ducts in different parts of the body. The doctrine is sustained that pulmonary tuberculosis is eminently a *diathetic* disease; *i. e.*, one arising from a *constitutional* determining agency." (*See General Pathology; Tuberculosis.*)

Individually, and in families, all causes that depress vitality produce consumption; but most of all *impure atmosphere.*[1] Sedentary employments and exhausting excesses, with foul air, make large cities very productive of it. In constitutions having the proclivity towards it, tuberculization may be brought on by any reducing disease, especially such as involves the breathing organs; as measles, bronchitis, or pneumonia. Dr. Copland[2] considers that phthisis may be *communicated*, by the emanations from the lungs and skin of a patient; and hence urges that consumptive mothers should not nurse their infants; and that healthy persons should not sleep with consumptives. Parkes, Budd, and others, confirm this opinion; which was held also by Morgagni, Laennec, Andral, and Sir James Clark. Dr. R. Payne Cotton, of the Consumption Hospital, Brompton, England, with extended opportunities for observation, denies it.[3] The judgment of Sir T. Watson is no doubt well expressed; who, while denying that phthisis is contagious, would still, "for obvious reasons, dissuade the occupation of the same bed, or even the same sleeping apartment, by two persons, one of whom was known to labor under pulmonary consumption."

Treatment.—*Hygienic management* is, decidedly, more important to the consumptive than medicine. The following precepts are well laid down by Dr. B. W. Richardson:—

1. A supply of pure and fresh air for respiration is constantly required by the tuberculous patient.
2. Daily exercise in the open air is imperatively demanded by the tuberculous patient.
3. It is important to secure for the patient a uniform, sheltered, temperate, and mild climate to live in, with a temperature about 60° and a range of not more than 10 or 15°; where, also, the soil is dry and the drinking-water pure and not hard.
4. The dress of the tuberculous patient ought to be of such a kind as to equalize and retain the temperature of the body.
5. The hours of rest should extend from sunset to sunrise.
6. Indoor or sedentary occupation must be suspended; but outdoor employment in the fresh air, even in the midst of snow, has been and may be advantageous.
7. Cleanliness of body is a special point to be attended to in the hygienic treatment of tuberculosis.
8. Marriage of consumptive females, for the sake of arresting the disease by pregnancy, is morally wrong and physically mischievous.

Dr. Hermann Weber asserts, upon experience, that prolonged residence in elevated localities is curative of phthisis.

Altogether, the *analeptic* principle is now universally adopted

[1] Dr. MacCormac, of Belfast, has rendered service to the profession by especially enforcing this. Dr. Bowditch, of Boston, U. S., has likewise shown the great importance of dampness of situation as a promotive cause of phthisis.
[2] On Consumption and Bronchitis, London, 1866.
[3] Brit. Med. Journal, Aug. 31, 1873.

for the treatment of consumption. The diet must be nourishing; a "generous" regimen; and the same indication is to be followed in the employment of medicines.

There has been discovered, as yet, no specific to arrest tuberculosis. But cod-liver oil and alcohol, and, in lesser potency, iron, quinine, and other tonics, in a certain number of cases do manifest an important conservative and restorative influence; and palliation of symptoms, as pain, cough, loss of rest, may greatly help the comfort of the patient. My confidence in the *frequent* value of cod-liver oil is based chiefly upon observation. Three individuals in one family, for example, under my care, notwithstanding a well-marked family tendency (shown by the previous death by phthisis of three sisters, their mother, and uncle), recovered from incipient consumption under the use of the oil. Other cases, much more commonly, have life *prolonged* by it. Unfortunately, however, in quite a considerable number of persons the stomach turns against cod-liver oil. When that is the ease, it is in vain to urge it. It may be taken in the froth of porter or ale, or after rinsing the mouth with brandy, which may also follow it. Some dislike it less when salted. Ammonia added to the oil lessens its taste; but I have not tried the combination extensively. The gelatinous capsules make it much less disagreeable to swallow; but less than two or three tablespoonfuls of the oil daily will hardly suffice. It can always be taken best in cold weather [F. 30, 31, 32]. Dr. B. W. Foster, on theoretical grounds, has proposed the addition of *ether* to cod-liver oil, to promote its digestion by the pancreatic secretion. Dr. Van den Corput, of Brussels[1] gives, with asserted advantage, *boluses* of cod-liver oil saponified by hydrate of lime. A bitter tincture, as of bark (Huxham's), columbo, or gentian, will lessen the disagreeableness of the oil, while adding to its tonic effect. Carre, Lemoine, and Bouchut have found[2] cod-liver oil *bread* very available, especially for children. Every pound of bread may contain about five tablespoonfuls of oil, and six spoonfuls of milk. The taste is said to be thus very much disguised.

Alcohol, though variously estimated by different physicians, is, in my view, well established as a remedial or at all events a supporting agent of value in consumption. Not to be used in excess, nor ever to produce excitement in any degree; but simply as a *roborant;* an addition to the diet and a supporter of the strength of the invalid. The dose must, therefore, be proportioned to his condition; and it ought usually to be small.

Whisky is preferred by many; but ale, lager beer, and wine suit different patients best. A little, two or three times daily, will be much better than a full drink at one time. I would always begin with very small quantities—say two or three teaspoonfuls of whisky, or half a glass or even less of wine, or half a tumblerful of ale or beer. To do good, the stimulant *should not quicken the pulse, flush the face, or be felt to affect the head.* Kept under such restrictions, even when increased to meet greater prostration, I have never known any hankering after excess to be caused by it. One patient of mine, with phthisis, would sometimes, when tem-

[1] Med. Times and Gazette, Nov. 26, 1870. [2] Bulletin de Thérapeut., 1873.

porarily much reduced, take more than half a pint of whisky daily for a time; and then, as his strength rallied, would diminish the amount to almost none, without any difficulty or longing for more.

Lately, we hear of advantage accruing from the "raw beef and brandy" treatment for consumption; but I am doubtful of its possessing any very special virtue.[1] When it can be done, alcoholic stimulus is best given with nourishment, as in milk, or beaten up with a raw egg, etc. *Koumiss*, a fermented drink, made from mare's or cow's milk, is a popular remedy of the Tartars, adopted lately to some extent by the Russian physicians.

Beef-tea, as a concentrated nutrient, is very useful when digestive power is low, at any stage of phthisis. One lady under my care, who, with tussicula, hæmoptysis, and emaciation, had greatly the appearance of incipient consumption, and who could not retain cod-liver oil upon her stomach without loss of appetite, was put upon the daily use of a pint of strong beef-tea,[2] for several weeks together, with no medicine but a mild expectorant. She recovered, and has since married and become a mother.

The phosphates and hypophosphites of calcium, etc., have been sufficiently tried to prove their inferiority to cod-liver oil. My own experience with them, in the wards of the Episcopal Hospital in this city, as well as in private practice, has been discouraging; and I believe the best phosphate for analeptic use to be the phosphate of iron. Dr. Henry Blanc (*Lancet*, June 13, 1874) insists on the value of phosphate of calcium, given at the same time with the juice of raw meat; the phosphate being always taken at meal times. Chlorate of potassium has entirely failed under fair trial. Glycerin will not take the place of cod-liver oil; nor has any other oil been shown to be capable of doing so. Hérard and Sankey have used arsenic in small doses; Dr. Moutard-Martin[3] considers it a valuable remedy in phthisis. Dr. W. M. Logan, of Cincinnati, reports[4] the recovery of ten out of twenty-four cases, treated with thirty or forty drop doses of nitric acid (after meals) along with tincture of chloride of iron; besides hygienic measures, and, in some cases, cod-liver oil. Dr. Inman, of Liverpool, and others, recommend frequent *inunction with oil*.

Iron, especially the iodide [F. 33] and the tincture of the chloride, are frequently suitable; and so may be quinine, nux vomica [F. 34], or the simple bitter tonics. But the patient must not be worried and disgusted with much medicine; whatever depresses appetite is likely to do more harm than good.

For this reason, *expectorants* require discretion in their use. Those of a nauseant kind must be very sparingly prescribed in phthisis. The syrup or fluid extract of wild cherry [F. 35, 36] is

[1] The possibility of parasites being taken into the body with raw beef is exemplified by a case recently reported by Dr. Leidy, in which tænia mediocanellata was evidently thus introduced.

[2] The mode of preparation of beef-tea is not unimportant. I prefer the following: Cut up a pound of good lean beef into small pieces, pour upon it half a pint or a pint of cold water, and let it stand two hours beside the fire. Then boil it half an hour. Take off all the scum and oil-drops, carefully; but *do not filter or strain it*. It should have a rich brown color; and, with salt, is agreeable to the taste.

[3] Bulletin Général de Thérapeutique, Nov. 15, 1868.

[4] Consumption: its Pathology and Treatment; Philadelphia, 1871.

one of the most suitable. Squills will do when loosening effect is particularly required. Ipecac and tartar emetic are too depressing to the stomach for the consumptive. Sometimes, at a late stage, carbonate of ammonium will be useful as a stimulant.

Anodynes and calmatives are almost always wanted as the case advances, to soothe the wearisome cough, and to give rest at night. Lactucarium, hyoscyamus, hydrate of chloral, and finally opium, or morphia, in some form, will be important sources of comfort to the patient, and may economize his strength. Mazza recommends cyanide of potassium in small doses.

Hæmoptysis, when not large in amount, requires only quietness, for the time, with little or no special medical treatment. Should much blood be raised, the patient ought to be kept in bed, with the shoulders somewhat raised; and only iced milk and beef essence, or beef-tea, should be given for food. Gallic acid, in ten grain doses every two or three hours, will then be the most available styptic medicine. Ergot, however, is preferred by some (Anstie). If nervous disquietude exist, it may be allayed by an opiate at night. The popular remedy of holding salt in the mouth may, perhaps, be of some temporary use in hemorrhage. Slowly melting and swallowing ice will probably do more good.

The colliquative sweats seldom demand treatment, they being the *result* rather than the cause of debility. Belladonna is found (Fräntzel[1]) to reduce the amount of perspiration. Ablution with brandy or whisky and alum may be practised if this is very excessive. Diarrhœa may require to be held in check, by simple astringents and opiates, especially by enema.

If pleurisy or peritonitis supervene as a complication, the local inflammation must be treated in view of the general condition. Depletion is out of the question at an advanced stage. Dry cups, small blisters, and opium are all that we can use in the treatment. For the variable pains in the chest in the course of the disease, mild or moderate counter-irritation, by warming or belladonna plasters, tincture of iodine, or croton oil, may be used.

It is not, however, to be said that the name or character of phthisis should in *all* cases rule out local depletion in the *incipient* stage. In one of three cases in one family (already alluded to) who recovered (notwithstanding a strong inherited tendency to consumption, from a condition threatening it), great relief and improvement followed the early application of two dozen leeches to the side; it was (to borrow an expression of Dr. Condie's) at the time an acute *tuberculous pneumonia*. Yet I know that such cases are exceptional. The pervading indications in phthisis are economy and recuperation. Niemeyer's suggestion that the identification of phthisis with caseous pneumonia should lead us to put all consumptives, in the early febrile stage, to bed, and bleed or cup them, could not be approved as a rule of practice, even if his pathological views should be accepted.

Inhalation has often been tried in phthisis. Not enumerating agents which have summarily failed, I believe that the best hope attaches, in this way, to inhalation of the vapor of creasote or of

[1] Virchow's Archiv, lxviii. 1.

carbolic acid. These agents are styptic, and by coagulating albumen and albuminoid material may be expected to aid in arresting the softening and destructive process in the lung. At least, we might hope that this would (and in some cases it has proved so) lessen excessive and exhausting expectoration. Dr. Marcet[1] reports favorably of the use, by inhalation, of carbolic acid, one or two grains to the ounce of water. Dr. Chéron[2] asserts the value, especially in slowly progressing cases, of inhalation of the vapors of oxygenated essences; as that of the *laurus camphoræ*, cedar, chamomile and *eucalyptus*. *Oxygen* itself is given by inhalation in the practice of some physicians; and so has been very dilute *nitrous oxide* gas. I have no positive knowledge of their results.

Dr. Oscar Hasse, of Nordhausen, has transfused *lamb's blood* into the veins of a number of cases of advanced phthisis, with asserted advantage.[3] Injection of a pulmonary cavity with alterative solutions (as tincture of iodine, carbolic acid, permanganate of potassium), has been proved, by Berkart, Koch, Mosler, W. Pepper,[4] and others, to be safe, when a hollow needle (Dieulafoy's) or capillary trocar and canula is used; and, in some instances, the effects have appeared to be beneficial. In cases manifestly progressing towards death, such a practice seems worthy of trial; with the hope of checking the destruction of the lung tissue, and promoting the cicatrization of cavities.

Dr. J. H. Hutchinson has shown (*Phila. Med. Times*, May 30, 1874) that even Hippocrates recommended puncture of the chest in phthisis; the idea of it being revived by Baglivi (1723) and Ramadge (1836). Hastings and Stork practised it about 1845. Prof. J. H. Bennett (*Reynolds's System of Medicine*, vol. iii. p. 589) asserts that, as might have been expected from the nature of the disease, such measures have uniformly and totally failed.

Change of climate is often proposed for the benefit of the consumptive. In an early, or middle, or even a stationary advanced stage, it may be of important advantage. When to forbid, or advise it, may be a very delicate question. More will depend upon the *rate* of progress than upon the period of the case. But the patient must have strength enough to travel, and must be not too dependent upon his home comforts, or he may be made worse instead of better. It is a cruelty to banish one who is already on the verge of the grave to die in a strange place among strangers. Yet I have known life to be prolonged from year to year, in those who were natives of this city, by spending the winter South.

In selecting a climate for the invalid, equability and dryness are, unless at a late stage, more important than warmth. That climate which will allow the patient the greatest number of days out of doors, will be the best. Minnesota, and other places near Lake Superior, agree extremely well with some, in the *early*, but not so well in the later stages of the disease. Of southern localities, Florida (best of all its central pine-lands) presents an especially equable, almost maritime, climate. Cuba is often resorted to. A sea voyage (if not subject to exhausting sea-sickness) may do good at an early stage. Across the ocean, consumptives resort to the South of France, particularly to Pau or Biarritz; or to Mentone, or Malaga, or Malta; or Italy—especially Ischia or Capri, Sorrento or Palermo;—Madeira, and Algeria, the year round, and Egypt in the winter only, are favorite climes. For the winter, nothing could excel in salubrity the atmosphere of the Upper Nile.

Our own country affords all the requisites for the migration of an invalid, to escape the inclemencies of every season, if he can vibrate between Newport, R. I., in the summer, and St. Augustine or the interior of Florida for the winter; or else between Minnesota in the summer, and Southern California for the colder half of the year.

[1] Practitioner, Nov. 1868.
[2] Gazette Hebdom., No. 51, 1872.
[3] Philada. Medical Times, May, 1874. See, also, "Die Lamm-blut Transfusion beim Menschen," by Dr. Oscar Hasse, Nordhausen.
[4] Philada. Medical Times, March 14, 1874.

Phthisis in Early Life.—Dr. C. West[1] names the following as characteristics of consumption in children, among whom, however, it is certainly *rare*:—

1st. The frequent latency of the thoracic symptoms during the early stages.

2d. The almost invariable absence of hæmoptysis at the commencement of the disease, and its comparatively rare occurrence during its subsequent progress.

3d. The partial or complete absence of expectoration.

4th. The rarity of profuse general sweats; and the ill-marked character of the hectic symptoms.

5th. The frequency with which death takes place from intercurrent bronchitis or pneumonia.

The same excellent authority designates the following peculiarities in the auscultatory phenomena of consumption in the child:—

1st. The smaller value of coarse respiration, prolonged expiration, and interrupted breathing, owing to their general diffusion over the chest, and to their occasional existence independently of phthisis.[2]

2d. The greater difficulty of distinguishing chronic bronchitis, in the child, from phthisis.

3d. The loss of that information which the phenomena of the voice furnish in the case of the adult.

4th. The smaller value of inequality of breathing in the two lungs.

5th. The difficulty of detecting minute variations in the resonance upon percussion.

6th. The frequent existence of dulness in the interscapular region, with moderate resonance and tolerably good respiration in the upper part of the chest—characteristic of enlargement of the bronchial glands.

The extremely common occurrence in young children of "caseous" local affections, of the glands, etc., and the much later period at which tuberculization of the lungs usually begins, afford together a strong argument against the theory (Buhl, Niemeyer) of the

[1] Diseases of Children, p. 404.
[2] The occurrence of harsh respiratory sound as an initial sign in *pneumonia* of children is well established.

"resorptive" origin of tubercular phthisis; otherwise, at least, than in quite exceptional instances.

AFFECTIONS OF THE ORGANS OF CIRCULATION.

PERICARDITIS.

Definition.—Inflammation of the covering membrane of the heart.

Varieties.—Simple or idiopathic, and rheumatic pericarditis. The latter is very much the more common. Degrees of violence in the attack also cause variations, from the mildest and almost latent cases, through those of open and active severity, to those attended by rapid effusion and prostration.

Symptoms.—Fever; pain (occasionally absent) at and radiating from the heart; tenderness on pressure in the cardiac region; accelerated, irregular, or oppressed, rapid and feeble pulse; anxiety or delirium; nausea and vomiting in some cases; short hacking cough; towards the end, coldness and pallor or lividity, œdema of the face and extremities, loss of pulse.

Stages.—1st, Acute inflammation; 2d, Adhesion; 3d, Effusion.

Physical Signs.—Before adhesion or effusion, usually, exaggeration of the heart's impulse. Then, pericardial *friction-sounds* (to and fro); the vibration accompanying which is sometimes felt by the hand. After effusion, dulness on percussion, with muffling of the heart's sounds to the ear on auscultation. The friction-sounds disappear during this period, sometimes to return as the effusion is absorbed.

Morbid Anatomy.—In the first stage, there is a rose-redness of the pericardium, diffused, punctated, or in patches. Then, deposits of coagulable lymph, white and opaque, sometimes causing local or general adhesion of the two layers of serous membrane. In most fatal cases, effused serum is found in the sac, in quantity varying from ounces to pints. Great quantities of it weigh down the diaphragm below it. *Purulent* exudation is sometimes met with. In scorbutic cases, it may be hemorrhagic. The muscular tissue of the heart is found to be less coherent than usual.

Diagnosis.—From *endocarditis* and from *pleurisy* it is sometimes not easy to distinguish pericarditis. The symptoms of the latter and those of endocarditis are the same; and the *friction-sounds* may occur in both. The heart's impulse is more apt to be sustained in strength in endocarditis; and in the latter, no dulness on percussion occurs, nor are the heart-sounds muffled at any stage; while valvular murmurs follow endo- and not peri-carditis.

Friction-sounds which are outside of the heart (pericardial) have a *nearer* character to the ear than endocardial sounds; they are more narrowly *limited*, not passing along the vessels; they do not keep exact time with the cardiac sounds, and may vary from day to day; and sometimes the vibration may be felt externally.

Pleurisy causes friction-sounds and afterwards dulness on percussion. But the former sounds are more diffused, are generally *single*, not "to and fro" or double; and the dulness extends further

over and around the side. Latent pericarditis may possibly, from some symptoms, be taken for inflammation of the brain, or of the stomach. Physical exploration should prevent such errors.

Prognosis.—There is great danger to life in pericarditis; and its course is sometimes terminated by death in a few days. In other cases resolution may take place promptly; but more often the heart is clogged for a considerable time (weeks or months) with effusion, or a more protracted interference occurs from adhesion of the pericardial surfaces. The latter is sometimes shown by a dimpling, or sinking in, with each beat of the heart, of the intercostal spaces above and below it.

Fig. 63.

Pericarditis, with effused lymph.

Causation.—The process or *materies morbi* of rheumatic fever is far the most common cause of pericardial inflammation, as it is of endocarditis also. Gout is accused of the same thing; but with much less frequency, or indeed, clearness of proof. Bright's disease of the kidney is occasionally associated with it.

Treatment.—In active cases, and good subjects, *one early and moderate bleeding from the arm* will be proper. Afterwards, in some, and instead with feebler patients, when fever is high and pain intense, leeches over the cardiac region may be used. A brisk saline cathartic, as Epsom or Rochelle salts, or citrate of magnesium, should commence the medication. Calomel, trusted still by some and condemned by others, may be confined to open sthenic cases, in previously good constitutions. In such, I would give half a grain of calomel, with half a grain to a grain of opium, thrice daily for three or four days. *Veratrum viride*, in small doses, is preferred by some practitioners of experience.

Where the rheumatic diathesis is marked, *alkalies* [F. 37] will be indicated. Carbonate or bicarbonate of potassium, or bicarbonate of sodium may be given, in scruple or half-scruple doses, with as much of Rochelle salts, three or four times a day. A blister over the heart, as the fever lowers, will often have a very good effect. If effusion occur, blistering may be repeated.

Should no opiate be given through the day, Dover's powder or morphia may be prescribed at night.

For the stage of effusion, or "chronic pericarditis," the usual treatment consists of diuretics [F. 38, 39, 40], as squills, juniper, sp. æth. nit., etc., varied and continued until absorption occurs. Tonics will often much promote the same end. Trousseau, Roger,