examined as long after the operation as possible. From examination of the notes he was able to obtain he arrives at the conclusion that in cases of acute glaucoma the operation of iridectomy effects a cure in 50 per cent. of all the cases, whilst it acts beneficially in nearly all. Good results were more frequent after the operation of iridectomy in a larger number of cases of subacute and chronic glaucoma than is generally admitted. In the former set of cases 62·5 per cent., and in the latter 60 per cent., recovered with fair vision. The use of myotics and the performance of sclerotomy are, in cases of acute glaucoma, far behind iridectomy in value. In glaucoma simplex also iridectomy is to be preferred to sclerotomy. The use of myotics is that by their means the glaucomatous process may be arrested, and in about 33 per cent. of the cases vision is preserved; but the augmentation of pressure, which sooner or later leads to amaurosis, is not permanently reduced. In regard to hæmorrhagic glaucoma, he arrives at the following conclusions: Sclerotomy, combined with the employment of eserine and pilocarpin, is to be preferred to iridectomy, since the results of this operation are, on the one hand, not very good, even if successfully performed; and on the other, because the operation is attended with great danger of further hæmorrhage. Still the prognosis of this form of glaucoma is not so very bad, since there were 20 per cent. of recoveries and 40 per cent. in which there was preservation of vision.

19. Malarial affections of the eye.

This subject is one that is rarely touched upon in the text-books, but appears from an article by **Major T. M. Yarr, F.R.C.S.I.** (*Brit. Med. Journ.*, vol. ii., 1898, p. 870), to be of considerable importance. The lesions observed in malarial affections all originate in troubles of the circulatory apparatus, which may be classified under the heads of neuritis, retinal hæmorrhages,

retino-choroiditis, and effusions into the vitreous. In most instances the patients have suffered from repeated attacks of malarial fever; supra orbital pain and photophobia are very commonly present; night blindness frequently occurs. There are remarkable variations in the visual acuity in the course of a few days. The field of vision remains nearly intact. The retinal changes that may be seen with the ophthalmoscope are swelling of the papilla, which assumes a greyish-red colour, œdema of the circumpapillary area of the retina, causing loss of definition of the papillary margin, with enlarged and tortuous veins. The peculiar coloration of the papilla due to parasites in the capillaries is pathognomonic. In about a third of the cases minute peripheral hæmorrhages and occasionally large peripapillary and macular hæmorrhages are also found. About 80 per cent. of cases terminate in partial atrophy, indicated by varying diminution of visual acuity, irregular contraction of the field, and slight greyness of the disc; many end in apparently complete recovery, and some terminate in complete atrophy.

20. Insertion of an artificial globe in Tenon's capsule.

This is a modification of Henle's operation, which has been suggested by **Dr. H. McI. Morton**, of Minneapolis (*New York Med. Jour.*, Oct. 30, 1897). In Dr. Henle's operation the sclerotic is preserved, but in this proceeding the optic nerve is divided and the sclera removed; but as each ocular muscle is divided, a double needle catgut suture is inserted in it from within outward, enclosing the central portion of the tendon, and tied on its external surface. After arrest of the hæmorrhage, a glass sphere, or, as some have recommended, a celluloid or a rubber sphere, is placed in the cavity, and the sutures from the opposing recti muscles are tied over it and cut off close. The conjunctiva is carefully closed over them.

DISEASES OF THE EAR.

By George P. Field, M.R.C.S.,

Surgeon for Diseases of the Ear, St. Mary's Hospital, London.

1. Replacement of the external ear after complete severance.

Two or three cases of successful engraftment of severed ears have been reported lately. The method adopted by **Purall** (*Lancet*, June 11, 1898) was as follows:—The ear was placed as soon as possible in warm water nearly at blood heat, washed and cleaned. The patient was next washed and prepared likewise. The ear was then replaced as accurately as possible, all landmarks being carefully noted, and interrupted sutures passed all round, these being tied afterwards, but not until the last was passed; by this means the needle was capable of being inserted through both edges exactly at points of correspondence. When the sutures were tightened, the ear fell into its natural position. Circulation was restored and the ear kept warm by the application of hot salt-bags over the dressings and bandages.

2. The treatment of chronic non-suppurative catarrh of the middle ear by surgical methods is being pursued energetically by our French *confrères*. Since the publication of Garnault's book (see "The Year-Book for 1898") additional papers have appeared on this subject by **Miot, Moure**, and **Malherbe**. (*Revue Hebdomadaire*, May and August, 1898.) Moure's paper merits careful attention owing to the conscientious manner in which he weighs all arguments both for and against the advisability of operating for the relief of this disease. In order to appreciate the difficulty with which this question is surrounded, and the conflicting views prevalent amongst otologists regarding it, some knowledge of the pathology of dry catarrh and sclerosis is, of course, essential. Moure especially insists that in the sclerotic form, not only do we find thickening of the membrana tympani, rigidity of the ossicular chain, ankylosis of the stapes, and atrophy of the expansion of the auditory nerve in the labyrinth, but also changes specially affecting the fenestra rotunda, these consisting of various degrees of thickening of the membrane and its bony frame, amounting in extreme cases to complete obliteration. Extension of chronic inflammatory mischief to the

retino-choroiditis, and effusions into the vitreous. In most instances the patients have suffered from repeated attacks of malarial fever; supra orbital pain and photophobia are very commonly present; night blindness frequently occurs. There are remarkable variations in the visual acuity in the course of a few days. The field of vision remains nearly intact. The retinal changes that may be seen with the ophthalmoscope are swelling of the papilla, which assumes a greyish-red colour, œdema of the circumpapillary area of the retina, causing loss of definition of the papillary margin, with enlarged and tortuous veins. The peculiar coloration of the papilla due to parasites in the capillaries is pathognomonic. In about a third of the cases minute peripheral hæmorrhages and occasionally large peripapillary and macular hæmorrhages are also found. About 80 per cent. of cases terminate in partial atrophy, indicated by varying diminution of visual acuity, irregular contraction of the field, and slight greyness of the disc; many end in apparently complete recovery, and some terminate in complete atrophy.

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labyrinth is another complication of dry middle-ear catarrh, which is looked upon by **Kessel** and others as much more frequent than was commonly supposed, and which, when present, puts the question of any operation entirely out of consideration. Hence the obstacles to success in such procedures are very numerous, and reduce the number of cases that can be properly regarded as suitable to a comparatively narrow limit, as will be inferred from the sub-mentioned tests. Cranial perception of the tuning fork must be absolutely perfect, and the watch must be heard immediately on any of the hairless parts of the skull. Weber's test must be positive and Rinne's completely negative (all indicating integrity of the perceptive organs). The A or C tuning fork must be more or less perceptible by aërial conduction.

Further indications for operating—and in these cases the prognosis is altogether good—are to be found in association with an improvement in hearing after Valsalva's experiment, the use of Politzer's bag, or catheterism, be this ever so slight or brief in duration. Still more favourable are those cases deriving benefit from an exploratory puncture of the membrana tympani. Certain objective and subjective conditions, on the other hand, are to be kept in view as strong contra-indications to operation. Amongst these are certain forms of atrophic sclerosis, in which the drum membrane is extremely thin, and the promontorial mucosa is highly injected; also rapid and progressive hereditary (true) sclerosis, and the forms of deafness following fevers. Certain constitutional states and diatheses also militate against success, including gout, rheumatism, the menopause, and lactation. Opinions appear to be still divided in France upon the choice of operation. Malherbe, Garnault, and others continue to advocate a modified "Stacke," much the same as performed for suppurative disease. The antrum having been reached by the usual method, the aditus is freely enlarged, and adhesions or other abnormalities are dealt with as they appear, by special instruments devised for the purpose. In very carefully selected cases the result is said to be improvement in hearing (for high tones principally) and progressive disappearance or diminution of tinnitus. Moure (*loc. cit.*), who is the most recent writer on this subject, and who, with a full knowledge and appreciation of the work of Malherbe and Garnault, etc., is able to speak authoritatively on the respective merits of intra-tympanic and extra-tympanic methods, gives his adherence to the former, and performs extirpation of the tympanic membrane, malleus and incus. In certain cases of tortuous meatus (but only in order the better to reach the ossicles and improve the view) he ablates the postero-superior portion of the rim of the membrana

tympani. The stapes he leaves untouched in the belief that should so-called mobilisation be indicated, this is quite sufficiently effected in the course of removal of the malleus and incus. It should be added that more recently Malherbe reported the results of five new cases of clearing out the petro-mastoid bone to the Society of Laryngology of Paris. The cases, which were not selected, showed most excellent results. Some scepticism was exhibited amongst the members, and a commission of inquiry was appointed to examine and report on Malherbe's cases before, during, and after operation. A concise statement of the results of section of the incudo-stapedial articulation and mobilisation of the stapes in twelve cases of advanced sclerotic catarrh by Gleeson is reported in the *Archives of Otology*, August, 1898 (from *Journ. of Amer. Med. Assoc.*, vol. xxx., No. 10). In some an attempt was made to mobilise the chain of ossicles by traction in various directions upon the lower portion of the long process of the incus. In others, the tendon of the stapedius muscle was severed and subsequent traction made upon the incus. In other cases, again, the incudo-stapedial articulation was severed, and a direct mobilisation of the stapes attempted by means of lateral pressure and lever-like movements with a cotton-tipped probe in direct contact with the head of the stapes.

Careful functional tests proved that not the slightest improvement followed the incision of the drumhead and the turning forward of the flap. Nor was any improvement effected by subsequent manipulation of the incus. The section of the stapedius performed in two cases was followed by an immediate improvement of hearing. In both cases further improvement followed the incision of the incudo-stapedial articulation and mobilisation of the stapes. Tinnitus was relieved in all cases. In five cases only was there any noticeable and practical improvement of hearing. The improvement unfortunately was not lasting, and invariably disappeared a few months after operation.

3. Treatment of cystic cholesteatomata of the auricle.

Three cases have been described by **Wyatt Wingrave** (*Journal of Laryng.*, July, 1898). Two of the cases resembled hæmatoma, and were situated in the helix or helicine fossa; the third, in an infant, was on the back of the ear. All contained a clear yellow fluid, with more or less pearly caseous material, which consisted of epithelial squames, cholesterin crystals, and amorphous granules. They were strongly suggestive of the cholesteatomatous masses so often occurring in the temporal bone. All did well after scraping out freely and mopping with a strong solution of carbolic acid.

4. Hæmorrhage from the external meatus, requiring ligature of the common carotid at the point of election, is reported by **Walter H Brown** (*Lancet*, June 4, 1898). The patient was a child aged five, who had suffered from a follicular tonsillitis, which was apparently clearing up. The bleeding, which came from the right meatus, was so free that the child soon became blanched and collapsed. A plug of iodoform gauze arrested the bleeding, but when this was removed four days later, a little pus first escaped, free from smell, and four hours afterwards there was another hæmorrhage more copious than the first. The common carotid was then tied, and the child, whose case had appeared hopeless, made a good but rather tardy recovery. Examination of the pharynx before operating showed the right tonsil to be pushed over towards the middle line by a non-pulsating swelling. This was presumed to be caused by the internal carotid, some inflammatory change in the bone surrounding the artery having caused erosion of its walls.

5. Aural exostoses vary so much in character, *i.e.* in situation, consistence, etc., that opinions are much divided as to the best way of dealing with certain of them, and clinical otology is capable of much further enrichment by the collation of facts, and the record of carefully described cases presenting special difficulty. **Goldstein** (*Journal of Laryngology*, July, 1898) and **Lake** (*ibid.*, August, 1898) have each published cases of this nature. That of Goldstein presented the appearance of a large fibrous polypus, filling up the entire lumen of the auditory canal about half an inch from the orifice, and having its point of fixation, so far as the probe could detect, on the posterior wall. There was much pain and tenderness and intense deafness; examination by touch caused a good deal of vertigo. It was only after snapping several No. 4 piano wires, applied with the Wilde-Blake snare, that the bony character of the growth became apparent. The working area behind the growth was so limited that with a possibility that the tumour extended the entire length of the canal, perhaps involving the annulus tympanicus, and with still deeper attachments, it became exceedingly questionable whether operating with the mallet and chisel, or even the dental drill, was justifiable. Accordingly, after several attempts with a long, shallow concave curette, this instrument was successfully placed over the convex surface of the tumour, and the latter, by gentle but firm leverage, was suddenly loosened and carried with the curette out of the canal. The tumour turned out on examination to be a large ivory exostosis, irregular on the surface, with several small but well-marked pedicles on the attached side. The whole was

encased in an elastic capsule closely adherent to the bone. [I may say that I have more than once attempted to remove exostoses having broad pedicles with a Volkmann's spoon, but have invariably failed when the growth has been hard. Unless the tumour is soft, or, being otherwise, has a narrow pedicle, I regard the method as inapplicable.] Lake, in describing his two cases, remarks that when the tumour is within easy reach of the operator, the chisel, *i.e.* a dentist's enamel one, being capable of control, is a useful instrument, but to avoid the annoyance of its breaking, as has happened to himself, it is essential to have the temper drawn. In the first of Lake's cases the exostosis, deeply seated on the anterior wall, obstructed the left meatus so completely that the finest Hartmann's probe could not be passed beyond it. All hope of its being pedunculated was dispelled on exposing its junction with the meatus; it was then slowly removed by means of fine enamel chisels (one breaking in the process). The base of the exostosis, which extended over half the circumference of the canal, was brought to a level with the rest of the wall, except above where a portion of the latter flaked off, improving the general effect. Contraction of the meatus was prevented by careful and long-continued plugging. The hearing afterwards was practically normal. The operation in this case was done through the meatus because reflecting the auricle would have given no more room. In his second case, however, in which an exostosis consisting of three bony masses almost completely fused at their bases was causing nearly total obstruction, blocking up offensive inspissated pus, a Stacke operation was performed with complete success and restoration of hearing.

[From my own large experience I consider it a matter of the greatest rarity to meet with a case of aural exostosis or hyperostosis which cannot be safely and expeditiously dealt with by means of the dental engine cautiously applied. No doubt some operators, with limited experience of the drill, are somewhat afraid of it.]

6. The use of **Eustachian bougies** has recently been revived by **Marshall** and **Menière**. The former (*Journ. Amer. Med. Assoc.*, xxx., 12) employs the bougie in the treatment of chronic stenosis, and allows it to remain in the tube from twenty to thirty minutes not more than twice a week. To medicate the tube he smears the bougie with lanolin, containing 3 per cent. of nitrate of silver. Of seventeen cases of chronic deafness and tinnitus thus treated, seven were greatly improved and five showed moderate improvement, but in five no alteration was experienced. Menière works upon the somewhat doubtful assumption that the changes in the middle

ear, for the treatment of which inflation is indicated, are due in the first instance to Eustachian catarrh, and on this ground still advocates the bougie. These he has carefully made of rubber, and having dipped them in a solution of potassic iodide and iodine, leaves them *in situ* from half a minute to half an hour. He reports great improvement in hearing in two cases that resisted the catheter after prolonged trial.

Several specialists in Great Britain have in recent years reported successes with the bougie, after other treatment had failed, and its use is rightly becoming more general where marked Eustachian obstruction exists. No doubt better results have been obtained since Urbantschitsch insisted on the necessity of the bougie remaining in the tube sufficiently long for it to exert a real dilating effect.

6. Catheterisation of the Eustachian tubes.

At the annual meeting of the British Medical Association, **Hovell** proposed the following **standard for the gauge of Eustachian catheters** (*Journal of Laryng.*, September, 1898) :—

(1) The gauge to be that of the French instrument, which is graduated on a definite scale.

(2) The length of curve to be expressed in millimetres, the number indicating the distance which the curve separates two parallel straight lines. Thus, when a catheter is placed so that the outer part of the stem touches the one line, and the tip of its beak the other line, the distance between the lines shall indicate the curve in millimetres.

As the beak of a catheter is usually slightly larger than the stem, the actual gauge of the latter will be slightly less than the number specified.

A Eustachian catheter No. 9 French gauge, with a curve of 18 millimetres between parallel lines, is suitable for most adult male cases, but it is sometimes found that this curve is too long to allow the catheter to be turned outwards in the naso-pharynx. Hovell employs either the nine or seven gauge, with a curve of 18 or 16 millimetres. In exceptional cases, a curve of 14 or 20 millimetres is required ; rarely the meatus is so small that it will only take No. 5. A general practitioner who does not wish to carry a large number of catheters can do good work with the following three :—

No.	9	gauge	...	...	18 millimetres'	curve.
,,	7	,,	...	...	16 ,,	,,
,,	7	,,	...	...	14 ,,	,,

By such a nomenclature as that described, Hovell suggests that a standard can be formed, intelligible to all, and enabling one practitioner to describe to another the size of catheter suitable in a given case.

8. The necessity for active, not passive, treatment of ear disease.

One of the most ardent advocates of massage in dry catarrh of the middle ear is **Lautenbach**, who has devised an elaborate array of instruments for its application to the drum membrane. His recommendations are first to open, or keep open, the Eustachian tubes by the use of hot mouth washes as high in the naso-pharynx as possible, and by the local use of guaiacum and the internal administration of sodium salicylate. Some of the massage instruments—" phono-masseurs "—are arranged to convey sound to the tympanum in combination with tactile vibrations, with a view to obviating the tendency to dulling of the sensitiveness of the auditory nerve. Others, viz. suction or " pneumo-masseurs," are designed for binaural application, and are worked by electro-motors. Lautenbach claims that by the timely employment of these measures, the serious consequences of rigid ossicles, thickened drum-membranes, and non-responsive auditory nerves are prevented.

These measures, which are more or less popular in America, have not been adopted by practitioners of any standing either there or in Great Britain.

9. The cleansing method of treating chronic suppurative disease of the antrum and vault of the tympanum.

Albert H. Buck (*Brit. Med. Journ.*, Nov., 1897) applies this term to a plan advocated by himself for use more especially in private practice ; partly on account of the time it occupies, and partly owing to the objection of private patients to submitting to operation. The essentials of the method are :—

(1) The removal by mechanical means of all granulation tissue, cast-off epithelium, and detritus from the diseased cavities.

(2) The destruction by chemical means of all pathogenic germs. Injection of peroxide of hydrogen through variously curved glass tubes is one of the chief procedures, not only on account of the germicidal action of this fluid, but also principally because the active effervescence which at once takes place when it comes in contact with decomposing organic material aids in dislodging the offending material. When the cavity has been cleared of all these, and rendered aseptic, powdered iodoform, europhen, or aristol is introduced freely, and allowed to remain indefinitely.

10. The rationale of removing adenoids for the cure of chronic aural suppuration in children is discussed by Lake (*Journ. of Laryngol.*, June, 1898). When the Eustachian tube is blocked by adenoids in the naso-pharynx, supposing the perforation in the drum membrane to be below or on a level with the umbo (the tip of the handle of the malleus), an accumulation of pus may take place within the cavum tympani, and upon the adjacent floor of the external meatus, to a level with the highest point of the convexity in the floor. It may also rise in the remainder of the cavum, as well as in the antrum and attic, until the weight of this portion of the discharge is able to force out by hydraulic pressure that already in the meatus. If, on the contrary, the Eustachian tube is rendered patent by removal of the adenoids, passive drainage takes place into the naso-pharynx, or forcible expulsion when the nose is blown, and the discharge cannot rise higher than the floor of the tympanic cavity on a level with the lower lip of the Eustachian tube. In the blocked condition of the tube, the higher the perforation the higher the intra-tympanic level of the pus; and a large destruction of membrane, part of which is above the level of the umbo, will cause an overflow the moment the pus obtains this level. The original annotation is illustrated by a diagram, which helps greatly to make these hypotheses apparent.

11. Passow, of Heidelberg, has a valuable paper in the *Archives of Otology*, 3, xxvii., June, 1898, on the **retro-auricular opening in mastoid operations,** with particular reference to his own methods. He makes his skin incision about 2 cm. behind the insertion of the auricle, beginning below, a little above the tip of the mastoid process and extending *obliquely* upwards about 1 *cm.* above the *linea temporalis*, at which point it comes nearly in contact with the auricle. After dissecting up the skin the periosteum is incised close to the insertion of the auricle, then it is stripped off the bone backward, and cut off as far as it lies bare. The upper and posterior walls of the meatus are loosened and pulled forward with a long hook. In this way the entire field is so widely exposed that one can enter the middle ear by Schwartze's, Stacke's, or Zaufal's methods. After completing the operation on the bone, the external meatus is split open as far as the cartilage of the auricle, and also by a second incision perpendicular to the first for a short distance, thus forming from the meatus a large upper flap, the soft parts of which are removed with scissors. This flap is next tilted upward, and its anterior margin united with the anterior edge of the wound in the bone by two sutures. The auricle is then hemmed with two sutures, and the lower flap of the meatus is sutured to the lower portion of the anterior margin of the bone wound at the concha with a needle-holder and small curved needles. The flap being small, a good deal of skin is dragged into the cavity. After this, a quadrilateral flap is formed by elongating the original skin incision forward and downward about $1\frac{1}{2}$ cm., and then obliquely upward and forward close behind the auricle, the breadth varying according to the amount of the bony cavity to be covered in. After preparing this flap the skin defect is easily closed by sutures, the anterior margin being fastened to the posterior margin of the bony wound. This flap can be easily formed in about fifteen minutes; the retro-auricular opening which results is slit-shaped, can be easily covered with plaster, and is hardly noticeable; during the after-treatment it contracts about one-half. The same plan can be employed in sinus thrombosis and other operations. The time for performing **secondary closure** of the retro-auricular opening must depend upon the nature of the case and the judgment of the surgeon. Passow performs it thus: After first producing Schleich's anæsthesia, he makes an oval incision at the outer margin of the orifice and not encroaching inside it. The skin is then loosened freely away, together with the periosteum. This establishes four margins, two inner and two outer; the two inner are turned over towards the inner ear, and so sutured that the freshened surfaces lie next to each other. Then with three sutures the two external freshened surfaces are likewise sutured and drawn together. In this manner the retro-auricular orifice is covered with a bridge, which is articular in both directions. Recovery by first intention follows, and there is no disfiguring scar.

12. The indications for operating upon the mastoid constitute a subject of great importance to all practitioners, operators, and non-operators alike, and they will be discussed at the Otological Congress to be held in London in 1899. Lake (*Medical Press and Circular*, Jan. 19, 1898) enumerates and classifies these indications as follows, and his arrangement may be taken as covering the ground sufficiently for all practical purposes, as well as reflecting the views of most otologists at the present time:—

(A) **Acute conditions:** (I.) Acute otitis media with acute disease of the antrum; (II.) influenzal mastoiditis; (III.) secondary infection from meatal abscess; (IV.) acute tuberculosis of middle ear. (B) **Chronic conditions:** (V.) otitis media suppurativa chronica; (VI.) acute exacerbation in chronic disease; (VII.) periodic or constantly recurring discharge; (VIII.) facial palsy; (IX.) cholesteatomata of attic and antrum; (X.) vertigo on syringing; (XI.) persistent mastoid pain; (XII.) contraction of

meatus; (XIII.) Bezold's mastoiditis; (XIV.) mastoid fistula; (XV.) necrosis. (C) **As a preliminary to some other operation.**

The following notes, in amplification of certain of the above indications as recorded in this paper, are worthy of special remark:—

(I.) In acute suppuration involvement of the antrum may be suspected if there be persistent fever or increase, or reappearance thereof—pain behind the ear, stationary or radiating, or elicited by pressure especially over *the anterior and upper part of the mastoid* or at its extreme tip. Redness, swelling, and the familiar bulging out of the ear, are commoner in young subjects than in adults, and may, of course, occur in their case from other causes, *e.g.* the passage of pus from the tympanum down behind the cartilage of the meatus, without implicating the outer wall of the antrum. Bulging of the postero-superior meatal wall invariably points to antral involvement.

Two other rare but confirmatory symptoms of extension to the mastoid are: (1) Painful mastication caused by direct extension of the inflammation along the anterior ligament, which, passing through the canal of Huguier, blends with the capsule of the joint and inter-articular fibro-cartilage; (2) lateral nystagmus, caused by an osteitis involving the bony external horizontal canal.

(II.) In influenzal mastoiditis, the antrum being frequently invaded without a preceding discharge from the meatus, requires to be attacked surgically at the first indication of trouble, the drum being carefully watched for redness and bulging during the course of the case.

(III.) Secondary infection from a meatal abscess is the rare case in which pus penetrates the cartilaginous meatus from a furuncle and, passing inwards, enters the tympanic antrum, giving rise to acute symptoms.

(IV.) In acute primary or secondary tuberculosis of the middle ear, Lake describes the appearance of the membrane as lustreless, injected, of a pale pink colour, with radiating dilated vessels, a bulging, thick, swollen appearance behind, and a perforation in front. The operation advised, in contra distinction to all other primary acute forms of mastoid infection, is radical, *i.e.* Stacke's, with removal of the membrane and ossicles, to prevent general infection and subsequent deafness.

(B) Two minor indications for operation during (V.) chronic suppuration are: (1) Persistent discharge after ossiculectomy, itself an important adjunct to the cure of the disease; (2) incurable discharge, with perforation (*a*) in Shrapnel's membrane, (*b*) in the postero-superior quadrant. Lake considers that the ossicles are more frequently affected in the latter form of perforation than in the former, as commonly taught. Under these conditions the indications are a complete Stacke operation, if ordinary means have failed to cure in two or three months.

[Though no doubt much can be done during this time-limit if proper remedies are thoroughly and conscientiously employed, but few patients may be expected to consent to so grave an operation after this short interval.]

(VI.) Acute exacerbation during chronic disease is one of the commonest indications for operation, and is due to a renewed bacterial activity in the pent-up purulent contents of one of the pockets invariably found in all these cases of chronic discharge, there being a temporary blockage of its channel of outlet, either by a plug or by inflammatory swelling. The following are the symptoms in these cases, though one or more may be absent: Fever, pain, redness and swelling, tenderness on pressure over the antrum or mastoid, giddiness and nystagmus, vomiting, redness of membrana tympani or its residua, swelling of postero-superior angle of meatus, and suppression of discharge. The indications are a complete Stacke operation, with removal of malleus and incus and remains of membrane without delay if the diagnosis is unequivocal, because it is impossible to know how much thinned the defences between the pus and the brain or sinus may have become.

(VII.) With a periodic or constantly recurring discharge, Lake considers the question of operation the most difficult of all to decide. He advises that each case should be treated on its own merits, due attention being given to the following points: (1) Social status of patient; (2) duration of disease; (3) length of intervals—frequent or remote; (4) character and amount of discharge; (5) sensations, local and general, during period of quiescence and just prior to activity; (6) condition of membrane and ossicles; (7) general health and hearing power. Operation is the more specially indicated, the more frequent the recurrence of discharge and the more profuse the flow, the greater the general and local disturbance prior to discharge, and the greater the relief obtained whilst it lasts; also the worse the condition of the general health and the greater the deafness.

(VIII.) In facial palsy coming on during chronic disease, the indication for operation is very urgent, since the outer wall of the labyrinth is almost certainly necrosed, and the case is very likely tuberculous. Small isolated foci of inflammation in the immediate vicinity of the antrum, mastoid cells, and petrous bone should be carefully looked for.

(X.) In vertigo, caused by syringing, which is of a rotatory and horizontal character (as apart from mere ill-defined giddiness), the membranous external semicircular canal is presumably exposed by caries of its bony wall, the danger is very great, and the indications are therefore obvious.

(XI.) Persistent mastoid pain, indicated by a sclerosed and eburnated mastoid, often without any antrum, is susceptible of cure through relief of tension, and this must therefore be afforded by operation on the mastoid.

NEW INSTRUMENT.

13. Dundas Grant's spinal vibrator.

This is an invention for applying indirect massage to the tympanic structures by means of vibrations communicated to the dorsal spine.

The apparatus consists of a heavy metal frame, suspending a spindle-shaped body which revolves excentrically inside and transmits a vibratory thrill to the surface with which the instrument is brought in contact. The applications are made once or twice a day for five minutes, the cases selected being dry catarrh of the middle ear of the sclerotic type. Many patients shown at a recent meeting of the British Laryngological Association testified to the improvement they had derived from the treatment, the presumption being that the stapedio-vestibular articulation had been favourably massaged indirectly by the vibrations.

DISEASES OF THE NOSE AND THROAT.

By StClair Thomson, M.D., M.R.C.P. Lond.,
F.R.C.S. Eng.,
Physician to the Throat Hospital, Golden Square;
Surgeon to the Royal Ear Hospital.

The general trend of Laryngology was indicated by **M'Bride** in his presidential address before the section at the British Medical Association meeting in Edinburgh. He pointed out that experience has shown that no charge of mental narrowness can be brought against the best workers in the department, but that the danger of excessive extension is perhaps more real. Indications of general disease are often first detected by the laryngoscope. We discover, it may be, some lesion of the chest, nervous system, or even kidneys, which we feel ourselves perfectly able to treat, and so, unless the laryngologist be careful, he may be led to encroach seriously upon the domain of the general physician. With regard to the surgical aspect of the speciality, the old rule used to be to call in a surgeon when external incisions were required. But the laryngologist of to-day does not confine himself to tracheotomy. He performs thyrotomy and excisions, removes goitres and sometimes cervical glands, so that he thus annexes, as it were, a considerable portion of the general surgeon's territory. If these operations are to come within our sphere of work, then it almost logically follows that we shall in the near future undertake external operations on the œsophagus and stomach, as well as extensive dissections involving the removal of tumours from the neighbourhood of the large vessels of the neck. M'Bride observed that there was a good deal to be said for and against this growing desire of the younger specialists to annex fresh territory. He held that it is a question for each one of us to decide how far he shall take part in this policy of expansion (*Journ. of Laryng.*, Sept., 1898). I venture to think that everyone is justified in embracing whatever he feels himself conscientiously able to undertake, his area of work being dependent on many things—his past experience of general work, his opportunities for perfecting his knowledge and skill, his individual tastes, etc.

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GENERAL METHODS.

The Roentgen rays continue to be of great service in this department, chiefly in the localisation of foreign bodies. Mounier, by their means, was able to diagnose that a chronic nasal suppuration, accompanied with epiphora on the same side, was caused by the extremity of a lachrymal sound which had broken off and remained in the lower part of the nasal duct for no less a period than 42 years (*Archiv. Internat. de Larnygol.*, No. 3, 1898).

From various sources efforts are being made to improve upon the simple **laryngeal mirror** with which we have worked for 40 years. **Kirstein's** autoscope was an attempt to improve upon the indirect method of observation, but even when successful it has the objection of giving a foreshortened view of the deeper parts. We cannot really judge of the actual conditions of the walls of a closed cavity, except when our visual rays fall more or less perpendicularly on each one of them, and it is generally recognised that it is impossible to form anything but an approximate idea as to the state of the subglottic region, especially posteriorly. Post-mortem examination only too often demonstrates how we have under-estimated the extent of disease below the level of the vocal cords. It is in an attempt to remedy this that Mermod has invented the "laryngendoscopic" mirror. This is a very small oval-lanceolate mirror on a long, curved stalk, which is introduced right into the larynx, the image it receives being viewed in the ordinary mirror held in the pharynx. It is necessary thoroughly to cocainise the larynx beforehand (*Annal. des Mal. de l'Oreille*, 1898, No. 2). The same idea had previously occurred to Rosenberg (*Therap. Monats.*, 1897, Dec.).

Last year reference was made to the attention being devoted to the subject of **laryngoscopy in children.** After a critical review of previous attempts in the matter, **Petersen** gives his approval to the method described by Lack. This is a development of the method described by Rauchfuss in 1878, in which a laryngeal mirror is used in the ordinary way, but the tongue, instead of being held out of the mouth, is simply well depressed by a Fraenkel tongue spatula. The end of this instrument presses on the dorsum of the tongue, but in Lack's method a beaked depressor is used which fits into the fossa epiglottica, so that the tongue can be hooked forwards and upwards. Petersen uses the tongue spatula of Mount Bleyer (*Therap. Monat.*, 1898, March).

Professor Stoerk, of Vienna, is surprised that **œsophagoscopy** is not more frequently made use of, and he devotes a brochure to the subject (Wien: W. Braumüller). He employs a straight tube, 40 centimetres in length, and a frontal mirror or forehead electric lamp. The patient is seated as for passing an œsophageal sound. He finds the method of value in removal of foreign bodies, dilatation of strictures, and the diagnosis of non-inflammatory affections. It is only a certain number of patients who can tolerate it.

GENERAL THERAPEUTICS.

In **orthoform** we seem to have secured a most valuable addition to our local remedies. This drug is a light, dirty yellow powder, slightly soluble in water, and easily dissolved in glycerine, or water acidulated with hydrochloric, nitric, or acetic acid. It is feebly antiseptic, and has no poisonous properties. When applied to mucous or abraded surfaces it exerts an anæsthetic and analgesic action, the freedom from pain lasting as much as 24 hours. **Lichtwitz** and **Sabrazès** have found it of great value in dysphagia, especially in that caused by laryngeal tuberculosis, laryngeal cancer, and the removal of the tonsils by the galvano-caustic snare (*Bull. Méd.*, Nov. 21, 1897). It gives considerable, if temporary, relief in hay fever and nasal hydrorrhœa when insufflated into the nasal fossæ (Lichtwitz: *Arch. Internat. de Laryngol.*, Nov. 1, 1898).

E. S. Yonge gives the following as a list of the most suitable preparations:—

(1) The crude powder, either alone or mixed with equal parts of lycopodium, which should be accurately insufflated on to the required area, since orthoform takes effect only where it comes in contact with the abraded parts, and its influence does not extend to the tissues beyond.

(2) Pastilles, with the following formula:—

Orthoform	...	...	...	...	gr. iij. to v.
Liq. cocci	...	...	...	...	q.s.
Saccharin	...	...	...	...	gr. ¼.
Glyco-gelatine	...	...	...	...	q.s.

The pastilles are useful in mouth, tonsillar, and posterior pharyngeal affections, but less so than the two succeeding preparations.

(3) A saturated solution of orthoform in collodion, forming a species of "varnish." This is useful in those cases in which an ulcer is exposed to much friction, but as it causes acute smarting it is advisable primarily to anæsthetise the ulcer either with cocaine or with orthoform in powder.

(4) A spray, with this formula :—

Orthoform	...	...	...	...	gr. v.
Sp. vini rect.	...	...	...	...	♏ 50
Aquæ	...	...	...	...	♏ 50

This is perhaps the best form in which to administer orthoform for nasal and laryngeal ulceration. The spirit evaporates shortly after contact with the parts, leaving the precipitated powder evenly distributed over the affected area.

(5) An ointment (10 per cent.) made with any good ointment basis.

(6) An aqueous solution (10 per cent.) of the hydrochloride as a paint (*Brit. Med. Journ.*, Feb. 5, 1898).

This commendation of the new drug was generally endorsed by the London Laryngological Society, although some members had been disappointed in the results obtained.

Another promising addition is **holocaine**, a salt which occurs in small, white, needle-shaped crystals, which are soluble to the extent of 5 per cent. in cold water. **Coosemans** maintains that in holocaine we have an ideal local anæsthetic, and one which surpasses cocaine in the following respects :—1. Holocaine is cheap—about quarter the price of cocaine ; moreover, 1 per cent. solution is equal to 10 or 20 per cent. solution of cocaine solution. 2. It causes no pricking. 3. It is much less bitter to the taste than cocaine. 4. It produces no nausea, no sensation of tightness or of foreign body in the throat. It produces none of that cerebral excitation which is often responsible for cocaine mania. 5. It causes no vascular contraction. 6. It never induces symptoms of general intoxication. 7. The solutions are stable and antiseptic (*Rev. Hebd. de Laryng.*, Dec. 11, 1897).

Nosophen is recommended by **Scott Bishop** as an excellent local antiseptic in diseases of the nose and throat. It has no odour or irritating qualities, and is antiseptic and healing. Its colour is greyish-yellow, and it contains nearly 62 per cent. of iodine in combination. It is not decomposed by heat up to 220°C., and is not soluble in water. However, it is readily soluble in alkalies, and when thrown on surfaces that have just been treated with alkaline sprays it is converted into the sodium salt, antinosine (*The Laryngoscope*, Jan., 1898).

Arsenic has been strongly recommended by **Costiniu** in malignant tumours of the larynx, tongue, and nose. After application of cocaine, he paints on a 1 in 150 solution of arsenious acid, and in one case, which had been demonstrated by the microscope to be epithelioma, he obtained a definite cure. There were no symptoms of intoxication, the pain produced was very slight, and the acid appears to act only on diseased tissues (*Rev. Hebd. de Laryng.*, No. 38, 1898).

CONNECTION WITH REMOTE SYMPTOMS.

Dr. W. F. Chappell (*Laryngoscope*, March, 1898) calls attention to the common dependence of throat and nose affections on the state of the general system. Atrophic rhinitis, enchondroma, perforation of the nasal septum, recurring epistaxis, etc., are often secondary to contagious affections ; marked redness of the mucous membrane and great pain and stiffness of surrounding tissues, to latent gout or rheumatism; primary syphilitic lesions of the upper air-passages have been mistaken for diphtheria, and congenital syphilitic ulcerations of the nasal septum, soft palate, and larynx for tuberculosis and malignant disease. Acute rhinitis and laryngitis often spread downward to the trachea and bronchi, and conversely, though laryngeal tuberculosis is nearly always secondary to that of the chest. Gastro-intestinal disorders play their part by causing venous congestion, especially round the base of the tongue, with glandular swelling there and on the posterior pharyngeal wall. Lithæmia is also responsible for much glandular tissue increase. Hysteria is a factor in the production of aphonia, œsophagismus, and dysphagia ; nasal headaches are often due to improper drainage or disease of the accessory sinuses. In all these conditions, full scope must be given to internal medication, and topical treatment not allowed to usurp exclusive dominion.

Certain forms of headache are undoubtedly of nasal origin, so that the method of treatment suggested by **Vansant** is worthy of consideration. He forcibly syringes the nasal accessory sinuses with a stream of hot dry air (medicated in some instances) or nitrous oxide gas. The relief was complete and permanent after one or two treatments in some cases, and was so quick as to be in some instances "positively startling." In most of the cases he records there was nasal obstruction present in some form or another. The forcible syringing in many instances caused a free serous discharge from the nostrils, which did not last very long. His explanation is that the headache results from the obstruction to the outlets of the sinuses, and consequent retention of fluids and rarefaction of the confined air. The forcible syringing permits the escape of the retained gases or fluids, and restores the equilibrium of the atmospheric pressure. Once freed, the outlets do not easily become obstructed again, hence the good results of treatment are lasting. No description of the technique is given (*Philadelph. Med. Jour.*, May 7, 1898).

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Sp. vini rect.	...	...	...	...	♏ 50
Aquæ	...	...	...	...	♏ 50

This is perhaps the best form in which to administer orthoform for nasal and laryngeal ulceration. The spirit evaporates shortly after contact with the parts, leaving the precipitated powder evenly distributed over the affected area.

(5) An ointment (10 per cent.) made with any good ointment basis.

(6) An aqueous solution (10 per cent.) of the hydrochloride as a paint (*Brit. Med. Journ.*, Feb. 5, 1898).

This commendation of the new drug was generally endorsed by the London Laryngological Society, although some members had been disappointed in the results obtained.

Another promising addition is **holocaine**, a salt which occurs in small, white, needle-shaped crystals, which are soluble to the extent of 5 per cent. in cold water. **Coosemans** maintains that in holocaine we have an ideal local anæsthetic, and one which surpasses cocaine in the following respects :—1. Holocaine is cheap—about quarter the price of cocaine ; moreover, 1 per cent. solution is equal to 10 or 20 per cent. solution of cocaine solution. 2. It causes no pricking. 3. It is much less bitter to the taste than cocaine. 4. It produces no nausea, no sensation of tightness or of foreign body in the throat. It produces none of that cerebral excitation which is often responsible for cocaine mania. 5. It causes no vascular contraction. 6. It never induces symptoms of general intoxication. 7. The solutions are stable and antiseptic (*Rev. Hebd. de Laryng.*, Dec. 11, 1897).

Nosophen is recommended by **Scott Bishop** as an excellent local antiseptic in diseases of the nose and throat. It has no odour or irritating qualities, and is antiseptic and healing. Its colour is greyish-yellow, and it contains nearly 62 per cent. of iodine in combination. It is not decomposed by heat up to 220°C., and is not soluble in water. However, it is readily soluble in alkalies, and when thrown on surfaces that have just been treated with alkaline sprays it is converted into the sodium salt, antinosine (*The Laryngoscope*, Jan., 1898).

Arsenic has been strongly recommended by **Costiniu** in malignant tumours of the larynx, tongue, and nose. After application of cocaine, he paints on a 1 in 150 solution of arsenious acid, and in one case, which had been demonstrated by the microscope to be epithelioma, he obtained a definite cure. There were no symptoms of intoxication, the pain produced was very slight, and the acid appears to act only on diseased tissues (*Rev. Hebd. de Laryng.*, No. 38, 1898).

CONNECTION WITH REMOTE SYMPTOMS.

Dr. W. F. Chappell (*Laryngoscope*, March, 1898) calls attention to the common dependence of throat and nose affections on the state of the general system. Atrophic rhinitis, enchondroma, perforation of the nasal septum, recurring epistaxis, etc., are often secondary to contagious affections ; marked redness of the mucous membrane and great pain and stiffness of surrounding tissues, to latent gout or rheumatism; primary syphilitic lesions of the upper air-passages have been mistaken for diphtheria, and congenital syphilitic ulcerations of the nasal septum, soft palate, and larynx for tuberculosis and malignant disease. Acute rhinitis and laryngitis often spread downward to the trachea and bronchi, and conversely, though laryngeal tuberculosis is nearly always secondary to that of the chest. Gastro-intestinal disorders play their part by causing venous congestion, especially round the base of the tongue, with glandular swelling there and on the posterior pharyngeal wall. Lithæmia is also responsible for much glandular tissue increase. Hysteria is a factor in the production of aphonia, œsophagismus, and dysphagia ; nasal headaches are often due to improper drainage or disease of the accessory sinuses. In all these conditions, full scope must be given to internal medication, and topical treatment not allowed to usurp exclusive dominion.

Certain forms of headache are undoubtedly of nasal origin, so that the method of treatment suggested by **Vansant** is worthy of consideration. He forcibly syringes the nasal accessory sinuses with a stream of hot dry air (medicated in some instances) or nitrous oxide gas. The relief was complete and permanent after one or two treatments in some cases, and was so quick as to be in some instances "positively startling." In most of the cases he records there was nasal obstruction present in some form or another. The forcible syringing in many instances caused a free serous discharge from the nostrils, which did not last very long. His explanation is that the headache results from the obstruction to the outlets of the sinuses, and consequent retention of fluids and rarefaction of the confined air. The forcible syringing permits the escape of the retained gases or fluids, and restores the equilibrium of the atmospheric pressure. Once freed, the outlets do not easily become obstructed again, hence the good results of treatment are lasting. No description of the technique is given (*Philadelph. Med. Jour.*, May 7, 1898).

The connection between **nasal** and **ocular diseases** have again been insisted on by **Stiel**. The relationships are essentially of three kinds. The first consists of reflex ocular disturbances, lachrymation, photophobia, scotoma, ophthalmic migraine, and especially asthenopia. The second consists of the connection between the nose and the eye through the tear duct. Inflammation in the nose, hypertrophy of the inferior turbinal and ulcerative processes, cause swelling of the cavernous tissue of the lachrymal duct, with stenosis, and as a result stagnation of tears in the tear duct. Bacteria increase and cause inflammation of the walls of the tear duct, producing dacryostenosis and dacryocystitis. As a result, preliminary treatment of the nose should precede probing and washing out of the tear duct. The third relationship consists of the proximity of the nose and eye. The orbit is surrounded by the accessory cavities, so that inflammation of these latter can easily spread to the eye. Every gradation, from simple collateral hyperæmia to orbital abscess and cellulitis, has been observed. Orbital abscess is usually secondary to disease of the antra (*Münch. med. Wochen.*, Jan. 25, 1898).

THE NOSE.

The possible dangers of the **nasal douche**, and its liability to abuse, have been insisted on by **Lichtwitz**. Amongst the dangers are disturbance to the sense of smell, due to the alteration produced by the medicated solutions on the epithelium and nerve endings; the occurrence of pains in the head, which are sometimes explained by the entrance of lotion into the accessory sinuses; and the entrance of liquid into the middle ear, sometimes followed by suppurative otitis. The danger of abuse resides in the fact that in prescribing it for a patient we frequently temporarily relieve him, while he not only remains uncured of his original complaint but to it are added the risks he runs from the use of the nasal douche. For Lichtwitz holds that genuine ozæna is the only affection in which the use of the douche is justified; in other nasal affections it is insufficient, useless, or even dangerous. He entirely disapproves of it after operations on the nose (removal of polypi, etc.), or naso-pharynx (removal of adenoids) (*Sem. Med.*, 30th October, 1897). In this latter opinion he is joined by many observers, and although the nasal douche has its uses I have no doubt that it is most recklessly prescribed. Even if its dangers have been exaggerated, the abuse it leads to is considerable, since it lulls the patient into a false sense of comfort that something is being done for him. I have repeatedly pointed out that when there is no pus formation in the nose, its

mucous membrane serves for its own cleansing and antiseptic purposes. When lotions are absolutely called for, they should preferably be administered in sprays or with syringes.

With regard to **nasal sprays**, some useful suggestions are made by **Scott Bishop**. For softening, dissolving and washing out discharges and crusts that cling to the mucous membrane he employs the following alkaline formula: ℞ acidi borici, sodii bicarbonatis, sodii chloridi āā ʒij, glycerine ʒiij, aquæ rosæ ʒiv, aquæ q.s. ad Oj. For a permanent medicinal effect on the mucous membrane sprays should be prescribed with a purified petroleum oil, and it is better that this oil should always be rendered antiseptic and disinfectant. These requirements are admirably complied with in Benzoinol. The addition of the balsamic resin, benzoinum, to the oil adds the germicidal property of an acid, besides the slightly stimulating effect of benzoin to the emollient and protective qualities of the oil. This affords an ideal base for various therapeutical combinations for medicating the respiratory mucous membrane. The simple benzoinol may be used in an atomiser, or with a 3 per cent. addition of camphor-menthol. For the sore throat associated with changes of weather, and possibly connected with the rheumatic or gouty diathesis, the following formula is well adapted: ℞ salol, 3 per cent.; oil of gualtheria, 4 per cent.; thymol, 3 per cent.; benzoinol, 90 per cent.

In tuberculosis of the nose and throat the atomiser puts some power of local self-treatment within the reach of the sufferer. In the pre-ulcerative stage the following formula is indicated: ℞ aristol, 10 per cent.; menthol, 3 per cent.; benzoinol, 87 per cent. After ulcers have formed and dysphagia is complained of, the following can be advantageously employed by the patient: ℞ creosote, 4 per cent.; carbolic acid, 3 per cent.; oil of tar, 3 per cent.; oil of wintergreen, 4 per cent.; benzoinol, 86 per cent. (*The Laryngoscope*, Feb., 1898.)

Suprarenal substance in hay fever.—**Solomon Solis-Cohen** (*Philadelphia Med. Journ.*, August 13, 1898), who for many years has suffered from hay fever, last summer tried suprarenal substance, abandoning all other measures, so as to give the remedy a fair trial. Except that he soon found it necessary to resume the wearing of dark glasses when driving in the sun, the treatment was, he says, entirely successful in controlling symptoms. After a time, having discontinued it from carelessness, the symptoms returned in full force. He then experimented as to the effect of taking or omitting the medicine, and found that after taking it he was comfortable for a certain number of hours, and that intermitting it for longer periods or omitting it altogether for

a day would cause a return of greater or less distress. At first he used a glycerine extract freshly prepared from carefully selected adrenals of sheep. In a vehicle of simple elixir (fifteen minims to a teaspoonful) it was not unpleasant. This dose three times daily was at first sufficient; later it became necessary to increase either the dose or the frequency. A larger dose caused a suspicion of nausea. Tabloids prepared by Burroughs & Wellcome were therefore substituted. One tabloid, representing 5 gr. of suprarenal substance, was allowed to dissolve in the mouth (the effect seeming to be better when the remedy was administered in this way, probably owing to direct absorption) every second, third, or fourth hour, according to effect. The average amount taken was five tabloids daily, the last one being taken at bedtime, and ensuring "a sneezeless coryzaless night." Sometimes a single tabloid was not sufficient, and two would be taken at a dose, that is, within a few minutes. If coryza or sneezing had begun, it would cease within fifteen minutes after taking the tabloid. The action of the suprarenal substance is, the author points out, to raise blood pressure by increasing the vascular tone; and this action may be local as well as general. To this effect in bringing about contraction of the vessels of the nasal mucous membrane he attributes the relief experienced. (*Epitome, Brit. Med. Journ*, Oct. 15, 1898.)

Epistaxis is, as a rule, one of the very simplest nasal affections to cure. To the rhinologist the proper treatment is so well established that he has ceased to look about for new hæmostatics. The large majority of these cases, however, occur in the practice of the family physician, and one may therefore be excused for referring to the generally adopted method. **Dr. Le Marc Hadour** writes that the bleeding point, whether originating spontaneously or from trauma, is nearly always the same. This is on the cartilaginous septum, a little above and behind the nasal spine. There is a choice of three methods of treatment: expectant, medicinal applications, or radical treatment. The first applies to the slightest forms. The second embraces direct pressure, and applications of solutions of antipyrin, cocaine, and peroxide of hydrogen. By the radical cure is understood cauterisation with the galvano-cautery, nitrate of silver, or chromic acid. The author does not employ the galvano-cautery, which is difficult to manipulate in this condition; and he does not make use of nitrate of silver, as the scar it leaves is soft and superficial. He prefers chromic acid fused on the end of a probe; it rapidly arrests the hæmorrhage and seals up the vessels from which it proceeded. (*Rev. Int. de Méd. et de Chir.*, No. 12, 1898.)

E. B. Gleason (*Laryngoscope*, Mar., 1898) describes two **methods of controlling nasal hæmorrhage,** which he has practised successfully, the object being to occlude the posterior naris without the use of Bellocq's snare. In the first he takes a long slip of muslin, $18 \times 1\frac{1}{2}$ in. This is soaked in cosmolin or albolin and folded about three inches from one end over a probe, and pushed through the nostril into the posterior naris—the short end next the septum. The long end is again folded near the ala and pushed into the sac just formed, and the packing deeply repeated until the bleeding cavity is filled. When the gauze requires to be removed gentle traction upon the free end will gradually draw out fold after fold without producing irritation.

The other method is by taking a large, loose piece of absorbent cotton-wool, soaking it in a fifteen-volume solution of peroxide of hydrogen and pressing it through the inferior meatus to the posterior naris, as in the first method. If necessary, smaller pledgets of cotton, dipped in the peroxide, could be packed in front of the larger piece. The packing in either case should not be removed inside of twenty-four hours, and then, if necessary, removed.

It is well known that **plugging the nostrils** exposes the patient to the risk of otitis media, and **Saint-Hilaire** has pointed out that this procedure may also be the cause of empyema in the maxillary antrum. In both the cases which he records the nasal plug had been left *in situ* for two days—a quite uncalled-for period. No nasal plug should be left in place for more than twelve hours, or twenty-four at the utmost, without being changed. But, in fact, it is very rarely indeed that plugging the nose is ever required. The bleeding point is generally anteriorly, and can easily be detected and sealed with chromic acid, or a touch of the galvano-cautery. It is also remarkable how many cases of epistaxis can be arrested by simply closing the nares with the finger and thumb and allowing a blood-clot to form. I myself have never seen Bellocq's sound employed, except in the class-room or examination hall! (*Archiv. Internat. de Laryng.*, No. 2, 1898.)

Deviation of the septum.—While spurs of the septum causing symptoms can be very satisfactorily dealt with, it must be confessed that the treatment of large deviations leaves much to be desired. The difficulty is, in such cases, that the prominent part of the septum cannot be removed without opening through into the concavity on the other side, and so causing a perforation. To avoid this, **Escat** of Toulouse, has suggested an ingenious plan for saving the mucous membrane on one side of the septum, sufficient to furnish a membranous septum which serves both for

physiological and æsthetic purposes as well as a cartilaginous one. This is done by means of a submucous injection of sterilised water beneath the mucous surface on the concavity of the deviation (hydrotomy). The mucous membrane by this means is raised from its cartilaginous base, so that when the prominent part of

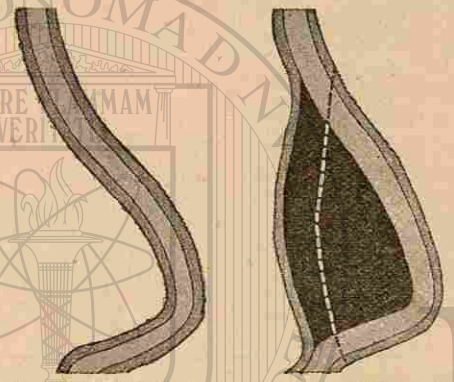

Fig. 1.—Escat's plan for treating deviation of the septum.*

the deviation in the other nostril, *i.e.* the convexity, is removed, the mucous membrane on the right side is left intact. (*Archiv. Internat. de Laryng.*, No. 4, 1898.)

Nasal synechia.—The most practical method of removing a synechia will depend upon its location, and the degree to which the parts are united. Where the tissues are joined simply by a fibrous band, the pressure of a probe is generally sufficient to remedy this condition; but where the synechia is more extensive a condition presents itself which is not very difficult to correct surgically, but in which the probability of a recurrence is very great. Plugging the nose with iodoform gauze, after the separation has been made, is a method extremely painful and disagreeable to the patient. **Scheppegrell** cuts through the synechia in the following manner:—A fine celluloid probe is bent at a short distance from its extremity, and passed beneath the adhesion. The curved part which will then appear above the fleshy bridge is caught with alligator forceps and brought out above the band. To this a silk thread and then a piece of piano wire are attached, so that when the celluloid tube is withdrawn the wire circumvents the synechia. The wire is attached to any of the usual snare-handles, and the adhesion is slowly cut through. A very thin,

* For the loan of this *cliché* we are indebted to M. Escat of Toulouse.

white sheet of celluloid is then cut to such a size and form that its lower edge will rest on the floor of the nostril, its upper edge reaching above the synechia, and its anterior edge very near the anterior orifice of the nose, so that, in blowing or sneezing, the celluloid will always separate the raw surfaces. The nostril requires no further treatment; all that is necessary is that the patient should use an alkaline and antiseptic nose-wash two or three times a day. (*The Laryngoscope*, Jan., 1898.)

The **adhesions** which take place between the turbinals and the septum after cauterisation of the nose, especially after the use of the galvano-cautery, are so troublesome that in many cases it is most desirable to take every precaution to avoid them. **Lavrand** recommends the use of chromic acid as an intra-nasal caustic, as being free from reaction and therefore not nearly so apt to produce these troublesome adhesions. (*Bull. Soc. Franç. d'Otolog.*, 1898.)

The following is **R. Lake's** simple and effective method of coating a probe-tip with **chromic acid**. A crystal or two of the acid are picked up on the end of the probe, the probe is now held in the flame of a spirit lamp, so that about half an inch of the end which supports the acid projects beyond the flame. The crystals soon melt, forming a dark brown fluid. When the crystals are entirely melted by the heat, the probe is removed from the flame. It is then rotated until the tip is completely covered, and allowed to cool. The end will now be seen completely sheathed by a pink coating of the acid. One avoids the spluttering and annoyance caused by thrusting the crystals into the flame, and at the same time obtains a far more satisfactory result. (*Journal of Laryng.*, Nov., 1898.)

In **tertiary syphilis** of the nose and throat **StClair Thomson** lays stress on the desirability of treatment by inunction of mercury. He points out the disastrous results which may occur—saddle-back nose, stenoses of the pharynx and larynx, etc.—if tertiary symptoms in this region are not quickly recognised and actively combated. In the nose it is always a grave symptom, as it may be the forerunner of deeper manifestations—especially in the brain. The teeth and gums should be put into as healthy a condition as possible before the treatment is inaugurated. A chlorate of potash mouth-wash is prescribed. Small doses of iodide with aromatic spirit of ammonia and bitters, are given on an empty stomach. Then 20 to 60 grains of ung. hydrargyri are rubbed in nightly, the site of inunction being changed every evening in the week. The ointment should be freshly

prepared. At first the effects must be carefully supervised. The duration of this treatment will vary according to the case, but generally 30 to 40 rubbings are required. With the disappearance of the symptoms the "chronic intermittent" treatment should be pursued. The local treatment consists in cleanliness and antiseptics; the local use of mercurial lotions; the judicious use of escharotics, such as the acid nitrate of mercury in the strength of 1 to 8; and such surgical measures as the curette and the knife. (*The Laryngoscope*, Jan., 1898.)

These views are thoroughly endorsed by **Lieven** of Aix-la-Chapelle, but he points out that to be on the safe side it is better in many cases to combine the administration of the iodides with mercurial treatment. To avoid stomatitis the patient is directed to cleanse his mouth with the following tooth powder after each meal: ℞ salol 4·0 grms., resorcin 3·0, pulv. irid. flor. 40·0, calc. carbon. 8·0, carmin. 0·3, ol. menth. pip. guttæ 10. The mouth is rinsed out with the following mouth-wash every half-hour or so: ℞ liquor alumni. acet. 100, aq. flor. aurant. 300, aq. dest. 800. (*The Laryngoscope*, May, 1898.)

Vacher insists on the advantages of post-nasal irrigations of a weak mercurial solution employed regularly and carefully. If used in considerable quantity and every two hours they rapidly cleanse the surfaces, check ulceration, and promote the effect of the general treatment, which should be kept up for a considerable time. As lotion he employs a 1 in 20,000 solution of salicylate of mercury obtained by double decomposition of bichloride of mercury and salicylate of soda:

Perchloride of mercury	1 gr
Salicylate of soda	2 gr
Boiled water...	1,000 gr

This solution contains a little chloride of sodium (*Annal. des Mal. de l'Oreille*, No. 7, 1898.)

Ozæna.—Last year I referred fully to the employment of diphtheritic antitoxin in this disease. More than two years have passed since the treatment was first recommended by Belfanti and Della Vedova, and latterly little has been heard in its favour. **Holger Mygind**, however, has given it a thorough trial in ten cases of genuine ozæna, and comes to the conclusion that in this disease subcutaneous injections of antidiphtheritic serum have an immediate and very marked effect upon the mucous membrane of the nose. Indeed, he thinks it the most effective treatment hitherto known. He considers that the theory that ozæna is caused by an attenuated form of the diphtheria bacillus is too weak to be adopted as a basis, and indeed, he has obtained results which seem

as good as those mentioned by simply treating ozæna patients with injections of normal horse serum. (*Jour. of Laryn.*, Aug. 1898). The subject requires further research, and in the meantime we must be content with ordinary alleviative treatment.

Moure thinks the use of diphtheria serum rests on an insecure basis, and is sceptical of the results obtained by electrolysis. He recommends that the nasal fossæ be cleansed and then massaged with probes coated with cotton-wool, and dipped in the following:—

Iodine	1–0·25
Potassium iodide	0·2–0·3
Trichloracetic acid	0·15
Glycerine	60·0

or

Menthol	1·0–2·0
Eucalyptus	0·1
Ol. vaselini	60·0

The secretion is then removed with a syringe, and powder containing 5 to 25 per cent. of powdered silver nitrate is applied. With this treatment improvement is obtained in a large majority of cases, and a complete cure in some. (*Deut. med. Woch.*, 7 April, 1898.)

It is rare in Great Britain for **larvæ** to be met with in the nasal chambers, but should they be detected, or even suspected, it is well to bear in mind that they are easily destroyed by oil—either olive oil or liquid vaseline—which, of course, is quite innocuous to the human tissues. Respiration in insects is carried on by means of an intricate system of tubes (pulmonary trachea), which open by pores (spiracles or stigmata) in the sides of the body. These are blocked by the free use of oil, thus causing suffocation. (**Scheppegrell**: *The Laryngoscope*, Feb., 1898.) This application of oil is a ready method of terminating the lives of wasps and other summer insect pests.

Acute suppuration in the accessory sinuses of the nose is probably not uncommon. In fact, the ordinary empyema commences in most cases with acute suppuration, and if this were recognised and suitably treated, nearly two-thirds of the cases of chronic suppuration would be avoided. **Lermoyez** points out that in order to effect this the practitioner should know both how to diagnose, and how to treat acute suppuration. The former is not difficult. The first rule is to bear in mind that only adults are affected. Secondly, the sudden onset of nasal suppuration and facial neuralgia should always raise the suspicion of a sinusitis, and this becomes stronger if the flow of pus is one-sided and fœtid.

Such a state of things should at once lead to a thorough examination of the nasal fossæ and their accessory cavities. As to treatment, it should only be operative if there are cerebral symptoms, if there is subcutaneous or orbital inflammation, or if the medicinal treatment has failed after some weeks of trial. This medical, abortive treatment can require no expert skill to carry it out. The object desired is to restore the natural drainage of the affected sinus. For this purpose, the nasal douche or lotion should be avoided, and the following treatment with menthol carried out. Menthol is not toxic, and it is vaso-constrictor; it is analgesic and antiseptic. It is employed as follows: Into a jug, or inhaler, of very hot but not boiling water, a teaspoonful of the following solution is poured:—

℞ Menthol, crystallised	...	...	...	4 grammes.
Alcohol at 90°	...	...	...	100 „

The vapour is inspired through the nose for five or ten minutes every hour. At the same time the classical treatment for any febrile condition should be carried out—rest in bed, low diet, purgative, etc. The pain may be relieved by antipyrin or phenacetin, and every upper molar which may be suspected of causing the suppuration should be removed at once. (*La Presse Méd.*, Feb. 16, 1898.)

NASO-PHARYNX.

Deaths continue to be reported of patients while undergoing operation for the removal of **naso-pharyngeal adenoids**, and rumour is busy with the reports of others which are not published. Some of these were due to hæmorrhage, and it has been shown by **Brown Kelly** that an abnormal distribution of the internal carotid may account for some of these (*Glasg. Med. Journ.*, Jan., 1898). But the largest number of fatalities are attributed to the anæsthetic employed, and **Hinkie** states that since 1892 he has collected references of no less than 18 deaths attributable to the chloroform administered for the removal of post-nasal growths. In his own fatal case death occurred just at the end of the operation. He suggests that these fatalities may be due to the "habitus lymphaticus" of adenoid patients, *i.e.* a constitutional condition in which there is hypertrophy of the lymphoid tissue throughout the body, frequently associated with dilated heart and narrow aorta. A result of this condition is an increased vulnerability and a particular predisposition to cardiac syncope. (*The Laryngoscope*, July, 1898.) Of course, those who have had large experience with chloroform and have not met with any accident, will maintain that all depends on the method in which the anæsthetic is administered. Still, as universal skill cannot be assured in chloroform administration, I think it is time that the profession reconsidered the question of the administration of this anæsthetic in the removal of naso-pharyngeal adenoids. There are many who claim to do the operation as thoroughly under the much safer administration of nitrous oxide, and it is strange that bromide of ethyl never appears to have been given much in Great Britain. In Paris it is the almost universal anæsthetic for operations of short duration on the throat.

In the *Boston Med. and Surg. Journ.*, May 19, 1898, **Dr. W. Preble** writes on **secondary hæmorrhage** following the removal of naso-pharyngeal adenoids. He removed vegetations from a girl aged eleven years. The bleeding was not severe. The operation was quite successful and nasal breathing was restored. But on the seventh day a sudden hæmorrhage occurred, and the girl was carried into the house fainting. Under cold syringing the bleeding stopped. It recurred, and was stopped by plugging the posterior nares. On the eighth day a sudden gush of blood came on, and she died before assistance could be rendered. There was no history of hæmophilia. Dr. Preble has collected 21 cases of serious primary hæmorrhage after this operation (of which 4 proved fatal), and 5 cases of secondary hæmorrhage. Of the latter, 3 of the patients were French and 2 were Danish. There does not appear to be any case of secondary hæmorrhage recorded in English literature. (*Lancet*, 1898.)

THE PHARYNX.

The pathology of the **lingual tonsil** formed the subject of one of the formal debates at the 1897 meeting of the Société Française d'Otologie, &c.* As regards treatment, **Escat** said that catarrh should be treated with antiseptic gargles or sprays of carbolic, thymol, phenosalyl, lysol, resorcin, sublimate, or salol; dysphagia and pain being met with menthol, cocaine, or, better still, holocaine of 1 per cent. The general treatment of catarrh and the treatment required for acute inflammation are the same as that indicated when the palatine tonsils are attacked. In brief, the lingual tonsils are subject to the same affections as the palatine, and require treatment on precisely the same lines. **Lermoyez** pointed out that we should be very careful in attributing subjective throat symptoms to some slight change in the lingual tonsils; for not only is it remarkable that these tonsils are frequently enlarged without causing any symptoms,

* *Bullet.*, 1898.

but in many cases where relief from subjective symptoms appears to have followed some application to them, it is striking that no change has been effected in the size of the gland, and yet the psychical effect of the treatment has modified the neurotic sensibility.

Various remedies are constantly being recommended for **peritonsillitis**, although considerable reliance may be placed on some of the preparations of salicine, with brisk purgation, and early puncture when pus has formed. **K. W. Baldwin** claims that if a case is seen early the following treatment will abort an attack, and that in a later stage it will prevent the formation of pus and the involvement of the opposite side. After thorough cleansing of the throat and nose with an alkaline spray, equal parts of spirit of turpentine and compound spirit of lavender are painted on to the inflamed tissues as thoroughly as possible. The taste of the turpentine may be disguised by the addition of a few drops of the oil of anise or gualtheria. It is painted on every three hours. A mercurial followed by a saline laxative is usually indicated. Codein is used to control the pain. (*Journ. Amer. Med. Assoc.*, Mar. 12, 1898.)

Lupus of the throat is not a very uncommon affection, and in its treatment **Lambert Lack's** warm commendation of the internal use of arsenic deserves every attention. In his experience nothing has produced such excellent results as the internal administration of Fowler's solution, increasing the dose as tolerance is established, so that in adults he has given as much as twenty minims three times a day. For the cure of lupus of the pharynx and larynx other means of treatment appear to him to be superfluous. It is curious to note that arsenic was not found by Lack to be nearly so efficient in intranasal lupus, and in such cases he usually employs local treatment in addition. In those of his cases where there was also lupus of the skin, the latter was unaffected by the arsenic. It also appears to be without effect in chronic tuberculosis of the pharynx and larynx; in fact, when pushed, it seems decidedly harmful. (*Treatment*, April 28, 1898.)

THE LARYNX.

Laryngeal tuberculosis.—**Donelan** recommends that the larynx be thoroughly cleansed by antiseptic sprays, and by the use of a mixture of guaiacol and paroleine. The larynx is then cocainised, and under the guidance of the laryngeal mirror an injection of one minim of pure guaiacol is made into the affected part of the larynx with a specially-designed laryngeal syringe. (*Lancet*, Dec. 25, 1897.) A similar method of submucous

injection had previously been recommended by Chappell and Watson Williams.

The dysphagia of laryngeal tuberculosis frequently calls for alleviation. **Eugene S. Yonge** divides the treatment of this symptom into two parts—that by drugs and that by methods. There is no ideal drug which is suitable in every case, but the following are generally effective:—Cocaine, antipyrin, eucaine,

Fig. 2.—Donelan's laryngeal syringe for submucous injection.

orthoform, carbolic acid, guaiacol, ice, morphia, and paramonochlorphenol. In the presence of ulceration any of the above remedies may be applied, but when loss of tissue is absent, only cocaine, antipyrin, eucaine, carbolic acid, and ice are available. In extensive ulceration, morphia and iodoform give modified relief for several hours. Orthoform (*vide* p. 397), when applied to a cleansed laryngeal ulcer, produces, in the great majority of cases, complete relief, beginning in a few minutes and lasting several hours. Of methods other than drugs there may be considered the prone position, recommended by Wolfenden, to be adopted in taking nourishment; the imbibition of semi-solids; the œsophageal tube; rectal feeding; and, lastly, surgical measures. The author has had no experience of curettement, etc., for the relief of painful deglutition, because he has not yet encountered a

case of dysphagia, uncontrollable by other measures, in advanced phthisis, in which the state of the lungs and the general condition of the patient were such as to permit the consideration that surgical interference would be successful, or even justifiable. (*Journ. of Laryng.*, Sept., 1898)

Tracheotomy under local anæsthesia.—B. Fraenkel (*Berl. klin. Woch.*, June 6, 1898) draws attention to the fact that in chronic stenosis of the larynx tracheotomy cannot always be done at the most opportune moment, and the risk of the operation may thus be increased by the general anæsthetic. The tracheotomy may have to be done in much haste. It may happen that the patient may have to take up a certain position in order to facilitate the breathing, and when such a patient is placed on the operating table he has an attack of asphyxia. By doing away with the voluntary respiratory efforts as occurs in general anæsthesia, it may no longer be possible for the patient to force air through the narrowed passage. Fraenkel has performed 23 tracheotomies under cocaine during the past three years. He has injected a 20 per cent. solution in two places or a 10 per cent. solution in four places beneath the skin of the part. In a few minutes tracheotomy could be carried out without pain. In children, only a 10 per cent. solution should be used. In the adult, 0·04 of cocaine is injected. The patient fears the tracheotomy under cocaine less than the general anæsthesia. The author has found that under cocaine it is never necessary to complete the operation in a hurry owing to threatening asphyxia. Fraenkel has thus tracheotomised 17 adults: 5 for laryngeal syphilis, 6 for tuberculous laryngitis, 4 for carcinoma, 1 for pachydermia laryngis, and one for stenosis resulting from attempted suicide. In a further 2 cases tracheotomy was done for acute disease. In 4 cases chloroform was used as well as cocaine. After a certain amount of anæsthesia was induced, cocaine was injected, and the tracheotomy performed in partial narcosis.

The advantages of **intra-tracheal injections** have again been advanced by **John A. Thompson** (*Journal of Laryngology*, 1898, No. 2). He did not recommend them in the acute stage of bronchitis before there was any secretion; they were not tolerated and only excited cough. He had obtained excellent results in pulmonary tuberculosis and chronic bronchitis, and believes that the same results could not be obtained from inhalations. In the inhalation treatment the vapour employed condenses so rapidly that only a small proportion of the remedy can reach the lungs. The superiority

of the method of intra-tracheal injection is due to the comparatively large dose that can be used, and the thorough saturation of the air in the lungs with the vapour. There are many proofs that tracheal injections are speedily absorbed, and they have the advantage of not being changed by the digestive processes, as they are when taken into the stomach. The digestion and appetite are not interfered with. From one to four drachms of fluid are used at a sitting, and there is no necessity to spray the larynx with cocaine beforehand. For further particulars of this method, *vide* Colin Campbell, *Medico-Chi. Trans.*, vol. lxxviii. 1895.

The treatment of chronic cervical lymphadenitis by the introduction of drugs into the crypts of the tonsils.—In the *Boston Medical and Surgical Journal* of May 19, 1898, **Dr. J. L. Goodale** has described this novel and ingenious method. His observations refer to the glands at the angle of the jaw and not to the occipital, jugular, and submental glands. The difference between the stout, compact epithelium covering the exposed surface of the tonsil and the delicate loose structure lining the crypts leads him to suppose that absorption takes place chiefly through the latter. A number of foreign substances were introduced into the crypts of tonsils destined for excision and the tonsils were removed at varying intervals and examined microscopically. The substances were found to have been absorbed and to have passed into the interfollicular lymph channels. To exclude complicating influences in the cases selected for treatment adenoid hypertrophy was absent and the lymphadenitis was out of proportion to discoverable disease of the tonsil, particularly hypertrophy. In most cases a 10 per cent. aqueous solution of iodine was used. Three or four drops were drawn into a syringe through a canula, which was introduced into a crypt as far as it would go and the fluid was expelled. The injections were repeated every third or fourth day. In most cases a remarkable reduction in the glandular swelling took place. For example, a pale, poorly-nourished girl, aged eight years, had a gland at the right angle of the jaw measuring 2 in. by 1 in. The gland became steadily reduced in size, and in eight weeks measured $\frac{3}{4}$ in. by $\frac{1}{4}$ in. In a few cases apparently suitable for this treatment no improvement resulted; possibly there was some source of infection other than the tonsils. (*Lancet*, Sept. 24, 1898.)

NEW PUBLICATIONS.

"Maladies du Larynx, du Nez, et des Oreilles." Par André Castex. (Paris: Librairie J. B. Baillière et Fils, 19, Rue Hautefeuille. 1899.)

"The Throat and Nose, and their Diseases." By Lennox Browne. Fifth edition. Price 31s. 6d. (London: Baillière, Tindall & Cox. 1899.)

"Diseases of the Upper Respiratory Tract." By P. Watson Williams. Third edition. (Bristol: John Wright & Co. Price 8s. 6d. 1898).

"Nasal Obstruction." By W. J. Walsham. Price 7s. 6d. (London: Baillière, Tindall & Cox, 1898.)

TROPICAL DISEASES.

By Patrick Manson, M.D., F.R.C.P., LL.D.,

Physician to the Seamen's Hospital Society—Branch Hospital, Albert Docks.

Malaria: mosquito theory.

Although we may chronicle no very important advance in the therapeutics of tropical disease during 1898, some important advances in the etiology of malaria, which in the not very distant future may have important practical issues, demand a brief notice.

In the "Year-Book" for 1898 Ross's observations on the malaria parasite in its relation to the mosquito were briefly described. It was pointed out that in the stomach wall of a certain species of mosquito, fed on crescent-containing blood, pigmented cells, which were presumed to be a developmental stage of the malaria parasite, were found. In the *Brit. Med. Journ.*, Feb. 26, 1898, Ross published additional observations which enabled him to state positively that these cells were certainly pathological as regards the insect, and also to convince him that his conjecture that they were malaria parasites was correct.

Since that time Ross has turned his attention to the study of the proteosoma of birds. Proteosoma, which occurs in several species of birds, is an intracorpuscular blood parasite closely allied in appearance, structure, and habit to the malaria parasites of man. By feeding a certain species of mosquito ("grey" mosquito) on sparrows infected with proteosoma, and subsequently dissecting the insects, Ross found that he could, without fail, obtain a crop of pigmented cells in the stomach wall of the mosquito experimented with. These pigmented cells closely resembled the cells he had previously seen in the mosquito above referred to as having been fed on human malarial blood. They were lodged among the muscular fibres forming the outer layer of the stomach wall. On the second day after feeding, the pigmented cells were still very minute (6μ), but day by day they increased in size, until at the end of a week they measured from 30μ to 60μ in diameter. With increase in size the cells in question acquired a capsule of some thickness and showed evidence of structure, some being granular, some being hyaline with the

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appearance of vacuoles, some containing peculiar sausage-shaped black rods. As the cells increased in size they came to project from the outer surface of the stomach, giving that viscus, as seen through a low power of the microscope, the appearance of being studded over with warts. At this stage of their development, if the cover-glass overlying the preparation were lightly pressed down so as to rupture the cells, a vast number of very minute, somewhat flattened, spindle-shaped, motionless bodies were forced out from a proportion of the cells into the body cavity of the insect. These spindle-shaped rods (germinal rods, Ross calls them) are apparently taken up by the blood of the mosquito, and are ultimately filtered out, at least in part, by the cells of the veneno-salivary gland situated in the head of the insect and communicating by a duct with the proboscis. The secretion of this gland is instilled by the mosquito when it bites. Ross found that by causing a healthy sparrow to be bitten by an infected mosquito he could communicate proteosoma, the characteristic intra-corpuscular parasites appearing in the infected sparrow's blood in great profusion some five to eight days after it had been bitten. This experiment was successfully repeated thirty times. It is therefore absolutely conclusive as to the possibility of communicating proteosoma disease to healthy sparrows by means of the grey mosquito.

Seeing that certain species of mosquito, fed on human blood containing malaria parasites, present pigmented cells in the stomach wall; that certain species of mosquito fed on proteosoma containing bird's blood also present similar pigmented cells; that mosquito-infected proteosoma can convey proteosoma disease to sparrows; Ross concludes that human malaria is communicable in the same way by mosquitos.

Recent observations made in Rome confirm this conclusion. **Grassi** (*Il Policlinico*, vol. v., 1898), who has made an extensive study of the mosquitos of Italy (upwards of fifty species), finds that only three species (Anopheles claviger, Culex malariæ, Culex penicillaris) constantly occur in, and are confined to, the worst malarial districts. Believing that one or all of these three species was an active agent in conveying malaria to man, Grassi placed specimens at Bignami's disposal for experimental purposes. For a time repeated attempts at infecting man by the bite of these insects were futile. Quite lately, however, and under circumstances which seem to exclude all sources of fallacy, Bignami has succeeded in conveying malaria to a man by one or other of these three species of mosquito. The subject of the successful experiment was an old soldier who had been in San

Spirito Hospital, Rome, for upwards of six years, and who, during all that time, had never suffered from fever. Some days after he had been bitten he showed a rise of temperature at midday, and at 3 p.m. had a rigor. At 4 p.m. the temperature was 102° F.; it continued rising, and on the third day reached 105° F. On the morning of that day the unpigmented amœba form of the æstivo-autumnal parasite was detected in the blood. In the evening the parasites were mostly unpigmented, but a few showed initial pigmentation, and brassy red corpuscles were seen. Quinine was then administered, and by next morning the temperature had become normal. This experiment seems conclusive, although, unfortunately, Bignami cannot say which of the three species of mosquito was responsible for conveying the infection. This, however, is a point which will be easily determined by further experiment.

2. Quinine and blackwater fever.

The uncertainty which has for so long hung over the ætiology, nature, and treatment of blackwater fever has not been dispelled by **Professor Koch's** recent utterances on the subject. In an experience of sixteen cases observed by him at Daressalam, he ascertained the presence of the malaria parasite only in two. As bearing on the use of quinine in, and on its relation to, the disease, he writes of one patient, "that he had not been more than eight months in East Africa; at home, it is alleged, he had never been ill, but caught the fever a few months after his arrival, and up to the time of his reception into the hospital, with shorter or longer interruptions, the attacks had always returned to him. About a month before he had an attack of blackwater fever. During his first week in the hospital he was free from fever and seemed to recover; no malaria parasites were discovered in his blood. Suddenly there occurred a rise in the temperature, which aroused the suspicion of a malaria relapse. The blood was examined, and now the presence of tropical parasites (æstivo-autumnal) was ascertained. He was given 1 gramme of quinine during the time of his freedom from fever, and a few hours later he had a pretty strong attack of blackwater fever. I at once conjectured that there existed here a causal nexus between quinine and blackwater fever. Of course, that might at first only be a conjecture, but soon it was to become a certainty. To prevent a relapse, the patient had to take further doses of quinine, and thereby it would soon become evident whether it was a mere coincidence or a case of blackwater fever caused by quinine. The patient received the next quinine dose after the complete disappearance of the hæmoglobinuria, the fever temperature, and

also of the parasites. A few hours after the quinine was taken another typical attack of blackwater fever, with a rise of temperature, hæmoglobinuria, and slight icterus, took place. To make every doubt impossible, a third dose of quinine was given, which could be done without hesitation, as the previous attacks had never taken a threatening character, and the patient received the quinine doses on the fifth day of the complete disappearance of his malaria. The effect was absolutely the same as after the previous quinine doses. Precisely at the same hour a typical blackwater fever attack again made its appearance. Afterwards the patient declared that before the attack of blackwater fever which he had gone through previous to his admission to the hospital, he had taken quinine."

In this case the parasite present in the patient's blood was what Koch calls the "tropical," that is the æstivo-autumnal of the Italians; in the following case the parasite was the benign tertian. "The patient had been for a year and a quarter in East Africa; he had his first fever three weeks after his arrival. After three months in Africa, he noticed for the first time bloody urine after having taken quinine a short time before. Since then he has had, as he told me himself, ten attacks of blackwater fever, and that, each time after taking quinine. His last attack he had a month ago, when he had taken quinine on account of a tertian fever. As the quinine had to be stopped after this one dose the fever returned and the patient was treated with arsenic, but without result; so that there was nothing left but to return to quinine. This time a dose of half a gramme was given subcutaneously. The patient received it at 8 a.m., the fever attack regularly taking place between twelve and one. Two hours after the injection there was violent ague shivering, which lasted for about half an hour. Soon after, 250 c.cm. of bloody urine was passed, the patient complained of pains in his limbs, a feeling of uneasiness, great weakness and nausea. He vomited several times. From twelve o'clock onward, the skin assumed an icteric hue which soon turned to a deep yellow. Towards two o'clock, a further evacuation of 150 c.cm. of black-red urine took place. After this, the weakness of the patient increased, and he fell into a sleep out of which he could not be aroused. Death came at ten o'clock in the evening, twelve hours after the injection."

That the administration of quinine provoked the blackwater explosion in these cases seems a reasonable enough conjecture; but to say that blackwater fever is caused by quinine, is "quinine poisoning," as Koch asserts, is a very different matter. As reasonable would it be to say that in a case of Bright's disease,

opium injudiciously given caused uræmia. Did quinine cause blackwater fever, why is it that this disease is not an every-day occurrence in India, where quinine is given in vastly greater quantity and in bigger doses probably than in Africa? It is well known that blackwater fever may supervene on exposure, chill, fatigue and other causes of physiological strain. But to say that these things are the cause of blackwater fever would be absurd. Such things do not give rise to blackwater fever in Europe or in India. Why should they do so in Africa? Manifestly because there exists in Africa a specific germ of some sort—be it a variety of the malaria germ, or something quite different—which is the real cause of blackwater fever. In persons infected with this germ, chill, exposure, and many other things—among them perhaps quinine—provoke, on occasion, the symptom "blackwater." If the malaria parasite be not the true cause of blackwater fever, it is certainly a powerful agent in provoking the blackwater manifestation, a much more powerful agent than quinine. As a practical corollary from this, the practitioner will be right, in the presence of an attack of blackwater fever, or in those who have suffered from blackwater fever, to administer quinine, if by microscopical examination of the blood, or from other reasons, he knows that the malaria parasite is present, and especially if it is active, in the patient. We think that Koch has been much too sweeping in his assertions about the danger of giving this drug, whether in blackwater or in other African fevers, and that he has presented his views to the public in a way so incautious that their expression is calculated to do an incalculable amount of harm. We believe that Bastianelli, as pointed out in the "Year-book" for 1898 (p. 425), has correctly formulated the indications for the use of quinine in blackwater fever, namely, to give it if there are malaria parasites ni the blood, to withhold it if there are no malaria parasites in the blood. It seems to us that, under any circumstance, in such a country as Africa, it would be culpable to withhold quinine in the presence of an active malarial infection. If quinine be an evil, it is manifestly an infinitely smaller one than malaria, and infinitely less likely to provoke the "blackwater" symptom than a neglected malarial infection.

Soon after the publication of Koch's views, the writer had a conversation on the subject with a missionary who had passed twenty years in one of the worst blackwater districts of Africa. It had been this missionary's practice, while in Africa, to take every day a five-grain dose of quinine. Only three times had he suffered from blackwater fever, and these three attacks he confidently attributed to his having given

up for a time his accustomed daily dose of quinine. **Dr. Crosse**, formerly P.M.O., Royal Niger Company, who has spent as many years in Africa as Professor Koch has spent months, says: "My experience is that those who take quinine, and take it freely, do not get blackwater fever. In my own case I attribute my attacks—and I have had at least ten severe ones—partly to my neglecting to take quinine, which I dislike very much, and to the fact that very often when unwell I had to be about attending to others who were more ill than I was myself." Dr. Crosse refers to Mr. Stanley's opinion, one founded on personal experience of the disease. Mr. Stanley considers that blackwater fever yields to quinine; in his own attack he did not get well till he took 60 gr. of quinine in a single dose. I would not go so far as to say that this, in my opinion, unjustifiably large dose cured Mr. Stanley's attack; but, as he got well after taking it, it is evident that it was not the cause of blackwater, in his case at all events. Equally emphatic is **Dr. Moffatt**, P.M.O., Uganda Protectorate, in condemning Professor Koch's sweeping assertions about the pernicious effects of the free use of quinine. Dr. Moffatt "has never seen a man die of malaria when quinine has been given early"; and he adds, "fatal cases, whether complicated with hæmoglobinuria or not, have been those in which quinine has not been administered, or was given in very small doses, or else resorted to only when the case was practically hopeless." Of nine cases of blackwater fever treated by him, two were fatal, the administration of quinine having been neglected until too late; the cases which recovered were all treated with quinine, six of them with heroic doses, 60–120 gr. in twenty-four hours.

Drs. Crosse and Moffatt deplore the effect that Koch's statements about the danger of giving quinine is having on the public, many people now absolutely refusing to take quinine under any circumstances.

It seems to me that Koch would have been wiser had he said that although, in some instances, quinine may have seemed to provoke blackwater, yet this drug cannot be held to be the cause of blackwater; and that as neglected malaria is a much more powerful provocative of the symptom than any other known agency, it is good and proper treatment to give quinine to all patients who are the subjects of active or latent malarial infection, unless in cases in which a blackwater idiosyncrasy in regard to quinine had by past experience been ascertained to exist.

PUBLIC HEALTH AND HYGIENE.

By Edward F. Willoughby, M.D. Lond., D.P.H. Lond. and Camb.

1. Legislation.—Except so far as the Local Government (Ireland) Act (1898) may be considered as bearing on the public health of that kingdom, the session of 1898 was unusually barren in sanitary legislation. The long-cherished hopes of a consolidation and revision of the laws relating to adulterated and unwholesome foods have again been doomed to disappointment, though in Mr. Kearley's Bill of the previous session there were ready to hand all the materials of an almost perfect statute; and the sanitary administration of the whole of England and Wales outside the metropolitan area is still carried out under the imperfect provisions of the Public Health Act of 1875, with the Public Health (Amendment) Act of 1890, and the Infectious Diseases (Notification) Act of 1889 and (Prevention) Act of 1890, the optional character of which creates local anomalies that ought long since to have been removed by consolidation and incorporation, as they have been in London in the Act of 1891.

The Royal Commission on Vaccination having completed its labours and issued its report, the Government introduced a Bill for the amendment of the laws relating to vaccination, which in its original form was, to say the least, disappointing, since the only amendment really needed was the legal enforcement of re-vaccination, as has long been the practice in Germany and Scandinavia, and is now adopted by Austria, Hungary, and Servia. The Bill, however, raised the age for the primary operation to six months, as in Scotland, abolished repeated convictions in respect of a single offence, and made provision for the performance of domiciliary gratuitous vaccination—matters of minor importance, though not without some advantages. But when the Bill reached the stage of being committed, the Government—who up to that time had firmly resisted all attempts at tampering with the principle of compulsion, and in so doing had had the hearty support not only of their own party but of many Liberals, as well as of the Irish Nationalists, and could easily have overpowered all opposition in the Commons and have relied on the unanimous votes of the Peers—surprised both sides of the House by a sudden

up for a time his accustomed daily dose of quinine. **Dr. Crosse**, formerly P.M.O., Royal Niger Company, who has spent as many years in Africa as Professor Koch has spent months, says: "My experience is that those who take quinine, and take it freely, do not get blackwater fever. In my own case I attribute my attacks—and I have had at least ten severe ones—partly to my neglecting to take quinine, which I dislike very much, and to the fact that very often when unwell I had to be about attending to others who were more ill than I was myself." Dr. Crosse refers to Mr. Stanley's opinion, one founded on personal experience of the disease. Mr. Stanley considers that blackwater fever yields to quinine; in his own attack he did not get well till he took 60 gr. of quinine in a single dose. I would not go so far as to say that this, in my opinion, unjustifiably large dose cured Mr. Stanley's attack; but, as he got well after taking it, it is evident that it was not the cause of blackwater, in his case at all events. Equally emphatic is **Dr. Moffatt**, P.M.O., Uganda Protectorate, in condemning Professor Koch's sweeping assertions about the pernicious effects of the free use of quinine. Dr. Moffatt "has never seen a man die of malaria when quinine has been given early"; and he adds, "fatal cases, whether complicated with hæmoglobinuria or not, have been those in which quinine has not been administered, or was given in very small doses, or else resorted to only when the case was practically hopeless." Of nine cases of blackwater fever treated by him, two were fatal, the administration of quinine having been neglected until too late; the cases which recovered were all treated with quinine, six of them with heroic doses, 60–120 gr. in twenty-four hours.

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surrender to the prejudices of the anti-vaccinators, introducing with the aid, *mirabile dictu*, of one or two of the leading medical members of the Liberal party, a conscience clause exempting from prosecution any person who should make before a magistrate a statutory declaration of his "conscientious" objection to the vaccination of his children, and compelled their supporters to accept it against their own conscientious convictions. The Peers rejected the clause by a majority including nearly everyone who was not officially connected with the Government. But the Commons, resenting this action of the Upper House, "disagreed"; and the like pressure being put on the Peers, it was at last accepted by a very narrow, and for the most part reluctant, majority. The worthlessness of the plea that the abolition of compulsion, to which the conscience clause really amounts, will tend to weaken opposition and render vaccination more popular, is shown by the example of Holland, where it is optional and generally neglected, the result being a mortality from small-pox more than six hundred times as great as in Germany. Already a large number of boards of guardians had assumed a right of local option, and overridden the authority of Parliament by refusing altogether to prosecute, until in some unions, especially in the towns of the North, Midlands, and in the east of London, 80 to 90 per cent. of the children born escaped vaccination. Such an accumulation of susceptible material must lead some day to an epidemic of unprecedented severity, but the plea of neglected sanitation will always be available as an explanation

The report by **Sir R. Thorne** and **Dr. Copeman** on the vaccine institutes of France, Switzerland, and Germany serves to bring out in strong relief the apathy of the British authorities and the backward state of public opinion in Great Britain on all matters of a scientific character, unless a direct pecuniary advantage can be shown. But the munificence of Lord Iveagh will, it is to be hoped, enable England to rival, in respect of perfectly equipped laboratories, Berlin, Dresden, and Köln.

2. The East London Water Question.—A drought of unusual severity following on a succession of years of deficient rainfall, especially over the eastern and naturally drier districts, has to a greater degree than ever taxed the resources of the East London Water Company, which is largely, and was at one time wholly, dependent for its supplies on the River Lea, and on that only after the New River Company had drawn its 22½ million gallons daily. The East London Water Company have the right of drawing 10 million gallons daily from the Thames, and they have pumped a like amount from the deep wells that they have for

some years been sinking through the London clay into the chalk beneath. With these subsidiary sources, and what they could purchase from other companies, they were just able to hold on, giving a restricted and intermittent supply, for the Lea itself almost entirely failed them; the flow over Feild's weir, which had for ten years (including some droughts) averaged 140 million gallons per diem, was during the preceding twelve months but 27 millions, and in August and September fell to 12 and for one week to 8 millions! The Company had therefore been unable to fill their storage reservoirs, the capacity of which they had raised from 600 million to 1,200 million gallons, and intend to increase by another 1,000 millions. The annual recurrence of these so-called "water famines" clearly points to the inadequacy of the Lea to the demands made on it, but does not justify the hard things said of the Company by almost the entire Press and at public meetings, an agitation evidently worked in the interests of the London County Council's purchase schemes and contemplated recourse to the Welsh mountains. There was not any appreciable effect on the general health of the district: the total death-rate was below the average, and the rise in the mortality from diarrhœa was but what one would have expected with the thermometer in September standing over 80° F. day after day. The real cause of the discomfort, perhaps even distress, consequent on the suspension of the constant service, was the absence of cisterns, for which the builders, not the Company, were responsible. Cisterns as commonly constructed and fixed are more or less objectionable, but it is perfectly easy to arrange a cistern to hold one, two, or three days' supply so that no dirt can enter or deposit form in it, when unavoidable interruptions would be unfelt.

3. Phosphorus poisoning in match factories.—The occurrence of a death from phosphorus necrosis of a young man who had been employed as a "dipper" at Bryant & May's match factory, and certified by the medical man attached to the works as "abscess in cheek and cellulitis," but reported by the Registrar to the Coroner, led to an inquiry which elicited the fact that a large number of similar cases had occurred during the last ten years, which the proprietors had failed to notify to the inspector or the Home Office. These revelations caused considerable excitement; the subject was taken up by the Press, and public meetings were held. In the course of these discussions Messrs. Bell & Black declared that there had not been more than one case of phosphorus poisoning in their establishment during the last 38 years, and that was caused by the indiscretion of the man himself. The Home Office turned its attention to the question, and

instituted an inquiry into the regulations in force in the match factories of Paris, which they found more stringent than those in Great Britain. Messrs. Bryant & May were convicted of failure to notify, and fined in respect of the cases of default within the last six years, prior offences being beyond the limits of time laid down by the Factory Act. These investigations have given a fresh impetus to the problem of the possibility of altogether dispensing with the use of white phosphorus in matches striking anywhere.

4. Dangerous trades.—A Royal Commission appointed to inquire into and report on the conduct of all trades the conditions of which involve special danger to life or health, the nature and extent of injuries effected, and the means of avoiding or minimising the same, has issued three reports; but the consideration of its work, which is far from completed, will be better deferred to another year.

5. Typhoid at Maidstone.—After much delay the Report of the Local Government Board Inspectors appeared, and cleared away the mists raised by the attempts at self-exculpation of the Town Council and Water Company respectively, and by the special pleading of the experts engaged by each party. Dr. Th. Thompson—for the work is virtually his alone—finds in the Farleigh springs and gathering ground the *fons et origo mali*, but divides the blame impartially, censuring the Company for collecting the drainage of heavily manured lands, on which a numerous and filthy population encamped for several weeks, and for neglecting the protection of their reservoirs and springs; and the Town Council for their apathy in the matter, even to the extent of reducing the examination of the water itself to an occasional form, as well as their gross default in respect of the sewerage and sanitary arrangements of large parts of the town.

6. Typhoid in Belfast.—Typhoid fever, which in 1897 had attacked over 3,000 persons, and caused more than 350 deaths, as against an average of under 200 annually, broke out again in 1898, on a scale rivalling that of 1897. Until an official investigation has been made, and the conclusions of the inspectors have been published, or at least until the outbreak shall have run its course, it would be premature to discuss its origin and the efforts, if any, made for its repression; but we have no doubt that a long story of culpable negligence will be brought to light. This much we know: that the beautiful land-locked lough is well nigh as foul as the harbour of Valetta, that the water supply is contaminated, that the sewers are defective, and the soil everywhere sodden with the soakage from cesspits and organic refuse; while, beyond contemplating a better water supply from the

Mourne Mountains, the municipal authorities have not shown themselves ready to ascertain the causes that have led to it or to undertake the necessary measures for preventing a recurrence of the disaster.

7. Aërated butter.—Good margarine is certainly preferable, both as regards taste and wholesomeness, to bad butter; but a patent has been taken out—or, more correctly, a company has been formed—for working Andrew's patent, hitherto employed in the purification of other commercial fats, and adapting it to the conversion of inferior and rancid butter into butter of the best quality and of a character to command a high price in the market. It has appropriately commenced its operations in Ireland, where, notwithstanding the natural advantages of rich pastures and a population almost wholly engaged in farming, the want of care and cleanliness in the making of butter has caused the Irish product to rank far below those of other countries. The repulsive taste and odour of bad or rancid butter are due to the formation by extraneous microbes of by-products from the butyric and other volatile acids and ethers; and it has been found that these can be entirely removed and dissipated by passing through the melted mass, mixed with a certain proportion of butter-milk, currents of superheated steam and air, leaving a pure butter of high quality, free alike from dirt and disagreeable flavour. It is no question of sophistication or imitation, but one simply of purification, the conversion of a bad article into a good. Alike on sanitary and commercial grounds it deserves every success.

8. Poisonous meat extracts.—Sausages, and potted meats and pastes highly spiced, present exceptional facilities for the utilisation of unsound meat, but the activity of some London sanitary inspectors has revealed an unlooked for and possibly greater danger in the "meat extracts" used in making "beef tea" for invalids. At a London factory the products of which would probably be preferred by many persons to those "made in Germany" a quantity of livers imported from abroad was seized in so advanced a stage of putrescence as to be semi-fluid. No doubt the heat employed in completing the "extraction" would kill the bacteria, but such materials are the best that could be found for the production of the cadaveric ptomaines of Fermi.

9. True scarlet fever in swine.—A remarkable report by Behle, too minute to be based on misobservation, brings one more specific disease into the number of those of which man and some of the lower animals are alike susceptible, and of which these may therefore act as carriers. He describes how, while an epidemic of scarlet fever of a severe type prevailed among

the children in a village, the pigs were attacked by a very fatal disease, the phenomena of which, pyrexia, erythema, desquamation, angina, œdema, albuminuria, uræmic coma, and acute nephritic lesions, were identical with those of the disease in the human subject, and were experimentally induced in a previously healthy animal, on a farm where no other cases had occurred in man or beast, by inoculation with the blood of a child suffering from an attack of severe scarlatina. We know that cats are liable to contract diphtheria from and to communicate it again to children, though in them it assumes a somewhat different character, and there is little doubt that the Hendon or Cameron's disease was scarlatina in a peculiarly modified form, which resumed its normal character in the consumers of the milk from the infected cows. Physiological and histological differences may so change the appearances of a disease as to elude recognition, without any essential alteration in its nature; the phenomena, for instance, of rabies in the dog, man, rodents, and birds are diverse and characteristic of each class.

10. Tuberculosis in fish.—Another interesting discovery in this field is that of the susceptibility of fish to tuberculosis. Carp, in a fish-pond into which the sputa and dejecta of a woman in an advanced stage of pulmonary and intestinal tuberculosis were thrown, died in two or three weeks of this disease. They were found experimentally to be infected by the ingestion of tuberculous matter from man, rodents and fowls, as well as from one another; but rodents and fowls ate, and were inoculated with fish tubercle with impunity, owing evidently to the attenuation of virulence induced by the cultivation of the bacilli at the lower temperature of the fish's body.

11. Tuberculosis in cattle.—Slow as the average Briton is to grasp and act on a new idea, the labours of the Royal Commission on Tuberculosis, and the untiring insistence of men like Dr. Niven of Manchester, seem to have begun bearing fruit. The prevalence of the disease is admitted, and some large dairy companies, together with a few private firms, assure the public that their own herds have been subjected to the tuberculin test. Doubtless in most cases this is done chiefly by way of advertisement, but that which is already looked on as a meritorious act—a work of supererogation, so to say—will before long be felt a moral duty. Still, there will always be a residuum of the less intelligent, prejudiced, and incredulous, whose herds, though in themselves small, collectively constitute the larger part of the stock of the country; and until these are brought under the control of expert veterinary inspectors appointed by the county

councils *throughout* the kingdom, the action of individuals will be of little avail, save so far as it may have the effect of leavening public opinion. The active interest taken in the movement by the late Lord Vernon, who placed his stock at the service of science, and of other leading agriculturists, will, we hope, hasten this consummation.

The Royal Commissioners, in their report, recommended the grant of powers to all municipal authorities to establish public slaughter-houses, with laboratories for meat inspection, and to require that all meat slaughtered elsewhere should be brought thither for inspection; and that in rural districts the county councils should provide for the best practicable inspection. Their recommendations as to milk, cowsheds, and the terms on which the distribution of tuberculin by the Board of Agriculture should be conducted were excellent; one especially, "That tuberculin be supplied only to such owners as will undertake to isolate reacting animals from healthy ones," guarding against its formal use as an advertisement, with the neglect of the subsequent precautions necessary to give it any practical value.

It is well known that tuberculosis is far more general among cows in the northern and north-midland counties of England than in the south; and the returns of the municipal slaughter-houses of Prussia show a percentage of carcases (mostly oxen) affected, ranging from 4·0 in Schleswig, 3·0 in Stralsund and 2·0 in Aachen, to 1·5 in Köln, Minden, Münster, etc., and 0·7 in Osnabruck. An inquiry into the causes of these astounding differences would be interesting.

It is scarcely necessary to remark that municipal slaughter-houses must be wholly controlled and conducted by the authorities, the butcher bringing the live animal and taking away the dressed carcass, or so much as has been passed by the examiner. Commodious buildings like those at the Metropolitan Cattle Market, though preferable to backyards in small crowded streets, are none the less private as being rented by the butcher from the authorities. In the municipal slaughter-houses at Berlin and other German cities the authorities provide, for a small charge, refrigerating-rooms, where the butcher may keep under lock and key the whole of his stock not wanted for exposure in his shop, a great boon, especially in hot weather.

12, The International Congress of Hygiene was held early in 1898 at Madrid under unfavourable circumstances, the attention of the authorities being occupied by the rebellion in Cuba and the impending war with the United States, as well as by domestic unrest. Nor was Spain a country that could offer

any object-lessons in scientific hygiene or practical sanitation; though the Government did mark the occasion by the introduction of a Bill for compulsory vaccination of infants and, in the event of small-pox breaking out in any town or district, for revaccination of adults under 60 years of age who had not had small-pox or been revaccinated within ten years.

13. The Plague still continues to rage in India, especially in Bombay, where the stringent measures enforced with a view to its repression have not met with the success that was expected. Calcutta has remained practically free, and the epidemic has almost disappeared at Karachi, but it has become more widely diffused, though with less severity than at Bombay. An outbreak of plague at Vienna, caused by the careless handling of cultures of the bacilli by a laboratory attendant when somewhat the worse for drink, and involving the death not only of the man himself, but of his chief, Dr. Müller, a young and promising bacteriologist, who had been a member of the Austrian Commission to Bombay, and of two nurses, not unnaturally created a panic in the city. But the spread of infectious diseases by fomites, though of daily occurrence, is not a whit less culpable than this, the first instance of its kind.

14. The war in the Sudan.—The campaign ending in the capture of Omdurman and the recovery of Khartoum has been essentially an achievement of engineering, the advance of the army proceeding *pari passu* with the construction of the railway. But the health of the troops, thanks to the efficiency of the medical department, the confidence reposed in it by the Sirdar, the absolute prohibition of alcohol in any form, and their splendid systematic training, has been unprecedented under the trying circumstances of a campaign conducted in the hottest season in one of the hottest regions of the globe, and the ratio of sickness was actually less than on home service. Only towards the end did enteric fever, consequent on the use of unfiltered water, make its appearance, accounting for the few deaths not caused by the bullets of the enemy.

A striking contrast was presented by the utter breakdown of the medical service in the war in Cuba, and the gross mismanagement of the entire military arrangements of the United States army at home and abroad.

15. Bacteriology.—No striking discovery, as that of the bacillus of the plague by Kitasato or of that of yellow fever by Sanarelli, has marked the year just ended, though it was but twelve months ago that the young Italian completely satisfied the scientific world as to the accuracy of his conclusions as to the efficient cause of that

disease, and the success of his prophylactic serum injections. So, too, it was within 1898 that **Memmo** of Rome published in the *Centralblatt für Bakteriologie* the experiments, amply satisfying the most stringent requirements of the critic and the sceptic, as to the identity and pathogenic character of the bacteria of rabies. Pasteur had worked at his attenuations of the virus in the spinal cords of rabbits, and the perfecting of his methods on purely empirical lines, leaving to others the discovery of the hypothetical bacillus. Accordingly several bacteriologists, as **Ferran, Spinelli** and **Rivolta** had in their researches, conducted independently, recognised one and the same form constantly present in certain tissues in cases of rabies and hydrophobia, but in no other disease; which form they therefore assumed to be pathogenic. **Sanfelice** by a special staining process demonstrated its presence in enormous numbers in the cord of a boy dying of hydrophobia, and found it to be highly virulent. Memmo, following his procedure, confirmed his observations. But he went further, and having succeeded in cultivating the bacillus in artificial media, inoculated dogs, rodents, and birds with pure cultures of the fourth or later generations. The results were absolutely conclusive, the incubation periods and the characteristic types of the disease peculiar to each class being reproduced, and exactly the same as after the bite of a rabid animal. In dogs the symptoms appeared between the thirtieth and sixtieth day as typical rabies; in rabbits and guinea-pigs between ten and twenty days, and assumed the paralytic form, while pigeons died from syncope or collapse. The bacillus was found in the cerebro-spinal fluid, the substance of the brain and spinal cord, the saliva and the parotid glands, and in the aqueous humour, whether the disease were acquired in the usual way or from artificial inoculations. He failed to detect it in the blood, spleen, or liver.

Memmo does not appear as yet to have turned his thoughts to prophylaxis; but if some means could be devised for attenuating and accurately standardising the cultures, they might possibly be substituted for the crude pulp used by Pasteur and his followers. The risk of septicæmia and the local irritation would be lessened, and living rabbits would be required for testing only, as the guinea-pigs are for diphtheria antitoxin.

16. Precaution in using Widal's test.—The importance of an early diagnosis of typhoid fever, the insidious character of the onset, and the obscurity attending some cases throughout their entire course have been so long felt by medical practitioners and by Officers of Health that Widal's test was at once received with something like enthusiasm. But when it was found that the

positive reaction was exhibited by the blood of persons who had gone through an attack many years previously, and even by that of persons suffering from febrile attacks of a non-typhoid character, the "test" appeared to have lost all practical value. But the labours of **G. Fraenkel, C. Stern, O. Förster,** and above all of **Scholtz,** have shown how these sources of error may be avoided and the test rendered conclusive. It is, in fact, simply a question of dilution; for though the blood of non-typhoid cases will react with culture fluids in dilutions of 1 : 10, or even 20, though very faintly; the lowest dilution at which that of a typhoid case, mild in type and at an early stage, has ceased to re-act is 1 : 45, while the great majority will easily bear dilution to the extent of 1 : 50, or more; indeed, a positive result has been obtained with 1 : 200. The line of demarcation may therefore be put at 1 : 30 or 1 : 40. Scholtz, experimenting with the blood of persons in good health, who had had typhoid eight, ten, twelve, and fifteen years previously, obtained reactions with dilutions ranging from 1 : 25 to 1 : 12. This reaction is evidently connected with the persistence and degree of immunity conferred by the previous attack. Scholtz uses a capillary pipette graduated to 0·01 c.cm., with which he mixes blood taken by a needle puncture on the ball of the thumb with a broth culture of the bacilli (kept for the six hours preceding at 37° C.) first in equal proportions, when if the result be negative nothing more is needed; but if a reaction occurs he next tries 1 : 50, in which proportion a positive reaction is decisive of typhoid. Should it, however, fail, he tries 1 : 20 and 1 : 30; with the former a positive reaction is compatible with typhoid at some previous date, or with non-typhoid febrile state; the latter indicates past or present and incipient typhoid, and calls for another observation after the lapse of a week, when, if the present illness be really typhoid, a positive reaction is sure to be obtained with a 1 : 50 dilution, whereas the energy of the serum resulting from a past attack will remain the same. In one case in which during life all clinical evidence of typhoid was wanting, the first and only observation made after death gave an unmistakable positive reaction, which was fully confirmed by the lesions found in the subsequent autopsy.

MEDICAL JURISPRUDENCE.

By Arthur P. Luff, M.D., B.Sc.Lond., F.R.C.P.,

Physician to Out-patients and Lecturer on Forensic Medicine in St. Mary's Hospital.

1. The fatal use of diachylon (lead plaster), taken with the object of procuring abortion.

In certain parts of England, notably in the Midland districts, the practice of taking diachylon in the form of pills, to bring on miscarriage, is by no means uncommon, and is far more prevalent among the working classes than is generally supposed. Apart from the criminal element of the procedure, the practice is a most dangerous one to women taking such a preparation, since marked lead poisoning must result before an abortion is likely to occur. The connection of lead poisoning with abortion has frequently been noticed. In the potteries, women who have become the victims of lead poisoning have frequently been known to abort. During the outbreak of lead poisoning some years ago in Sheffield from contamination of the water supply, it was noted that pregnant women who became affected either aborted or had premature labour. **G. F. Crooke** (*Lancet*, July 30, 1898), describes an instructive case of poisoning by lead, contained in diachylon, taken with the object of procuring abortion. A young married woman, twenty-three years of age, took diachylon plaster in the form of pills for some weeks (the exact amount taken was not ascertained), and aborted about the third month of pregnancy. Before and after the abortion she suffered from lead poisoning, the symptoms being intense headache, colic, anorexia, thirst, attacks of diarrhœa and vomiting, numbness and loss of power in the left arm and hand, and general weakness and prostration. She continued to take the diachylon for six days after the abortion, under the impression that there was something more to come away, so that the lead accumulated in the system, and finally manifested its effects with great violence. On the sixth day after the abortion she was seized with paroxysms of intense pain, apparently abdominal, and when seen was in a condition of maniacal delirium. Along the free border of the gums there was a distinct slaty-blue line. A small quantity of urine drawn off by the catheter was found to contain albumin and a few red blood corpuscles. During the attacks of eclampsia the left arm was practically passive, and appeared to be paralysed

positive reaction was exhibited by the blood of persons who had gone through an attack many years previously, and even by that of persons suffering from febrile attacks of a non-typhoid character, the "test" appeared to have lost all practical value. But the labours of **G. Fraenkel, C. Stern, O. Förster,** and above all of **Scholtz,** have shown how these sources of error may be avoided and the test rendered conclusive. It is, in fact, simply a question of dilution; for though the blood of non-typhoid cases will react with culture fluids in dilutions of 1 : 10, or even 20, though very faintly; the lowest dilution at which that of a typhoid case, mild in type and at an early stage, has ceased to re-act is 1 : 45, while the great majority will easily bear dilution to the extent of 1 : 50, or more; indeed, a positive result has been obtained with 1 : 200. The line of demarcation may therefore be put at 1 : 30 or 1 : 40. Scholtz, experimenting with the blood of persons in good health, who had had typhoid eight, ten, twelve, and fifteen years previously, obtained reactions with dilutions ranging from 1 : 25 to 1 : 12. This reaction is evidently connected with the persistence and degree of immunity conferred by the previous attack. Scholtz uses a capillary pipette graduated to 0·01 c.cm., with which he mixes blood taken by a needle puncture on the ball of the thumb with a broth culture of the bacilli (kept for the six hours preceding at 37° C.) first in equal proportions, when if the result be negative nothing more is needed; but if a reaction occurs he next tries 1 : 50, in which proportion a positive reaction is decisive of typhoid. Should it, however, fail, he tries 1 : 20 and 1 : 30; with the former a positive reaction is compatible with typhoid at some previous date, or with non-typhoid febrile state; the latter indicates past or present and incipient typhoid, and calls for another observation after the lapse of a week, when, if the present illness be really typhoid, a positive reaction is sure to be obtained with a 1 : 50 dilution, whereas the energy of the serum resulting from a past attack will remain the same. In one case in which during life all clinical evidence of typhoid was wanting, the first and only observation made after death gave an unmistakable positive reaction, which was fully confirmed by the lesions found in the subsequent autopsy.

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The patient died from exhaustion on the second day of the convulsive seizures.

2. The value of oxygen in morphine poisoning.

D. T. Playfair (*Lancet*, August 27, 1898) records a case illustrating the efficacy of oxygen inhalations in the treatment of severe morphine poisoning. A woman, aged thirty-seven years, swallowed, on an empty stomach, rather more than 30 gr. of morphine acetate in solution. Treatment was commenced some three hours or more after taking the poison. She was then in a condition of profound coma, the face was livid, and the fingers were ashy grey as far as the second joints. The pupils were contracted, and did not react to light, but at no time were they strikingly small. The breathing was very slow and shallow, and the pulse very weak. The stomach was washed out first with water and then with a solution of potassium permanganate, after which a pint of strong coffee with 1 oz. of brandy was introduced into the stomach. Hypodermic injections of atropine and strychnine were given at intervals, and as the cyanosis became intense, and the pulse exceedingly feeble, artificial respiration was resorted to. This produced little or no alteration of colour or pulse. About five hours after the poison had been taken, inhalations of oxygen were commenced, and in a very short time the cyanosis became much less marked, and the pulse became stronger. After employment of the oxygen for four hours, the patient's condition seemed utterly hopeless, but artificial respiration and oxygen inhalations were persevered with. After the oxygen had been employed for nearly ten hours, the patient partially recovered consciousness, was able to speak and swallow some black coffee, and then made a rapid recovery. The oxygen was administered by passing into the mouth a vulcanite nozzle attached to a tube leading from the cylinder of gas, an indiarubber regulating bag intervening. At each respiratory movement a stream of gas was allowed to flow, the tube being pinched close during the expiratory movement. Altogether, about 80 cubic feet of oxygen were used.

3. The treatment of chloroform poisoning.

S. T. Reid (*Brit. Med. Journ.*, Nov. 20, 1897) records a case in which over 2 fluid ounces of chloroform were swallowed by an adult man. When seen he was partially unconscious. Coffee was given, artificial respiration resorted to, and the electric current employed, one pole being placed over the nape of the neck, and the other at the ensiform cartilage. The current was gradually increased from 30 to 50 volts. In the meantime, strychnine was hypodermically injected, commencing with one-eighth of a grain. After this, injections of one-twelfth of a grain

were administered at hourly intervals, until nearly half a grain of strychnine had been given, when full evidence of the action of the drug became manifest. The patient then made a good recovery. The points of interest in the case are that the respiratory mechanism was kept at work, during the period that the vapour of the poison was being exhaled, by the combined action of the electrical current and strychnine on the respiratory centre.

4. The cause of death by electric shock.

It is well known that a powerful electric current kills immediately. Two views have been held as to the cause of death : (1) That death is due to failure of the respiratory centre ; (2) that it is due to sudden arrest of the heart's action. T. Oliver and R. A. Bolam (*Brit. Med. Journ.*, Jan. 15, 1898) have conducted a series of experiments with the object of ascertaining which of these views is correct. They found that primary cessation of the heart's beat is without doubt the general rule. In a few of their experiments, death seemed to be due to contemporaneous cessation of the respiration and heart's action, but such apparently only occurred in the case of very high voltages, with currents considerably above the potential usually required to kill the animal. Alternating currents, which are generally thought to be the most dangerous to life, were solely used in these experiments, but H. Lewis Jones (*Brit. Med. Journ.*, March 2, 1895) had previously shown that continuous currents act in the same manner. The problem of treatment of resuscitation in apparent death from electric shock is increased in difficulty by the fatal result being brought about by the heart. The endeavour to excite contraction of the arrested heart by means of cardiac tonics resulted in failure. Artificial respiration appears to hold out the only possibility of restoration, but if recovery is not accomplished in twenty or thirty minutes the prognosis is very unfavourable.

5. Belladonna poisoning from the use of atropine eye-drops.

W. J. Harris (*Lancet*, Jan. 8, 1898) reports a case in which the symptoms of belladonna poisoning rapidly developed after the use of sulphate of atropine eye-drops. The patient, a woman, aged thirty years, was suffering from syphilitic iritis, and was ordered atropine drops for the eyes (4 gr. of sulphate of atropine to 1 oz. of distilled water), two drops every four hours. After using them for a day and a half, she developed the following symptoms of belladonna poisoning : flushed face, excited state, quick pulse, dryness of the tongue, lips, mouth, and throat, with a great craving for drink and widely dilated pupils. The drops were discontinued, and under treatment she made a rapid recovery.

6. Sulphonal poisoning.

J. F. Gillett (*Brit. Med. Journ.*, Sept. 17, 1898) describes a case of sulphonal poisoning in a girl, aged seventeen, who took 60 gr. of sulphonal in three doses of 20 gr. each over a period of four hours. Soon after taking the last dose she became drowsy, and slept for about two hours, when she woke with a feeling of nausea, and on getting up was markedly ataxic. Her condition rapidly became worse, and marked muscular twitchings with shallow respiration supervened. The temperature was subnormal, the heart's action became very weak, and the pulse was 58. The patient suffered from visual hallucinations, and when spoken to became wildly delirious. Strychnine and brandy were administered hypodermically, and later croton oil was given, and also hyoscine hypodermically. The patient became quiet, and made a slow but uninterrupted recovery.

7. "Headache powders."

These powders, which, unfortunately, are largely advertised and indiscriminately used by the general public for the relief of headache, usually consist of antipyrin or antifebrin, with occasionally some caffeine citrate in addition. As may be expected from the indiscriminate use of such powerful drugs as antipyrin and antifebrin, deaths have occurred from taking these powders. Recently (*Brit. Med. Journ.*, June 11, 1898) a young man died from the effects of taking two "headache powders," which were found to consist of antifebrin. The symptoms produced are of the anilin type, and consist of giddiness, noises in the ears, throbbing in the temples, and a dull, heavy pain in the head. The face becomes livid, the lips are blue, and the pupils are contracted. Symptoms of collapse follow, the face and extremities become cyanosed, the pulse is feeble, the respiration is shallow, and the skin is covered with cold, clammy perspiration. The treatment consists in emptying the stomach by means of the stomach-pump or stomach-tube, or by means of a brisk emetic, and then freely employing stimulants and external warmth.

8. Poisoning by privet berries.

Poisoning by privet is a very rare occurrence. The symptoms consist of vomiting, purging, cyanosis, convulsive twitchings, which may pass on to violent convulsions with marked opisthotonos, and great thirst. Early in 1898 (*Lancet*, Mar. 5, 1898) a child, aged eight years, died a few hours after eating privet berries. At the *post-mortem* examination the lungs were found congested, and the stomach was also much congested, and had one patch of superficial ulceration about the size of a shilling. The heart, liver, and kidneys were quite healthy.

9. Survival for eleven months after a penetrating wound of the heart.

Faralli and Ragnini (*Giorn. Med. del Regio Esercito*, An. 15, n. 8, 9) report the case of a man who received two knife wounds, one in the fourth left intercostal space, and the other under the left costal arch. There was considerable hæmorrhage from the upper wound, and he was unconscious for three hours. The wound was dressed, and six weeks later he left the hospital apparently cured, although faintness occurred on strong exertion. Eleven months later he developed peritonitis, for which laparotomy was performed, and eleven days after this operation he died. At the *post-mortem* examination the heart was found adherent all round to the pericardium. There was a cicatrix in the anterior wall of the right ventricle about $\frac{1}{2}$ in. from the interventricular septum, and an open communication was found between the two ventricles, having fibrinous deposit on the edges of the orifice. Although this communication between the two ventricles had existed since the receipt of the injury, the patient at no time had cyanosis.

SUMMARY OF THE THERAPEUTICS OF THE YEAR 1897-98,

CHIEFLY WITH REFERENCE TO NEW REMEDIES.

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In the following pages the principal advances during 1898 have been summarised. Attention has been mainly directed to recent work in connection with the newer remedies, but where discussions embrace both old and new an attempt has been made to represent both views, rather than to appear to discredit remedies of established reputation by giving an undue prominence to the more recent arrivals. As in former years, a short account has been given of toxic symptoms observed with older remedies, together with their treatment, while in the section dealing with new remedies I have included the results of more extended experience of drugs of recent introduction, as well as notices of experimental researches, calculated to influence the therapeutics of the future.

A.—TOXIC EFFECTS WITH OLDER REMEDIES.

1. Hydrocyanic acid as an antidote to chloroform.

This remedy has been recommended by **Hobday** (*Lancet*, Jan. 1, 1898). In 1896 he gave an account of the palliative and sedative effects produced on the respiratory efforts by chloroform inhalations, administered to animals suffering from overdoses of hydrocyanic acid, and now he endeavours to show that the antidotal use may be reversed, and he states that when chloroforming animals the only antidotes he now employs are hydrocyanic acid and strong liquor ammonia. Should the breathing cease or become dangerous, artificial respiration is resorted to, the tongue being continuously pulled well forward and the full medicinal dose of Scheele's acid placed as rapidly as possible at the back of the throat. When respiration has recommenced, the ammonia vapour is applied cautiously to the nostrils. He considers that hydrocyanic

acid is of value as a rapid and powerful respiratory stimulant, and he thinks that it is not more dangerous than strychnine. His results are necessarily drawn solely from veterinary practice. In the two cases of which details are given he used, respectively, three minims and four minims of Scheele's acid. It must be remembered that Scheele's acid may be rather more than twice the strength of the pharmacopœial dilute hydrocyanic acid. It is noteworthy that hydrocyanic acid is generally considered as being capable of paralysing the respiratory centre, instead of acting as a respiratory stimulant, and shortly after Hobday's account was published he was challenged to give an account of the effects on a healthy animal of the dose he recommended (*Lancet*, Jan. 8, 1898).

2. Anæsthetic emergencies.

The treatment of emergencies under anæsthetics was somewhat fully discussed at a meeting of the Society of Anæsthetists (*Lancet*, Feb. 5, 1898), and the employment of various drugs, such as amyl nitrite, strychnine, atropine, etc., came under consideration. It was indicated that the subcutaneous injection of drugs might be inoperative, since, for their absorption, some degree of circulatory activity was necessary, while it is difficult to estimate whether a given dose administered to a person apparently moribund might not, upon his restoration, set up toxic symptoms of its own. Many speakers referred to the value of ammonia and of oxygen in the treatment of chloroform poisoning, but the recommendation to employ hydrocyanic acid did not meet with general approval.

3. Cannabis indica in large dose.

Bicknel (*Therap. Gaz.*, Jan., 1898), wishing to test the effects of cannabis indica, having previously taken 5 gr. of an extract made by an American house, took, in a single dose, 3 gr. of an English extract, and he has recorded his experiences under this dose. In many respects the symptoms produced resemble those in H. C. Wood's classic account. The sense of duration of time became altered, and visions of a vivid character were very numerous. The chief difference, however, consisted in the existence of muscular contractions, followed later by violent convulsive movements, due evidently to the action of the drug on the spinal cord. He also describes a sense of extreme tension in the abdominal blood-vessels. It is curious, however, to note that there was no foreboding or fear of impending death, although the condition remained severe for more than five hours, and during part of the time there was unconsciousness. The unconsciousness was succeeded by sleep, which continued eight hours, and on waking all symptoms had passed away.

4. Rapid development of belladonna poisoning from the use of sulphate of atropine eye-drops. (*See also* p. 433.)

(*Lancet*, Jan. 8, 1898.) The patient had been ordered eye-drops, 4 gr. of sulphate of atropine to 1 oz. of distilled water, 2 drops to be used every four hours. The day after using the drops she had dryness of the tongue, lips, mouth, and throat, and great craving for drink, and the pupils were widely dilated. She also suffered from some oppression of the heart and giddiness, which was increased after taking food. Cases of extreme susceptibility to the action of belladonna are by no means rare. In this particular case, however, the curious feature is the rapidity with which the symptoms developed after the absorption of the drug from the conjunctiva.

5. Salicylate of cinchonidine has frequently been employed as a tonic and antiperiodic in neuralgia, rheumatism, sciatica, etc., and it has ordinarily been administered in doses of 5 gr. every two hours. **Walcott**, of Massachusetts, records a case of untoward effects, resulting from the use of 10 gr. of this drug, ordered in a single dose. The patient had been suffering from neuritis, affecting the median nerve of the right arm. An hour after taking the first powder, at 10.30 a.m., she felt "queer" (*Therap. Gaz.*, Sept., 1898), her head buzzed, and some nausea was present. At 2.30 she took another powder and again had headache, accompanied with marked vertigo, profuse lachrymation, with slight blurring of vision and severe pain in the face, jaw, and limbs. The bladder soon became affected; urination was frequent, only a small amount of clear, colourless urine being voided. Later the face became swollen, while the nausea persisted. After falling asleep at midnight there was gradual diminution of trouble, although the increased frequency of micturition persisted for ten days. The above symptoms combine some of those of overdoses of salicylates, and of quinine; it is therefore curious to note that no mention is made of buzzing in the ears, nor of albuminuria or hæmoglobinuria.

6. Sulphonal.

Although toxic symptoms have often been noted in connection with overdoses of sulphonal, they have usually been regarded as causing inconvenience rather than danger. A fatal case of sulphonal poisoning has, however, been recorded (*Berl. klin. Woch.*, Sept. 26, 1898) in a woman, aged thirty-two. The symptoms commenced thirty-six hours after the administration of sulphonal had been stopped, and consisted at first of pains and vomiting, and later, of paralysis and hæmatoporphyrinuria. Besides ataxia, there was paralysis of the arms and legs. The hæmatoporphyrinuria occurred eight days after the onset of the toxic symptoms, and later, albuminuria and other evidence of toxic nephritis appeared. The chief change, apart from the toxic nephritis, consisted in the degeneration of the heart muscle. **Wien**, who records this case, considers that there is danger in the continuous employment of sulphonal, and believes that, if frequently given, intervals of four or five days should be allowed. He considers that sulphonal is a cumulative poison, and that when any toxic symptoms are present, excretion should be favoured by diuretics, while camphor should be used to avert the danger of cardiac failure.

7. A case of poisoning by **convallaria majalis** is recorded in the *Therap. Gaz.*, Feb., 1898. The patient, a child aged two, was given nearly a teaspoonful of liquid extract of convallaria majalis by mistake. An hour later the child was extremely restless, with continuous trembling of the arms and legs and with general convulsions. She could with difficulty be roused from her condition of stupor. The pupils were moderately dilated, the temperature was subnormal, the pulse extremely irregular and, when it could be counted, 140. Respirations were shallow and superficial; the face slightly flushed. There were no signs of gastro-intestinal irritation, nor of diuretic or diaphoretic effect. With symptomatic treatment the child gradually regained her normal condition. Cases of poisoning with this remedy have so rarely been recorded that the foregoing account is of considerable interest.

8. Local effects of iodoform.

Dry iodoform gauze has been credited with the production of attacks of bullous dermatitis of the hands. The appearances in many cases have been attributed to gout, and relief is afforded by the firm application of bandages to the fingers, with boracic ointment (*Lancet*, Feb. 5, 1898).

B.—NEW REMEDIES.

I.—Local Anæsthetics.

9. Holocaine.—The introduction of this local anæsthetic, and its employment as a substitute for cocaine and eucaine, were referred to in the "Year-Book of Treatment for 1898." It is a derivative of para-phenetidin, from which are also derived phenacetin and lactophenin. It is insoluble in cold water, but readily soluble in alcohol and ether. The chlorhydrate of holocaine is, however, slightly soluble in cold water, and its aqueous solution is neutral and undergoes no change on prolonged boiling.

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Hinshelwood (*Brit. Med. Journ.*, Sept. 3, 1898) has employed a 1 per cent. solution in a large number of cases, and he finds that it produces complete anæsthesia of the cornea and conjunctiva in from fifteen to thirty seconds after instillation. The anæthesia lasts about ten minutes. It is preceded by a slight feeling of burning, which rapidly passes off. It causes no alteration in the size of the pupil, no disturbance of accommodation, no alteration in the tension of the eye, and the corneal epithelium retains its normal appearance. Shortly after instillation it produces slight hyperæmia of the bulbar and palpebral conjunctiva, which rapidly passes off. In the discussion which followed this paper, **Argyll Robertson** said that he had used a 2 per cent. solution and had found it infinitely inferior to cocaine as a local anæsthetic, and, commenting upon this remark, Hinshelwood laid stress upon the importance of employing fresh preparations. He said that he used a solution which was made up fresh every week, and found that it would not keep longer than a fortnight.

Hotz (*Journ. of the American Med. Assoc.*, Nov. 13, 1897) says that the instillation of holocaine always caused more or less smarting or burning, which, however, only lasted about half a minute. It produced redness of the conjunctiva, which persisted during the whole period of anæsthesia. Complete anæsthesia of the cornea was noted within one and a half to two minutes; after six minutes sensibility began to return, then a second instillation prolonged the anæsthesia for another five minutes. It would appear that the anæsthetic effect of holocaine can be kept up by repeating the instillation every five minutes. Holocaine has no effect in causing dilatation of the pupil and no effect on accommodation. Hotz, as the result of several experiments, concludes that the anæsthetising effect of cocaine, 2 per cent., is more thorough and penetrating than that of holocaine 1 per cent. The effect of holocaine is very quick and superficial, and while it is a very useful local anæsthetic for the removal of foreign bodies from the cornea or for operation on the conjunctiva, cocaine is the more trustworthy anæsthetic for deeper operations, especially for those which involve iridectomy and cataract extraction.

10. Orthoform has been employed in the local treatment of painful ulcerations with special reference to the upper air-passages by **Young** (*Brit. Med. Journ.*, Feb. 5, 1898). After giving an account of the chemical composition of this new synthetic product and showing its relation to cocaine, he gives some details of cases in which he has used the remedy as a local anæsthetic. It is best employed in the form of a spray. Its composition is 5 grains in 100 minims of equal parts of rectified spirit and water.

The spirit evaporates shortly after contact, leaving the precipitate of powder evenly distributed over the affected area. He employed this drug chiefly in painful ulcerations of the upper respiratory tract, and he found that it was devoid of toxic effects although occasionally it produced some slight burning for a few minutes after its application. He thinks it is probable that it may replace cocaine when long anæsthesia of ulcerated surfaces is wished for, while on the other hand cocaine would probably be employed when short insensibility of an intact mucous membrane is desired.

II.—Antipyretics.

11. Kryofin.—Reference was made to this new drug in the "Year-Book of Treatment" for 1898, p. 456, and the account then given showed that it had some antipyretic power. It had been employed since by **J. H. Curtis** (*Therapeutic Gaz.*, May, 1898), who finds that even when no reduction of temperature follows its employment there is absence of increase of blood-pressure. It is rapidly absorbed and rapidly eliminated, and he states that it controls neuralgic pains in a marked and sometimes almost magical manner, and in some persons produces a tendency to sleep. Kryofin is one of the coal-tar derivatives, and it is saponified with hydrochloric acid. The dose administered is eight grains. Curtis states, that notwithstanding its power of reducing temperature, he is of opinion that except in occasional cases the use of agents that reduce temperature by lessening the oxygen-carrying capacity of the blood is scarcely good treatment in pneumonia. In most of his cases the drug was employed for the relief of pain—indeed, the analgesic properties and the rapidity of action in all cases of a neurotic character, are the features upon which he lays the greatest stress.

12. Euchinine, which was introduced as a substitute for quinine, was mentioned favourably in the "Year-Book" for 1898.

St. George Gray (*Brit. Med. Journ.*, Feb. 26, 1898) gives his experience of this drug in malarial fevers, and he finds it superior to quinine in being tasteless and in requiring a smaller dose to reduce the temperature. Contrary to the statements of Von Noorden, he finds that ten or fifteen grains of euchinine are as efficacious as from twenty to thirty grains of quinine sulphate, and that it nearly always causes buzzing in the ears, if not other symptoms of cinchonism. He lays stress upon the smaller dose and upon the tasteless character, considering the latter the chief advantage over quinine.

13. Methylene blue in malarial fever.

Methylene blue has been recommended in cases of malaria,

where quinine had proved useless, or where there was intolerance of quinine. **Cardamatis** has used it in a very large number of cases, apparently with success. In some of his cases he has found it advisable to use both methylene blue and quinine, but in the large majority he employed methylene blue alone. He found that the drawbacks included staining of the tongue and lips, and sometimes a slight amount of cystitis. He considers that patients are not only cured of existing malaria, but that they are also rendered immune, so that they may continue to reside in malarial districts with but little danger of subsequent attacks. The daily dose was from 10 to 12 grains for adults, and the drug was administered in intermittent fever some ten hours before the beginning of the paroxysm.

14. Olive oil in the treatment of typhoid fever.

Olive oil is not commonly credited with antipyretic properties. Indeed, apart from a knowledge of its domestic employment as an article of diet, or as a mild laxative for infants, it may be doubted whether medical men consider it seriously; still **Owen Paget**, of Freemantle, Australia (*Lancet*, Nov. 27, 1897), claims to have treated a large number of patients (well over 100) without a single death, and he attributes this result largely to the use of salad oil. This he has given as an injection by the bowel, a large breakfastcupful (from a quarter to half a pint) being used for the first four or five days, at intervals of twelve to twenty-four hours, and he claims that it reduces the temperature and soothes the patient. After the fifth day he administers the oil every second day. When the injection has no result and the temperature goes up, he gives the salad oil by the mouth, a large breakfastcupful at a time, and repeats this dose after twelve hours if there has been no evacuation. The treatment appears to depend entirely upon its power of emptying the bowel. Owen Paget does not, however, indicate the course of action to be followed when the individual is already suffering from much diarrhœa.

III.—Antiseptics.

15. Chinosol, a member of the quinoline group, with reputed antiseptic, disinfectant, and deodorant powers, has been studied by **Hobday** (*Journ. Comp. Path. and Therap.*, March, 1898). The pure powder, applied to wounds, causes great pain, but in dilute solutions (from 1 in 1,000 to 1 in 60), it can be used as a disinfectant for the hands and skin, though the stronger solutions are very apt to discolour instruments. Although concentrated solutions could be safely applied to the unbroken skin of the dog, toxic symptoms were readily produced in the cat. Where subcutaneously injected, the chief toxic symptoms were sneezing and coughing, an increased flow of thick, ropy saliva, subnormal temperature, staggering gait, prostration, and ultimately death from failure of the heart's action.

16. Protargol has of late been gaining ground in the treatment of many forms of ophthalmia, and it has recently been used as a substitute for nitrate of silver in ophthalmia neonatorum, and also in some cases of gonorrhœal ophthalmia and acute conjunctivitis (*Boston Med. and Surg. Journ.*, Aug. 25, 1898). The strength employed varies from a 10 per cent. to a 2 per cent. solution. The former causes flushing of the eye and discomfort, while the latter can be used without cocaine. The solution is gently applied to the conjunctiva with a pledget of cotton-wool. The 2 per cent. solution seems to have given the most satisfactory results. In acute conjunctivitis, however, the protargol has been employed in $\frac{1}{2}$ per cent. solution. Most of the cases thus treated recovered promptly, but perhaps not more rapidly than they might have done under some of the more commonly used remedies. The advantages claimed for protargol are that it produces less irritation, and that there is less tendency to the formation of fibrinous coagula.

Neisser describes this drug (*Therap. Gaz.*, March, 1898) as a chemical combination of silver with proteid, which forms a yellowish, fine powder, readily dissolved by being shaken with water. It contains 8·3 per cent. of silver, and its solution is not precipitated by dilute sodium chloride or hydrochloric acid, and it is therefore likely to penetrate deeply into the tissues. Neisser has employed protargol in gonorrhœa, and he employs solutions of a $\frac{1}{4}$ per cent. at the beginning of the treatment, and increases the strength until 1 per cent. solutions are being used. He asserts that he has never had from any other drug such rapid, satisfactory, and safe cures.

17. Iodoformogen is described as being a combination of iodoform with albumin in the form of a bright, yellow powder, which is practically odourless, and can be sterilised at 100° C. **Kronmeyer** (*Berl. klin. Woch.*, May 7, 1898) states that he has used it as a substitute for iodoform, but that, like the latter, it may produce eczema. He believes it to be the best available dusting powder for wounds.

IV.—Drugs Acting on Nerve Centres.

18. Synthetic analgesics.

The discussion at the meeting of the British Medical Association at Edinburgh on "The Therapeutic Value of Recent Synthetic Analgesics: their Benefits and Attendant Risks," was introduced by **Stockman** (*Brit. Med. Journ.*, Oct. 8, 1898) with a

lucid account of the chemical relationship of these substances, followed by a summary of their uses and their dangers. He indicated the risks of producing disintegration of the red blood corpuscles, and owing to the smallness of the dose of acetanilide, and its pronounced action on the blood, gave preference to antipyrin and phenacetin. He also spoke favourably of lactophenin. **C. D. F. Phillips** thought antipyrin, antifebrin, phenacetin, and exalgin of greater service than many of the newer synthetic analgesics; he considered salophen, phenocoll hydrochloride, apolysin, and methylene blue of high therapeutic value; agathin was slow and unreliable, and many others were unnecessary, though they might be used with comparative safety as substitutes for better remedies.

19. Methylene blue. (See also pp. 441 and 450.)

A summary of the actions of methylene blue is to be found in the *Revue de Thérap. Médico-Chir.* of April 1, 1898. In this, three distinct properties are attributed to methylene blue: (1) It is a colouring agent; (2) it acts as a microbicide or disinfectant; (3) it possesses distinct analgesic properties. These latter have been attributed to the transformation of oxyhæmoglobin into methæmoglobin. As an analgesic it has been employed for facial and sciatic pain; also for rheumatic pains, angina pectoris and migraine. Its chief disadvantage is the discoloration of everything with which it comes into contact, and for this reason as well as on account of its disagreeable styptic taste, it is preferably given in the form of pill or cachet.

The pains of ataxia have been treated by **Lemoine** with methylene blue, and he believes that this remedy has led to great diminution in the intensity and frequency of the pains (*Therap. Gaz.*, Feb., 1898). He thinks that the greatest relief is given in the darting pains in the limbs, and in the sensation as of a tight band drawn about the patient. He asserts that the effect of methylene blue is very rapid, its discoloration of the urine being noted between two to three hours.

20. Mydrin.

The claims of this mydriatic were referred to in the "Year-Book" of 1898, pp. 368, 455. **Stephenson** (*Lancet*, July 2, 1898), as the result of experiment with a 10 per cent. watery solution, concludes that it causes a moderate dilatation of the pupil, without involving the function of accommodation. The dilatation occurred somewhat slowly, the average time being 29·35 minutes, it lasted on an average a little more than three hours, and it was not accompanied by discomfort or irritation.

21. Euphthalmine hydrochlorate is mentioned in Merck's Annual Report for 1898 as possessing a powerful mydriatic action which, however, is less intense and slower in the aged than in the young. Its instillation is not attended by pain nor by other unpleasant secondary effects, and the power of accommodation is less affected than by homatropine. **Winselmann** (*Klin. Monats. Blätt. f. Aug.*, July, 1898) employs a 5 per cent. solution which causes a maximum of mydriasis in thirty-two minutes, while a 10 per cent. solution produces a maximum dilatation in twenty-three minutes. This dilatation of the pupil lasts from three to three and a half hours, and the normal size is ultimately resumed in about seven hours.

V.—Cardio-Vascular System.

22. Aconitine, benzaconine, and **aconine,** the alkaloids of aconite, form the subjects of an interesting paper by **Cash** (*Brit. Med. Journ.*, Oct. 8, 1898) dealing mainly with the pharmacology. Aconitine is the most toxic, and it possesses the strongest antipyretic power. Benzaconine, although it reduces the blood pressure, is not lethal owing to its action on the heart, but rather from respiratory failure. Aconine strengthens the ventricular systole and opposes the asequence and inco-ordination which aconitine so actively produces. Cash suggests that, if it can be produced in sufficient quantity, it might be of value in some conditions of accelerated and irregular heart's action. He states that many samples of "aconitine," especially of German manufacture, have consisted to some extent of benzaconine and aconine, which would account for some of the different results obtained by other observers.

23. Periploein.

Periploein is a glucoside, derived from the bark of periploea graeca. **Burzinski** found that it slowed the action of the heart, while it increased the blood pressure; with a larger dose the blood pressure still remained high, but there was increased frequency of pulsation, while with still larger dose the pulse became irregular, and the heart stopped suddenly, the blood pressure rapidly falling. **Levaschoff** (*Vratch*, No. 11, 1898) found periploein peculiarly suitable for hypodermic injection, since it is soluble in water and causes no severe irritation at the site of injection. Having determined the maximum daily dose (0·001 gr.) by experiment, he proceeded to investigate its actions. By sphygmographic tracings he found that for an hour after injection the blood pressure was raised, while the rapidity of the heart's action was diminished The area of cardiac dulness was not materially altered. It produced diuresis in heart disease, but not in cases of dropsy dependent upon kidney or liver changes. If

these observations are confirmed, this drug will be a formidable rival to digitalis on account of the facility of its hypodermic administration. During its employment the urine reduces Fehling's solution, but it does not respond to other tests for glucose.

24. Coronilline.

The physiological effects of this alkaloid have been studied by **Maranaldi** (*Rif. Med.*, June 24, 1898). Although the drug in dogs diminishes the frequency of the heart-beats, with increase of their power, it does not appear to be destined to attain any clinical importance as a cardiac tonic, since when given by the mouth it is split up by the action of hydrochloric acid in the stomach, while it is extremely irritating when given hypodermically.

VI.—Respiratory System.

25. Creosotal.

After summarising actions of creosotal and of guaiacol, **Edmond Schaumier** (*Lancet*, Jan. 22, 1898) gives a description of creosotal, which he considers destined to supersede creosote in the treatment of tuberculosis. He finds that, like creosote, it increases the appetite, diminishes cough, facilitates the nutrition, and stimulates the increase in weight. Its advantages over creosote are that it can be used indefinitely without causing any gastro-intestinal troubles. He employs it either in the form of capsules of 7½ grains, or in drachm doses, which may be given with jam or in wafers. He prefers its administration in a pure state, but says that it may be also given in the form of a solution with oil, in emulsion with yolk of egg or mucilage of acacia, or mixed with a little claret or hot milk. As it is largely eliminated in the urine, he thinks that it can, with advantage, be used like salol as an antiseptic of the urinary canal. The only contra-indications which he mentions are fever and diarrhœa. In the paper referred to he also states that he has employed other derivatives of creosote, such as oleocreosote, benzoate of creosote, and phosphate of guaiacol, but he expresses a preference for creosotal.

26. Guaiacolate of piperidine has recently been employed by several observers (*Brit. Med. Journ.*, July 16, 1898) in the treatment of phthisis, and the general conclusions arrived at are that the drug is safe, that it is well borne by the stomach, that it causes no unpleasant after effects, and that there was some improvement in the general condition while under its influence.

27. Geosote.

Geosote is the valerianate of guaiacol, and this is closely related to eosote, the valerianate of creosote. This remedy has

been employed by **Rieck** (*Brit. Med. Journ.*, May 7, 1898), who describes it as a yellow, oily liquid, soluble with difficulty in water, but readily soluble in alcohol, ether, chloroform, and benzol. It is said to be of particular value when subcutaneously injected; internally it can be given in capsules containing three grains. As much as fifteen of these have apparently been taken at a sitting without any ill effect. Rieck finds that it checks increased secretion from all mucous membranes, and at the same time retards its putrefaction. He also thinks that it is of considerable value in tuberculous cases, where he says it causes diminution of the tuberculous process and encapsulation of its products without producing a general reaction. Similar benefits are said to have attended its use for tuberculous glands in the neck.

28. Cinnamic acid in the treatment of tuberculosis.

This drug has been given hypodermically, commencing with doses of two minims, and the dose has been increased until one gramme has been given. The immediate result of the injection is severe burning pain, which speedily passes away. It is stated that after this treatment has been continued for two to four weeks there is increase in weight and a diminution of cough and of expectoration (*Journ. de Méd. de Paris*, Dec. 5, 1897). The unpleasantness of this treatment may be gathered from the statement that great constancy and patience are required on the part of the doctor and the patient.

29. Sterilised olive oil with guaiacol and iodoform in tuberculosis.

Breton, of Dijon (*Journ. des Praticiens*, Dec. 19, 1897) speaks favourably of the results of treating pulmonary tuberculosis with injections consisting of sterilised olive oil with guaiacol and iodoform in the following proportions:—

Iodoform	15 gr.
Guaiacol	75 gr.
Sterilised Olive Oil	3 oz.

He employs from one to one drachm and a half of this, and the injections are made into the loose connective tissues of the back, shoulder, or thigh. In rare instances some diarrhœa followed, together with a scarlatiniform eruption of an irritating character, which lasted some eight or nine days. Under this treatment Breton found that there was amelioration of all pulmonary symptoms and a general increase in weight.

30. Peronine, the hydrochlorate of benzylic ether of morphine has been employed as a substitute for codeine, and is credited with especial power in allaying the cough of phthisis, chronic bronchitis,

and whooping-cough (*Revue de la Suisse Rom.*, June 20, 1898). From the experimental side, **Mayor** concludes that the drug is a cardiac poison, and that it possesses very feeble narcotic properties.

In Merck's Annual Report for 1897, published in March, 1898, the following contra-indications to the use of peronine are enumerated: profuse sweats, severe headache, nausea, itching of the skin, roughness in the larynx, catarrhal and tuberculous affections of this organ, and bronchitis and other diseases of the lungs in cachectic patients.

31. The **saccharated extract of thymol** has been recommended by **Fischer** (*Deut. med. Woch.*, July 7, 1898) in the treatment of whooping-cough. A proprietary preparation under the name of "pertussin," is said to consist of one part of thymol and seven of syrup. This substance relieves the tendency to spasmodic cough in several other conditions, such as chronic catarrh of the larynx and bronchi. In some cases in which I have employed it in the treatment of whooping-cough at the Evelina Hospital, the frequency of cough appeared to be diminished during the administration of pertussin, and the number of whoops in the twenty-four hours increased when the administration was discontinued. So many drugs, however, appear to relieve whooping-cough, that without further experience I hesitate to speak more strongly of this remedy.

VII.—Digestive System.

32. Amylolytic ferments.

From a series of chemical and clinical tests of the value of various starch ferments, **Wingrave** (*Lancet*, May 7, 1898) concludes that taka-diastase is apparently the most powerful and the most reliable, since it is more rapid in its action. He finds that organic acids, such as acetic, butyric, and lactic, retard but do not permanently kill the ferments; that taka-diastase seems to be less influenced by them, and also by tea, coffee and alcohol, than are saliva and malt extracts. And finally, that taka-diastase and malt diastase have, like ptyalin, no action upon cellulose (uncooked starch).

33. Tannate of orexin has been employed by **Bodenstein** (*Wien. med. Presse*, 1898, No. 26), who finds that it is more valuable in functional than in organic diseases of the stomach. He has found it of particular service in the loss of appetite of children, as during convalescence from diphtheria. In adults the best results are obtained in the anorexia of phthisis, and in one case of uræmic vomiting it alleviated this distressing symptom. No untoward complications are mentioned in connection with this drug, which

was administered in doses of 7½ gr. twice a day two hours before meals.

34. Ox bile in biliary lithiasis.

Gautier (*Revue Méd. de la Suisse Rom.*, June 20, 1898) claims to have obtained brilliant results from the administration of an extract of bile of which 1½ to 3 gr. are given in pill or capsules three times a day after meals. It is not, however, a preventive of colic, since although it is claimed that this treatment will prevent the formation of fresh calculi, the patient is subject to colic until the calculi already in the gall-bladder have been passed.

35. Tenaline, a preparation from the areca nut, devoid of the toxic principle known as arecoline, has been employed as a vermifuge by **Hobday** (*Journ of Comp. Pathol. and Therap.*, Dec., 1897). As it stimulates peristalsis, no purgative is required. Hobday, administering it to animals, employs 1 minim for each pound of body-weight. Usually the only ill effect consisted in vomiting, but on one occasion when it was employed subcutaneously, it appears to have caused the death of the animal within a quarter of an hour.

VIII.—Genito-Urinary System.

36. Diuretin.

Dreschfeld, at the Manchester Therapeutic Society, spoke favourably of the value of diuretin which he had employed in acute Bright's disease, and he had found that it increased the excretion of urine in this condition from 15 to as much as 100 oz. in the twenty-four hours. These benefits were not so readily obtained in post-scarlatinal nephritis. In chronic tubal nephritis he had found that it sometimes succeeded when digitalis failed, while in interstitial nephritis he had found that it might produce toxic symptoms without any compensating beneficial symptoms. He thought that its action depended upon stimulation of the epithelium of the convoluted tubules, and he thought that so far from possessing any direct action upon the heart, the relief to the circulation was secondary to the diuresis. With cirrhosis of the liver, when the symptoms have come on suddenly he found marked benefit from the use of diuretin, while, when the onset was more gradual, very little relief was obtained. **Dixon Mann** suggested that the depressing effects of diuretin might be due to the presence of salicylate of sodium, and he thought that some soluble form of theobromine might be found of greater value than diuretin.

37. Sparteine sulphate.

In considering the treatment of obstinate dropsy, **James Tyson** (*Therap. Gaz.*, Jan., 1898) alludes to the value of sparteine

sulphate, the active principle of broom. The common broom tea, often employed as an efficient diuretic, is extremely nauseous and the dose is large, but sparteine, its active principle, is a good diuretic. Tyson considers that it has hitherto been given in too small doses, and he recommends that the dose should never be less than a $\frac{1}{4}$ of a gr. to adults, to the amount of 2 gr. in the twenty-four hours. He has occasionally increased it to 3 or 4 gr. in this period, but he does not push the use of this remedy when no diuresis follows such doses. He has not seen any ill effects from its employment.

38. Apocynum cannabinum.

The diuretic action of Canadian hemp was referred to at the Montreal meeting of the British Medical Association, and it was then admitted that it might produce severe vomiting and purging. Several writers in the *Therapeutic Gazette* of Oct., 1898, have indicated that this is not a new remedy, and have collected references to it in literature thirty and forty years ago. It is urged, however, that the drug undoubtedly possesses powerful properties, and that it acts as a tonic upon the absorbent system as well as a stimulant to the heart's action. Many of the preparations formerly in use are said to have been extremely nauseous, and this quality is not present in the saturated tincture of the recent root. The benefits resulting from its employment in cases of dropsy do not appear to be dependent upon its cathartic action.

39. Methylene blue. The *Therapeutic Gazette* for July, 1898, contains a valuable summary of the range of application of methylene blue, which was formerly known as pyoktanin. It has been employed in a large number of cases of acute gonorrhœal urethritis by **Horwitz**, of Philadelphia, who employed two grains two or three times a day, a dose which, however, appeared to cause, in some instances, slight diarrhœa and strangury. There was marked improvement in the course of four or five days. Horwitz believes methylene blue to be a germicide of great value when acute urethritis is due to the presence of gonococci. He thinks it materially shortens the duration and diminishes the tendency to complications. He recommends that a dose of one grain should be given three times a day, and that this should be increased to two grains if the remedy is well borne.

Methylene blue has also been employed in the treatment of diabetes mellitus (*La Méd. Mod.*, Jan. 22, 1898). Two cases of treatment with this remedy have been reported, and in both there was diminution in the daily excretion of urine, while the amount of albumin and of sugar markedly decreased. The methylene blue was given in the form of pills containing two grains in each. It is mentioned incidentally that this treatment tends to relieve any neuralgic pains.

40. Amyl hydrate and paraldehyde in the treatment of diabetes insipidus.

Many other drugs having been employed in succession in a case of diabetes insipidus with no particular result, amyl hydrate was employed (*Brit. Med. Journ.*, Sept. 3, 1898) in half-drachm doses at night-time, and the amount given was gradually increased. Under its influence the thirst very greatly diminished, and the specific gravity rose until, when the patient was taking three drachms nightly, the specific gravity was 1010. After using amyl hydrate for a fortnight the patient developed a great craving for it, and accordingly paraldehyde was substituted. During the treatment the patient gained in weight.

41. Piperazine and lysidine.

The claims of these unofficial remedies for the treatment of gout have been investigated by **Luff** (*Lancet*, June 11, 1898) from the chemical side, rather than the clinical, and his results are not favourable; and, as his experiments extended to the ordinary alkalies, lithium salts, and sodium salicylates, and his conclusions applied equally to all, they suggest further extended observations. He states that the ordinary alkalies, the lithium salts, piperazine and lysidine, do not exercise any special solvent effect on sodium biurate, and their administration to gouty subjects with the object of removing uratic deposits in the joints and tissues appears to be useless. He further states that sodium salicylate does not exercise any special solvent effect on sodium biurate. Its administration with the object of removing uratic deposits in the joints and tissues appears to be useless, and, moreover, it is apparently contra-indicated in gout on account of its leading to an increased formation of uric acid in the kidneys. This is not the first time that laboratory work has been found in direct conflict with clinical observation. Clearly, there must be an error somewhere—but where?

42. Stypticin is said to be a hydrochlorate of cotarnine, an oxidation product of narcotine, and its action has been tried by **Ronosse** and **Walton** (*Belge Méd.*, May 19, 1898). They find that it increases peristalsis, and that it increases the force and quickness of the rate of contractions of the gravid uterus independently of any effect upon the blood supply. In arresting hæmorrhage it is, however, less useful than hydrastis, since it is less rapid in its action. On the other hand, it has the advantage of causing more protracted contraction, and can, therefore, be used where more lasting action is desired, as in prolonged hæmorrhage.

This remedy has also been employed by **Bakofen** (*Münch. med. Woch.*, April 5, 1898), who speaks, however, in terms of only moderate praise, though he considers that it constitutes an addition to our resources.

43. Manganese binoxide. The administration of manganese binoxide for functional ailments of the uterus has been highly recommended by **A. H. Smith** (*Georgia Journ. of Med. and Surg.*, Jan., 1898), who describes its value as a corrective. He says that he has found great benefit from its employment in cases associated with much pain, and he commences its administration about four days before the expected period. He also thinks that it relieves the headaches of a burning character, and also the hot flushes attending the menopause. For this last he administers a pill of two grains at bed-time. Ordinarily, however, he administers two grains three times a day, and as it produces no unpleasant symptoms it may be given in larger quantities and at shorter intervals.

44. Veratrum viride having passed out of the Pharmacopœia, it is somewhat interesting to find that its employment in a new direction is already attracting attention. **John Gordon** (*Lancet*, Jan. 15, 1898) gives an account of its employment in a case of puerperal eclampsia, and he describes the drug in some detail, although at the time of publication it was still official. He appears to have used the preparations of the United States Pharmacopœia, and he noted shortly after its administration, lowering of arterial tension, slowing of the pulse rate, and absence of convulsive seizures. The drug was followed, however, by retching and vomiting, and there was much salivation which gave trouble by producing cough. Dr. Gordon summarises the physiological actions of the alkaloids of veratrum viride, and he considers that these actions meet the supposed pathological conditions in puerperal eclampsia, namely, increased arterial tension and cerebro-spinal excitement. Although the patient recovered from puerperal eclampsia, it is noteworthy that the convulsions occurred before delivery, and that they were not repeated after delivery. It is possible, as Dr. Gordon suggests, that the influence of the drug in relaxing muscular tissue was shown by the dilatation of the rigid external os, and that, therefore, it rendered delivery more rapid, but it must be remembered that in the treatment of puerperal eclampsia the rapid emptying of the uterus is usually considered to reduce danger from further convulsions.

IX.—Constitutional and General.

45. Therapeutic action of the X rays on tuberculosis. It may be questioned whether the X rays are, strictly speaking, to be regarded as new remedies, but since therapeutic results have been claimed, and since, undoubtedly, they influence the nutrition, and have formed the subject of several communications at the Congress on Tuberculosis, it may not be out of place to mention here the report at this Congress by **Bergonié** and **Teissier** (*Brit. Med. Journ.*, Aug. 20, 1898). They found that in cutaneous tuberculosis they produced dermatitis of greater or less intensity. When this dermatitis can be limited in intensity and duration the effect in cutaneous tuberculosis is favourable, but this limitation presents considerable difficulties. For tuberculosis of the joints the Report, while admitting the possibility of inducing local inflammation, says that this is of doubtful therapeutic value, and could be obtained by more manageable methods, while for pulmonary tuberculosis, although sometimes abatement of fever and improvement of the general state may follow the use of the X rays, these good effects have not been lasting. On the whole they maintain not only that the disease has not been cured, but that its evolution has not been stopped or even checked; in short, they hold that, up to the present time, the action of the X rays is, if not dangerous, of no therapeutic efficacy whatever.

46. Chinosol for the antiseptic treatment of tuberculosis.

Chinosol, which has long been known as a non-irritating antiseptic, was used for tuberculosis by **Cipriani**. He published notes of eight cases (*Allgemeine medicin. Central-Zeitung*, No. 75, 1897). Chinosol was given by the mouth in three cases of tuberculous glands and two of tuberculous caries. When given internally he employed doses of one gramme during the day. Rapid improvement is described as having followed the treatment in all the cases, and the use of this drug does not appear to have been followed by any ill results.

47. Chelidonium in cancer.

Numerous recent observers have called attention to the alleged value of the internal administration and subcutaneous injection of extract of chelidonium in cases of cancer, and it is asserted that during this treatment the growths become softer, and that grey fluid and detritus are discharged from the interior (*Vratch*, No. 32, 1897). It must be admitted, however, that some of those who took part in the discussion asserted that the chelidonium acted merely as a caustic, and that the alteration in size was somewhat deceptive since, even when injected in a healthy man, it was found to produce a powerful local reaction, causing inflammatory œdema, which slowly disappeared.

Krainski records four cases of malignant disease of the eyelids

and face in which injections were made in the sound tissue bordering upon the new growths. He injected four to eight minims of a mixture of equal parts of extract of chelidonium, sterilised water, and glycerine. Some pain and pyrexia resulted, together with a good deal of swelling around the tumour, and in one case suppuration at the seat of puncture. In two of the cases the neoplasms disappeared, but in the other two, although there was distinct improvement, the cases could not be followed up (*Lancet*, Sept. 18, 1898).

48. Tincture of myrrh in diphtheria has been recommended, given internally every half-hour or every hour during the day, and every two hours at night (*Allgemeine medicin. Central-Zeitung : Lancet*, Jan. 1, 1898). The solution employed consisted of 4 parts of tincture of myrrh, 8 parts of glycerine, and distilled water up to 200 parts. This solution has also been used in an inhaler or spray when the larynx is affected. In the account, however, no mention is made of bacteriological verification of the diagnosis.

49. Bromide and **iodide of strontium** have been employed for exophthalmic goitre in children by **Gillespie** (*Brit. Med. Journ.*, Oct. 8, 1898) with exceedingly favourable results. He recommends that the bromide, on account of its deliquescence, should be given in solution rather than in powder. For adults he employs 10 to 30 gr. of the bromide, or 3 to 5 gr. and upwards of the iodide.

50. Salicylate of methyl applied locally.

Linossier and **Lannois** (*Bull. de l'Acad. de Méd.*, March 22, 1898) maintain that the therapeutic action of methyl salicylate, when applied locally, is due to actual cutaneous absorption, and not to the inhalation of the drug through the lungs. They assert that it is saponified in the blood and converted into sodium salicylate, and as an argument in favour of this method of employment they point to the rarity and slightness of toxic effects, vertigo and tinnitus being quite exceptional even after large doses. They recommend that it should be painted on the unbroken skin and covered with several layers of indiarubber. Ordinarily they employ 60 gr. as a dose, but in acute cases two or three times this amount may be given. They think it is of the greatest use in chronic rheumatic affections, but some benefit is claimed also for it in infectious and gouty arthritis, in neuralgia, and even in acute rheumatism.

51. Carbolic acid in the treatment of anthrax.

Scott Jackson (*Lancet*, March 5, 1898) describes a case of anthrax treated with carbolic acid, the patient being anæsthetised. Crucial incisions were made through the enlarged glands, and the wounds were swabbed out very freely with pure carbolic acid.

This drug was also given internally. The general condition improved rapidly, and the patient ultimately recovered. In this case no bacteriological examination was used, the diagnosis resting upon the history of the symptoms.

52. Iodol.

The employment of a 10 per cent solution of iodol in collodion has been recommended for erysipelas. This is painted over the affected part, which, if necessary, has been previously shaved, and the application is extended for about an inch beyond the area involved. Some of the iodine is undoubtedly absorbed, since it can be detected in the urine. The beneficial effects of pressure exerted by collodion must not, however, be overlooked.

53. Artificial immunity by alkaloids.

Some interesting experiments have been made by **Giofreddi** (*Archiv. Ital. de Biol.*, t. 28, fasc. 3) in attempting to render dogs immune against vegetable alkaloids, using the same methods as are employed for immunising animals against bacterial toxins. It is, perhaps, rather difficult to understand the practical bearing of these experiments, but none the less the results are suggestive. Thus, with morphine, as might have been expected, the quantity injected was gradually raised until twice the minimum of a fatal dose could be borne without producing more than slight narcosis. The serum obtained from the animal thus immunised appeared to possess antitoxic properties: 10 c.cm. to 20 c.cm. sufficed to neutralise the effect of double the minimum fatal dose of morphine, if injected into a non-immune animal, before or at the same time as the latter. The results are, however, comparable to those obtained by the man who tried to induce his horse to live without food, since after six months, when the dog could bear very large doses of morphine, it died suddenly with fatty degeneration of the left ventricle, analogous to that sometimes met with in morphinomaniacs. Similar experiments with cocaine and atropine failed entirely.

C.—SERUM THERAPEUTICS.

54. The **oxytuberculin treatment of tuberculosis** has been reported upon by a committee of the faculty of the Cooper Medical College (*Lancet*, Jan. 15, 1898), and the conclusions reached are : (1) Oxytuberculin prevents the growth of tubercle bacilli in veal *bouillon* ; (2) a positive therapeutic value has been demonstrated for it in the fifteen cases examined, the more clearly as no other treatment was used ; (3) no dangerous or untoward effects have resulted from its use. Although the committee feels justified in certifying these facts to the profession, to the end that oxytuberculin may be thoroughly tested, the limits of its

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successful application determined, and its place in therapeutics established at the earliest possible time, yet while some remarkable results have been obtained in advanced cases, no claims are made for the later stages of the disease.

55. "TR." tuberculin.

Stopford Taylor, who has been employing the "TR." tuberculin in the treatment of lupus vulgaris (*Brit. Med. Journ.*, July 9, 1898), finds that the local reactions are more mild than those produced by the old tuberculin; during the earlier treatment improvement was most marked, then came a period of no advance, and lastly, a stage of breaking down of healed ulcerations and the recrudescence of the disease. He further states that all his patients suffered from malaise, anorexia, pains in the back or weakness, and trembling of the legs.

At the Congress on Tuberculosis in Paris (*Brit. Med. Journ.*, Aug. 13, 1898), Koch's new tuberculin fell under discussion, and with one exception the speakers gave an adverse verdict. It was admitted to be less dangerous than the original tuberculin, but perhaps not altogether harmless, since some had noticed febrile attacks and exacerbations of the disease. The utmost in its favour was that, although it had fallen somewhat short of the promised effects, it might be useful as an adjunct in the treatment of sufferers from tuberculosis.

56. A case of tetanus successfully treated with antitoxin is reported in the *Lancet*, Jan. 8, 1898. The masseters were at first firmly contracted, and there was spasm of the retractor muscles of the head. In addition to being treated with seventeen injections of antitoxin, this patient was also treated with morphine, and also with large doses of chloral hydrate and bromide of potassium at night. In spite of severe symptoms ultimate recovery occurred.

57. Serum against yellow fever (*Lancet*, Nov. 27, 1897) has been recommended by **Professor Sanarelli**, who has performed several experiments on dogs, horses, and guinea-pigs. He considers that the serum possesses the power of saving animals which are destined to succumb almost without exception to experimental yellow fever, and he thinks that this treatment might be useful in the treatment of spontaneous yellow fever occurring in man, while it possesses, moreover, distinct preventive action against the disease.

58. Fraser has been continuing his interesting investigations connected with venoms and disease toxins (*Brit. Med. Journ.*, Sept. 2, 1898). He had already shown that the bile of several animals possessed antidotal properties against serpents' venom and against toxins of such diseases as diphtheria and tetanus, and that the bile

of venomous or, more correctly, of noxious serpents, is especially powerful as an antidote against the venom of serpents. In view of his further experiments he thinks that the antidotal or curative effects of anti-venin and of disease toxins are of mechanical, or physical, and not of a biological nature.

59. During 1898 **anti-streptococcic** serum has been employed for a great variety of conditions, and the records are generally favourable. An interesting case of erysipelas, complicated by endocarditis, is reported by **Magill** in the *Lancet* of Feb. 19, 1898. The patient was a young man, who at first complained of soreness of the throat, with an extremely high temperature, but with no visible ulceration, no follicular tonsillitis, and no membrane. Two days later it was found that the left ear and parotid region were swollen and presented an erysipelatous blush. From this point the erysipelas spread to the rest of the face, gradually fading in the parts first affected. From the commencement of the illness there was slight pain about the cardiac region, and a loud mitral systolic bruit, and the temperature oscillated widely. It was at this time that the serum was employed, and the general condition rapidly improved, although the mitral murmur remained long after the patient was apparently well.

In the same number of the *Lancet* a case of puerperal septicæmia similarly treated is reported, and **Nathan Raw** makes two valuable suggestions: (1) That the presence of streptococci should be demonstrated before the serum is used, and (2) that the serum used should have a guarantee of being free from active organisms.

Another interesting instance of the use of this serum is reported in the *Lancet*, March 19, 1898. The case was one of scarlet fever, complicated with acute suppurative otitis media and acute hæmorrhagic septicæmia. Under the influence of the serum the temperature became more steady and the pulse and respiration improved. Although this patient appears to have been desperately ill, she ultimately recovered under the use of the serum, together with chloride of calcium, which was administered in view of the hæmorrhage.

The same number of the *Lancet* contains a report of a case of puerperal fever, which was also treated with the antistreptococcic serum. The symptoms mentioned are not very convincing, one of the chief elements in the diagnosis being that the woman had been attended by a "pseudo-midwife," in whose practice a fatal case of puerperal fever had recently occurred. It is stated, however, that although there were no local symptoms, the patient's general condition improved after each dose, and when the remedy was withdrawn for a time the case rapidly became worse.

60. Coley's fluid.

The treatment of inoperable sarcoma by means of Coley's fluid—a mixture of the products of the growth of the streptococcus of erysipelas and the bacillus prodigiosus sterilised by heat—formed the subject of a paper by **Mansell Moullin** (*Lancet*, Feb. 5, 1898). He gives details of five cases, of which three were apparently cured. In one the original tumour disappeared, and in another there was only a temporary diminution affecting one portion. Amongst the conclusions drawn from these cases, and from the exhaustive study of the literature connected with this subject, may be mentioned the following:—(1) That the proportion of cases of sarcomata that are cured by the injection of the mixed toxins depends, amongst other things, upon the histological character of the growths. Spindle-celled sarcomata are by far the most successful. This suggests the inference that the mixed toxins have a selective effect, even if it is not specific. (2) The disappearance of sarcomata is not due to inflammation, but to an intensely rapid form of fatty degeneration, comparable only to that which affects the lymphatic cells in acute yellow atrophy of the liver. (3) The toxins are of no use unless the cultures are taken from a virulent case of erysipelas, or are made virulent by passing the streptococcus through rabbits. (4) The bacillus prodigiosus, in spite of theoretical objections, has the effect of immensely increasing the reaction.

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