

is a physiological cyst at the end of the tubal fimbriae. *Myoma*.—Notwithstanding the fact that fibroid tumors of the uterus are of such common occurrence, myoma of the tube is very rare. Bland Sutton reports a case in which an interstitial myoma, the size of a Tangerine orange, was found in the walls of the tube at the juncture of the uterine and middle thirds. Most of the reported myomata of the tube are pedunculated and of the sub-peritoneal class. In Sir J. Y. Simpson's case the tumor was "of a size equal to that of a child's head"; but usually the growths are so small as to create no disturbance. Many observers have mistaken a collection of tuberculous matter and inflammatory changes in chronic salpingitis for minute fibroids. *Cancer*.—Carcinoma of the tube may be either primary or secondary, though the latter is more frequent and results from involvement of the tube in cancer of the uterus or ovaries. The disease is generally confined to one tube. Until recently it was asserted in text books that the secondary was the only variety, but at least seventeen authentic cases of primary carcinoma of the tube have been described. The cancer in nearly every case assumed a villous or papillomatous appearance. *Sarcoma* has also been noted. Montgomery refers to a case reported by Kahlden in which the tube formed a sausage-shaped mass filled with soft, cauliflower-like material. Under the microscope it showed various degenerations such as round-cell and spindle-cell sarcoma and a papillomatous structure wanting in connective tissue. *Lipomata*, or fatty tumors, from the size of a bean to that of a walnut, have been found in connection with the tubes. Parona reports a case in which the lipoma weighed a little under three ounces and measured three and a half inches in the longest diameter; traces of the wall of the tube with characteristic ciliated epithelium were seen through the adipose tissue of the lipoma. *Deciduoma malignum*.—Two cases of this remarkable disease have been described, both in Sanger's opinion quite authentic; and if we can have the malignant degeneration of a portion of the placenta or chorion within the uterus, it is not surprising that a similar malignant change may occur in the tubal sac of ectopic pregnancy. Sanger claims that this is an additional argument, not only for active interference in cases of extra-uterine pregnancy, but also for the extirpation of the appendages in which tubal abortion has occurred. *Papillomata*.—According to Doran papilloma is the term applied to an exuberant morbid growth which lies in the interior of the Fallopian tube. Sutton, however, classifies such tumors as adenomata. Doran considers that these tubal papillomata are allied to the condylomata and warts seen on the external genitals irritated by venereal discharges. These ordinarily are innocent but may undergo malignant degeneration. Sanger divides them into two forms: simple cystic and hydropic. *Dermoids*.—According to Doran there is no sound evidence that a dermoid tumor of the tube has ever been seen. *Enchondromata* are small, semitransparent, cartilaginous masses, occasionally situated on the ends of the fimbriae (Montgomery).

The general treatment for all these tubal neoplasms is salpingectomy. They are rarely differentiated, as subjective symptoms throw no light upon the diagnosis and examination reveals merely a tubal mass without any determination of its character. *Wilmer Krusen.*

FARCY. See *Glanders.*

FARMVILLE LITHIA SPRINGS.—Prince Edward County, Virginia.

POST-OFFICE.—Farmville. Boarding-houses.

ACCESS.—Via Norfolk and Western Railroad to Farmville, thence one-half mile to springs. Farmville is a thriving town of 4,000 inhabitants, located 55 miles east of Lynchburg and 72 miles south of Richmond. The railroad depot is within convenient walking distance of the springs, but carriages are at hand for all those who prefer to ride. There are many features of interest in this historic region. The springs are beautifully situated about 550 feet above the sea-level. The surrounding

country is very pleasing to the eye, and on every hand the visitor is met by names and locations of familiar memory. Not far from the springs are found the battlefields of Chancellorsville, Appomattox, Rapidan, Five Forks, and others of lesser note. The climate here is bracing, the temperature ranging from 40° to 50° F. in winter and from 80° to 90° F. in summer. The springs are eight or ten in number, and yield about fifty gallons of water per hour. The following analysis is by Prof. E. T. Fristoe, of the Columbian University, Washington:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride	5.30
Sodium sulphate	3.59
Potassium sulphate	.18
Calcium sulphate	1.81
Lithium bicarbonate	3.76
Calcium bicarbonate	1.33
Magnesium carbonate	2.71
Ferrous carbonate	1.25
Manganous carbonate	Trace.
Alumina	2.52
Silica	3.92
Iodine	Trace.
Sulphuric acid	Trace.
Organic matter	Small quantity.
Total	25.38
Carbonic acid gas, 74.20 cubic inches.	

It will be observed that this water contains a fair proportion of the bicarbonate of lithium. It is also abundantly charged with carbonic acid gas, and contains sufficient sulphate of sodium to give it a mild laxative action. The water has come into wide use as a corrective of the uric-acid diathesis, and is sold in all parts of the country. Its best effects have been observed in gout, renal and vesical calculus, Bright's disease, and dyspepsia. The iron in the water gives it also excellent properties as a ferruginous tonic. *James K. Crook.*

FAT NECROSIS. See *Pancreas, Diseases of.*

FATTY DEGENERATION; FATTY INFILTRATION. See *Lipogenesis.*

FAUQUIER WHITE SULPHUR SPRINGS.—Fauquier County, Virginia.

POST-OFFICE.—Fauquier White Sulphur Springs. Hotel.

ACCESS.—From Washington via Virginia Midland Railroad to Warrenton, 56 miles southward, thence a drive of six miles to the springs. The visitor to this favored locality is pleasantly impressed during the forty minutes' ride from the picturesque town of Warrenton to the springs. The drive is over a fairly graded road through a country where the well-stocked farms and handsome residences are indicative of an advanced degree of thrift and refinement. The springs are charmingly situated among the foothills of the Blue Ridge at an elevation of 1,000 feet above the sea-level. The surrounding grounds comprise an area of 400 acres in a high state of cultivation and abounding in shaded walks and drives through hills and valleys. Being sheltered on the west by wooded hills, the location admits of invalids enjoying the open air with safety almost daily throughout the year. The clear waters of the Rappahannock River border the western boundary of the park and sweep along the base of the mountains, where the huntsman or the disciple of Izaak Walton will find an ample reward for his tramp among the hills or his patience by the waterside. The waters of these springs have been well known for upward of seventy-five years. As early as 1834 a company was formed of well-known men from Maryland and Virginia, and two large hotels and a number of cottages capable of accommodating 1,000 persons were built. So attractive were the resort and its surroundings that the Legislature of Virginia held a summer session there in 1849. At the beginning of the war the place was in the full blast of prosperity. In August, 1862, it was the scene of a fierce fight between

the Federal and Confederate forces, and the two hotels were burned. In 1877 a company was formed for the purpose of restoring the famous old resort to public uses. The present accommodations consist of an elaborate and commodious fire-proof hotel fitted with all modern improvements. There are besides a number of cottages, capable of accommodating 500 guests; they are located in a fine grove of elms convenient to the main hotel.

The following analysis of the spring water was made in 1878 by Prof. Thomas Antisell, of Washington, D. C.:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Calcium bicarbonate	7.88
Magnesium bicarbonate	2.47
Sodium chloride	3.75
Calcium sulphate	3.39
Iron phosphate	2.14
Iron sulphate	1.63
Sodium and potassium sulphate	.64
Calcium and magnesium phosphate	.10
Gaseous matter, etc.	
Total	22.00
Gases.	Cu. in.
Carbonic acid	11.00
Sulphureted hydrogen	Small quantity.
Temperature of water at springs, 55° F.	

The source of the mineral ingredients of the springs lies in the country rock, which is an aluminum slate, the beds of which lie nearly horizontal, or with a slight slope, and hold between their layers sandy, ferruginous seams, in which are embedded crystals of iron pyrites with some hydrated oxide of manganese. The water is properly classed as a sulphureted alkaline-chalybeate, possessing alterative, tonic, and diuretic properties. It has long been recommended in the various forms of dyspepsia, in intestinal disorders and in liver complaints. Its diuretic properties are utilized in dropsical affections due to renal and cardiac diseases, as well as in the early stages of Bright's disease. In the condition known as neurasthenia, produced by overwork, anxiety, or other causes, a course of this water has been found to be markedly advantageous. In certain female complaints, notably in menstrual disorders due to anæmia, its action is prompt and permanent. *James K. Crook.*

FAVUS. See *Tinea.*

FEBRICULA (diminutive of *Febris*, fever).—(Synonyms: Simple fever, Simple continued fever.)

Febricula is a convenient term which finds its justification in ignorance rather than in knowledge.

A pyretic state lasting from one (*ephemera*) to ten days, in which the temperature probably does not rise above 102° F. except temporarily, nor the pulse usually above 100 to 120, accompanied by a white, furred tongue, constipation, loss of appetite, by headache which may be sharp; but without other derangement of the bowels than constipation, without any exanthem, without any distinguishable internal or external local lesion, inflammatory or otherwise; ending in sudden resolution and rapid, easy recovery—this is febricula, and we agree to call this general condition, whatever may be the cause, by that name for want of a better, and because it requires some designation.

Febricula has no pathology, because it always ends in recovery. Febricula ending in death takes on another name. Abortive typhoid, typhus, or relapsing fever; scarlet fever or measles without their rash; tonsillitis with an inappreciable tonsillar affection; acute rheumatism or erysipelas without localization, may all conceal themselves under the term febricula.

On the other hand, the same symptoms—as shown in a mild or short continued fever—may result from exposure to extremes of temperature, from exhaustion, from digestive disturbances, from derangement of the nervous centres.

The *febris ardens* of the tropics, various degrees of which are encountered in the United States during the occasional hot "waves" of our summer months, belongs more appropriately under insolation, or heat- or sun-fever.

The DIAGNOSIS of febricula can be reached only by exclusion, and should only be made subject to ready revision.

The TREATMENT is simple and consists of a saline laxative, diuretics, diaphoretics, or refrigerants, as indicated in the particular case. *George B. Shattuck.*

FEEDING, FORCIBLE.—Forcible feeding means the introduction of food into the organism against (or without) the will of the individual. It is employed in two groups of cases: (1) In patients exhibiting a comatose or semi-comatose condition for a considerable period of time; and (2) in patients afflicted with brain troubles (insanity, melancholia), when they refuse nourishment.

The insane form the largest contingent of cases in which forcible feeding must be resorted to. Here it is the most important measure not only to prolong life but also often for the establishment of a cure, whenever this is possible.

In some instances small quantities of liquid or semi-liquid food are introduced into the mouth of the patient and the latter is told to swallow. In case this procedure is effective, enough nourishment may be slowly ingested in this way. But if this means fails, as it often does, or in patients who are not accessible to our exhortations, the principal measure of forcible feeding consists in the artificial ingestion of nourishment. The latter is performed in three ways: (1) Gastric alimentation by means of a tube inserted into this organ; (2) rectal alimentation; (3) subcutaneous alimentation.

By far the most frequently employed and the most efficient method of forcible feeding consists in the first measure. It seems that the stomach pump was used for this purpose long before its application in gastric affections as a therapeutic measure (Kussmaul, 1867); for in 1857 William Hamilton¹ mentions the stomach pump as a well-known procedure in the feeding of the insane. The same writer had also introduced a new means of gastric alimentation by inserting a tube through the nostril into the œsophagus and providing it with a funnel. This method is still used nowadays, and I may, therefore, be allowed to cite Hamilton in full. He says:

"Acting upon a method advised, in cases of trismus, of introducing into the nostrils a tube to the posterior fauces, through which nourishment may be passed to a point beyond voluntary muscular control, an instrument was constructed which was efficaciously employed on the 24th of June last. It consists of an elastic tube, twenty-four inches long, the size of a catheter, at the open end of which a funnel is attached. Near its end the tube is slightly curved. The curve is maintained by the introduction of a silver wire, two inches in length, one end being bent upon itself to preserve it in position, to prevent its impinging at right angles upon the posterior wall of the pharynx during the first stage of the process, and, during the second, keeps the tube from interfering with the glottis. The tube being adjusted, the operator pours through it nutritious or medicated liquids, which are immediately, by automatic action, conveyed into the stomach. This operation is not disturbed, owing to the length and flexibility of the tube, by any considerable motion of the patient's head."

Forcible gastric alimentation is performed in the following manner: A soft-rubber tube (regular stomach tube), provided with a connecting glass-piece at the outside end, is introduced, either by way of the mouth (when this is possible, or after keeping the mouth open by a gag) or by way of the nostril, into the stomach. A rubber tube with funnel attachment is next slipped over the glass-piece, and the apparatus is then ready for the reception of food. The latter, in liquid or semi-liquid form, is poured from a pitcher into the funnel, which at first must be somewhat lowered, in order to prevent the entrance of too much air into the stomach, and then afterward raised to about the level of the patient's face, until the whole quantity desired has been ingested. Then the entire apparatus is quickly removed after compressing the tube with the fingers in such a manner that no con-

tents may escape from it while in the pharynx. It will be readily understood that assistance is oftentimes required during this procedure, especially when we are dealing with maniacal patients. The arms and feet of such a patient must sometimes be kept quiet by strong assistants.

The amount and kind of foods to be introduced into the stomach can be varied. The principle is, to introduce liquid and semi-liquid food in sufficient quantity for the maintenance of life. As a rule a combination of milk and eggs beaten up together is the most important and most frequently used form of nourishment. F. Jolly² recommends using one quart and a half of milk and three raw eggs for each feeding, twice daily. The milk can also be combined with cream, with somatose, or with plasmon, or indeed with any of the beef juices in use. A tablespoonful or two of sugar and some table salt may also be conveniently added. In the same manner meat powder, purée of brain, peas, etc., can be mixed with water or milk and introduced into the stomach.

Inasmuch as forcible gastric feeding permits us to utilize a great variety of foods, and especially a considerable quantity of them, it lies within our power not only to keep the patient in balance, but also sometimes to make him gain in flesh. Forcible gastric feeding is therefore the means par excellence for forcible feeding. The other two methods mentioned above—rectal alimentation and subcutaneous feeding—play here but an unimportant part. Rectal alimentation may be for a time combined with gastric alimentation when it is very difficult, on account of the patient's struggles, to introduce the tube into the stomach. Subcutaneous alimentation is still less important, as the amount of nutritive value introduced in this way hardly amounts to anything. William H. Murray³ recommends subcutaneous injections of olive oil (10-20 c.c.) twice daily. Max Einhorn.

REFERENCES.

- ¹ William Hamilton: On Forced Alimentation. *Journal of Insanity*, January, 1857, p. 278.
² F. Jolly: Ernährungstherapie bei Nervenkrankheiten. E. von Leyden's Handbuch der Ernährungstherapie. Bd. II., p. 108, 1898.
³ William H. Murray: Buck's Reference Handbook of the Medical Sciences, 1886, vol. III., p. 53.

FEES, LEGAL RULES GOVERNING THE COLLECTION OF.—As far back as history goes we find mention of physicians; physicians' fees are probably nearly as ancient, but the privilege of being able to recover these fees in a court of law is, in countries other than our own, of quite recent date. In the United States the law has never made any distinction between the professional man who works with his brain and the laborer who works with his hands. *Honoraria*, with their interesting history and subtle legal evasions, are unknown here; and the rules governing the collection or recovery of physicians' fees are, in the main, the same as would be enforced in any other vocation. But still, there are a few peculiarities arising from the nature of the services rendered, or from the circumstances that attend the need of these services; also there exist in many minds certain superstitions or fallacies with regard to a physician's services and remuneration. Hence a few general rules on these topics may be of value. At the outset it must be premised that only a very general sketch can be given; on points of detail the various States differ considerably among themselves, and even in the same State diverse decisions have been rendered on a single point. This article is intended to be for physicians what an article of similar length in a "Family Medicine Book" might be for lawyers *viz.*, a guide till proper professional advice can be obtained. A physician ought to know enough law to avoid being his own lawyer.

A physician's right to receive compensation for his services is based upon a contract either express or implied, and this same contract will form a basis for an action to recover that compensation in a court of law. If there is an express agreement between the parties (1) as to the amount or rate of compensation, and (2) as to the person

or persons to be considered responsible for the same, then no difficulty is likely to arise. But this is seldom the case, and as a rule an implied contract will be inferred as existing between the physician and either the patient or some one representing the patient. In this implied contract the physician will be expected to treat his patient with reasonable skill, judgment, and experience, according to the standard prevailing in the locality in which he practises, he will pay such visits as he may deem necessary; and the patient, by his acceptance of these services, undertakes to obey the physician's instructions and to pay a reasonable remuneration. What constitutes a reasonable remuneration will depend upon the usual rate of charges for similar services in the neighborhood. Here it may be remarked that failure to cure will be no bar to the physician's recovering his fee. The physician as a rule does not guarantee a cure; but should he undertake a case on the distinct understanding that "no cure no pay" shall hold, he will be required to abide by it. A patient will not be allowed to allege that he got no benefit from the physician's treatment provided the physician uses reasonable care, skill, etc.; but it has been held that where the treatment was such that it could under no circumstances effect any possible benefit, the patient might allege this as a reason for non-payment. If the services were intended to be gratuitous, and the physician so declared, no action will lie for recovery; but if the physician intended his services to be free, and did not at the time declare such intention, an action for recovery will lie; and in any case the law will presume the existence of liability on the patient's part, and it will be for him to prove that such services were intended to be without charge. But an implied contract can exist not only with the patient, but in some cases with a person or persons who stand in such relation to the patient as to be legally liable for necessities furnished. Thus, in medical services rendered to a child under age, the parent is held by the implied contract to pay; so, too, is the husband for services rendered to his wife, and the guardian for services rendered to his ward. It is very necessary that the proper person be held responsible, and the physician will do well to ascertain the individual to whom he should present his account. Thus, where a married daughter was taken ill in her father's house, and received a physician's services, the father acquiescing, the father was not liable, but the husband, and it was held that even if the father had sent for the physician it would have made no difference. With regard to parent and child under age, it may be said that as a rule the father is liable, even if the child is away from home, provided he is absent with his father's consent, but not if the child has run away or left without the father's approval. If the father is dead, the mother is liable only so far as the child has a separate estate, and if the child has no separate estate she is not liable. In the case of husband and wife the husband is liable; and if the wife be divorced, the husband will still be liable unless the physician is made acquainted with the fact. So, too, where the husband declines to be responsible for debts incurred by his wife, it is incumbent on him to furnish this information to the physician, or else the courts will uphold the physician in recovering his fee from the husband.

There are two cases in which, in the absence of an express contract, the physician may recover if either husband or wife has property. The first is the case in which a physician renders services to a woman not knowing her to be married. Here the husband is liable as an undisclosed principal, but the wife is also liable as an agent who has made a contract without disclosing the fact of agency, and either could be sued notwithstanding a previous judgment against the other for the same cause, if it has not been satisfied. The second is the case in which a married woman, who has been abandoned by her husband, or is living apart from him for good cause, renders him liable for necessities furnished to herself and her children. Here the debt is that of the husband, and the wife may not be sued directly. But a judgment against the husband may be enforced against the wife's

separate property, by an action instituted for that purpose" (Willard A. Mitchell, in *Medical Record*, 1894, vol. xlv., p. 98).

In the case of a third party other than the parent, husband, or guardian, what are the liabilities of such third parties for the payment of the physician's fees? When a physician depends on the promise, express or implied, of a third party, it is necessary to understand whether that third party promises as for himself or as a guarantor. In the former case he is liable, and the physician can recover from him. In the latter case it is necessary that such promise should be in writing. The Statute of Frauds declares that "no action shall be brought . . . whereby to charge the defendant upon any special promise to answer for the debt, default, or miscarriage of another person . . . unless the agreement upon which such action shall be brought, or some memorandum or note thereof, shall be in writing, and signed by the party to be charged therewith, or some other person thereunto by him lawfully authorized." To take a few illustrative cases: (1) A asks a physician to attend X, and says, "I will pay," or "I will see you paid"; A is liable, and the physician can recover from him. (2) A asks a physician to attend X, and says, "If X does not pay you, I will"; unless this is in writing the physician cannot recover from A. (3) A says to a physician, after services have been rendered to X, "I will pay"; A is not liable. In Case 1 above, there is an ordinary contract, and the transaction does not come under the Statute of Frauds because it is an independent promise. Case 2 is covered by the Statute of Frauds. In Case 3 there is no consideration upon which to found a contract, and therefore, whether oral or written, such a promise has no legal value. But, in the large majority of cases, although third parties are ready enough to call a physician for a friend or neighbor, they are singularly reticent on the subject of remuneration. If the third party avers that he is merely an agent, he has no responsibility; but where he does not state that he is acting as an agent the courts differ as to the question of liability. This subject of agency has been condensed as follows: "It is a general principle of the law of agency that one who procures services to be done for another is not himself chargeable as the debtor, unless he omits to make known his principal, or erroneously supposes that he has authority, or exceeds his authority, or expressly or implicitly engages to be answerable either by directly promising to pay for them if rendered, or by doing or saying something which justifies the person who is to perform them in supposing that the one who applies to him engages to pay for them" (Judge Daly, in *Buck vs. Amidon*). In dealing with corporations, such as railway companies, the physician will do well to remember that unless he has an express contract with the corporation, an implied contract is with the person who receives his services. Thus, in a railway accident, a conductor asks a physician to attend X; the company is not liable. Doubtless there is in every corporation some officer whose acts will bind the corporation; if such an officer requests professional services for an injured person, the company will be held responsible, but not otherwise; and it will be for the physician to prove that the officer who employed him had such authority, or else that the company subsequently ratified the action of an inferior officer. The question of the liability of corporations, with the various decisions, is far too large to enter upon here.

Having now seen how, in most cases, a contract is made, let us note the points necessary to success in invoking the aid of the law. In the first place—with regard to his own legal status—the physician must have fulfilled all the legal requirements of the State in which he practises, and of the county or counties in which he has an office. He must be legally qualified to practise. If there is any omission or flaw in this respect he cannot recover his fees in any State, with the possible exception of Missouri. And as with professional services so, too, with medicines supplied. Generally the physician will be presumed to have fulfilled all legal requirements, and

the burden of proving that there is any irregularity will rest upon the defendant. The legally qualified physician can also recover for services rendered by students working under his direction, and also for a physician employed to assist him, even when this assistant is not legally qualified. But it would seem that a physician, being unable to attend a case, and sending in his place another physician not his assistant, cannot recover for that other physician. The patient is also liable for the expenses of a consultant, even when there is no express stipulation. Next, the physician will have to prove that he has rendered the services for which the charges are made. This is a difficult and delicate matter, and the physician must proceed cautiously, for the question of "professional secrecy" presents itself. In the States of Arizona, Arkansas, California, Colorado, Idaho, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Utah, Washington, Wisconsin, and Wyoming a duly qualified physician is positively restrained from disclosing anything that the patient has confided to him professionally. In States not mentioned above, the physician may be allowed to testify in detail as to the services that he has rendered. In case the physician should be unlicensed the patient has no such protection, and a full account of the services may be given. Great diversity exists as to the interpretation of these rules, and chiefly as to what is included in the term "privileged communication." In the next place the account sent in will be scrutinized. The court will hardly recognize an account as vague as the "To professional services" so commonly rendered. While there is some difference in the requirements of the various States, the safest course is to present an account in which each item is specifically given under its proper date, and with its own charge against it. "The general rule that one who receives a bill or account, and retains it without objection, will be deemed to have acquiesced in its correctness, does not apply to a bill rendered for personal services without previous agreement as to rate of compensation. But where a part payment is made on such bill without protest, it becomes an account stated, which may be sued upon without giving evidence as to the value of the services rendered; and the bill need not have been an itemized one" (Willard A. Mitchell, in *Medical Record*, 1894, vol. xlv., p. 98). With regard to the value of the services rendered—in case this is disputed (and the defendant is likely to dispute everything)—the custom of other physicians in the locality, and the plaintiff's own custom in other cases may be cited; but it will be proper for the defendant to urge that the physician had on previous occasions charged him less for similar services. Expert opinion as to the value of the services may be given by physicians only; but juries are not bound to accept their valuation, and in case of different witnesses making different appraisals the lowest is most likely to be taken. Another possible defence is that the physician made more visits than were actually necessary; but the physician is recognized as the only judge as to the number and frequency of the visits required, and as a rule the physician remains in attendance on a case just so long as he deems it necessary, or until the patient dismisses him, or until he leaves by mutual assent. It may possibly be urged that the physician was intoxicated; this would be a good plea if the patient on this ground refused to allow the physician to treat him, but if the patient continues to receive that physician's services this defence will not be allowed. "Malpractice" is a common assertion; if proven it is a good defence; but to sustain this the defendant will have clearly to prove gross neglect or culpable lack of skill. With regard to "limitation of action," where there is only one item to the account, the matter is easily settled by referring to the Statute of Limitations for the particular State; but where, as is generally the case, there are several items, covering a number of years, with possibly certain payments made from time to time, the different States have decided differently on the question of this

constituting a "mutual account." In this case proper advice must be sought.
R. J. E. Scott.

FELL-O'DWYER METHOD OF INSUFFLATING THE LUNGS.—Insufflation of the lungs is evidently the most direct and instant method of restoring the suspended re-

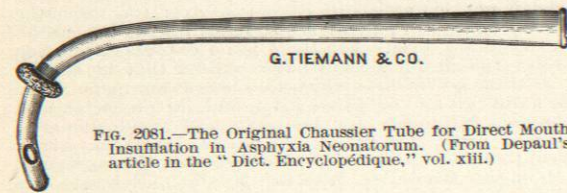


FIG. 2081.—The Original Chaussier Tube for Direct Mouth Insufflation in Asphyxia Neonatorum. (From Depaul's article in the "Dict. Encyclopédique," vol. xiii.)

spiratory function, and yet until recent years it had been practically abandoned or forgotten by the medical world. Such was not, however, always the judgment upon it. It has an ancient and honorable history. Passing by the statement of Depaul that reference to it may be found in the Scriptures, and that Hippocrates considered it, he lets us know that Paracelsus (1493-1541) applied a bellows to the mouth and by its aid gently inflated the lungs, while Panarolus had recourse to the same procedure to revive the victims of charcoal fumes. Vesalius (1514-1564) demonstrated that in animals, after the thorax had been opened for observation, respiration could be maintained by the use of an insufflating bellows and tube.

In the latter part of the eighteenth century this method of relieving asphyxia was widely popular. It was in particular used to restore those who had been asphyxiated by drowning, and the numerous appliances, which were the product of the ingenuity of medical men in England and on the continent of Europe, were placed in the hands of life-savers and the police to be used at their discretion, or, too often, their indiscretion.

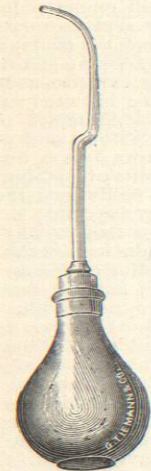


FIG. 2082.—Gaïral's "Aërophore Pulmonique." (From Depaul's article.)

The names of many eminent physicians are connected with the invention of insufflating apparatus at this time. In all of these machines the air was supplied from a bellows or pump and injected into the lungs by means of a tube inserted into the mouth, the nostrils, or the glottis, or through a tracheotomy wound. In England William Hunter, Monroe, James Curry; on the continent, Des Granges, Hans Courtois, Fine, Pia and Garcy, devised instruments that were more or less widely adopted. And Lecat, Louis, Marc, Portal, Troja, and many others were warm in their praises of this method of treating asphyxia.

The indiscriminate use of these machines by ignorant persons resulted in bringing the method into disfavor. In 1829, Leroy d'Etiolles announced to the French Academy that the mortality from drowning had increased since this practice had become general. He contended that insufflation was dangerous to the integrity of the respiratory organs. Numerous experiments upon animals and upon human cadavers had convinced him that violent insufflation could produce emphysema and rupture of the air cells and smaller bronchioles. He therefore condemned the practice, and being supported in his conclusions by a committee, composed of Dumeril and Magendie, appointed by the Academy of Sciences to investigate the matter, the fate of insufflation was, for the time at least, sealed, in spite of the vigorous protests of Marc, the physician-in-chief of the life-saving service of Paris, and of other members of the Academy.

The sentence seemed final when, in 1845, Depaul started

a propaganda in its favor for the resuscitation of the asphyxiated new-born. He demonstrated that insufflation was dangerous only when done by the inexperienced and with violence, and he proved that the human lung was more resistant than that of most of the animals used in Leroy's experiments.

Chaussier, who preceded him at the Maternité, in Paris, had, in 1806, recommended, for intralaryngeal insufflation, a tube which met the approval of Madame La Chapelle, and which Depaul adopted with some slight modifications.

The eminence of Depaul, the brilliancy of his argument, and the convincing character of his clinical evidence stimulated other inventors to attempt to improve upon his instrument. Gaïral, in 1879, proposed an instrument which he called the "aërophore pulmonaire."

Ribemont, in 1877, presented a somewhat similar tube with conical tip, to which he too attached a rubber bulb.

Depaul, in his article, objects to these so-called improvements upon his method of insufflation, claiming that the operator's lungs are the safest form of bellows to use in filling the lungs of the new-born babe, and that the wedging of the conical tip of Ribemont might endanger the structures of the larynx.

Matas calls attention to the fact that Dr. Truehead, of Galveston, Texas, in 1869, described a complex machine

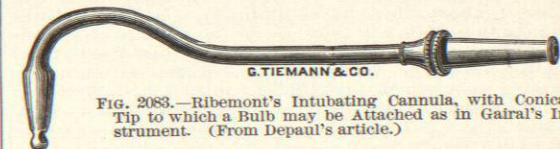


FIG. 2083.—Ribemont's Intubating Cannula, with Conical Tip to which a Bulb may be Attached as in Gaïral's Instrument. (From Depaul's article.)

of his invention for the purpose of inflating and aspirating the lungs. His article was contributed to the Berlin Obstetrical Society and appeared in their Transactions for 1869-72, but was never published in America.

From this review, it is evident that the idea of combating asphyxia by means of insufflation was too fundamental ever completely to receive its quietus. Individual and original minds were attracted to it, but to the great body of the profession it was a discredited procedure, when, in 1887, Dr. John R. Fell, of Buffalo, N. Y., after vainly trying every recognized method to maintain respiration in a case of opium narcosis, employed the tracheal cannula and bellows, used on dogs in the Buffalo Medical College, and succeeded, after carrying on respiration with its help for three hours through a tracheotomy opening, in saving the life of his patient. This success was followed by others, and in 1893, at the meeting of the Pan-American Congress in Washington, he was able to present a list of thirty cases whose lives had been

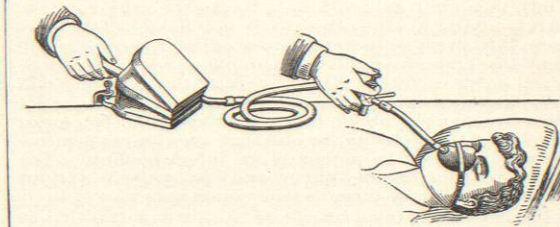


FIG. 2084.—Original Fell Apparatus, showing Face Mask and Air Valve Attached to Tube. (Truax's "Mechanics of Surgery.")

preserved by the use of his instrument, which he had meantime modified by substituting a face mask for the tracheotomy cannula.

It is interesting in passing to notice that while the arguments of Leroy and his adherents had succeeded in discrediting insufflation for the relief of asphyxia in man, it had continued to be the universal custom in physiological laboratories to maintain respiration during

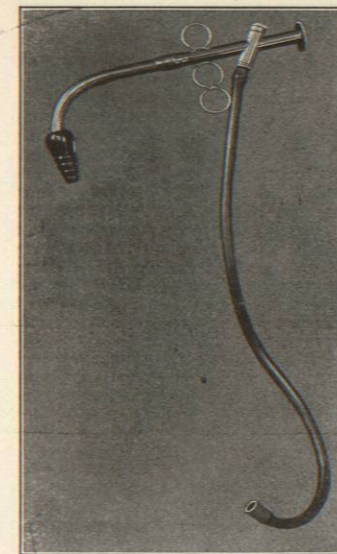


FIG. 2085.—Dr. Bloom's Latest Modification of the Intubator for Adults, with Automatic Ball-Valve.

and which he described in the *Universal Medical Sciences* for 1894.

The tube and bellows, very properly called the Fell-O'Dwyer apparatus, have been in use in the Presbyterian Hospital, in New York, where they were introduced by Dr. William P. Northrup, since 1895, and in the Charity Hospital at New Orleans, for which they were purchased by Dr. J. D. Bloom, since 1896. Ample experience in the use of the apparatus in these two hospitals has demonstrated its great practical value. It consists of a foot bellows, connected by a long flexible rubber tube with the intubation attachment. The latter is of metal, is curved at the laryngeal end at a right angle, and has detachable conical tips, of various sizes to suit different ages, and designed to wedge in the larynx and prevent the escape of air alongside. The extra oral end has two branches, one to receive the tubing and admit the air from the bellows, the other to permit the escape of the air in expiration. The latter is stopped by the thumb of the operator during forced inspiration. No effort is made to aspirate the chest, it having been demonstrated during the days of Hunter and Monro that the elasticity of the lung is amply sufficient to expel the air. To give a better grasp on the instrument, a row of metallic rings is attached near the free end of the tube. These receive the fingers and give excellent control over the instrument.

Matas has recently modified the O'Dwyer tube by the addition of a pistol-shaped handle, and by adding a third branch, provided with a stopcock, through which an anæsthetic can be admitted without interfering with the continuance of forced respiration.

Since its introduction into the Charity Hospital, Dr. J. D. Bloom has made a number of improvements in the bellows, consisting of (1) a long lever to facilitate compression of the bellows; (2) a metal chamber, filled with cotton to filter the air on its way from the bellows to the lungs; (3) a similar chamber, through which oxygen can be passed into the bellows from a bag or cylinder, when deemed advisable.

For use in the asphyxia of the new-born, Dr. Bloom

has had made a smaller tube, to which is attached the bulb of an ordinary atomizer, in place of the large bellows, thus preventing over-distention of the infant's lungs. In this small instrument the thumb of the operator is replaced by a ball valve, which automatically closes the exit tube when the bulb is compressed, and falls out of the way when the pressure from the bulb is stopped. (Fig. 2085.)

Since the days of Leroy the objections to the use of insufflating appliances have been: (1) That the instrument ignorantly or roughly used was capable of inflicting serious injury upon the larynx and upon the structures of the lungs themselves. To this it may be answered, as was done long ago by Depaul, that it is not intended to be either ignorantly or roughly used; that the same objections might be urged against any of the operations of surgery; and that extended experience in at least two great hospitals has demonstrated not only that it can be employed without danger to the integrity of the larynx and lungs, but that even after many hours of continuous insufflation by the Fell-O'Dwyer apparatus the voice is seldom affected.

(2) It is objected that it is difficult to introduce the tube into the larynx. It is true that a certain amount of dexterity is required, particularly in the infant, but the necessary skill is very quickly acquired. It is certainly far easier to introduce than the intubation tubes used in laryngeal diphtheria.

The instrument is introduced exactly as in the operation of intubation. The head of the patient is kept in the median line with the face pointing directly up. The mouth is kept well open by means of a gag, and the tongue is best pulled forward with a tongue forceps to bring the epiglottis well in reach.

With the tube lightly poised in the fingers of the right hand the left index finger is passed along the tongue till the epiglottis and the opening of the larynx are felt. The epiglottis is hooked up by the



FIG. 2086.—Original Fell-O'Dwyer Apparatus. (From Medical and Surgical Reports, Presbyterian Hospital, of New York City, 1896.)

finger, which is slipped a little to one side. The tube is now passed alongside of the finger, exactly in the median line, till it reaches the tip of the finger. The handle is now sharply raised and the tube pressed home into the larynx. A gentle inflation from the bellows will cause the chest to rise and will be followed by expiration, if the tube is in the larynx. On the other hand, if it has passed down into the œsophagus, the chest will not rise, and in addition the air will be heard hissing in the throat. Occasionally the end of the tube gets blocked by the folds of the larynx. In these cases a little manipulation will generally clear it, or it may have to be withdrawn and again

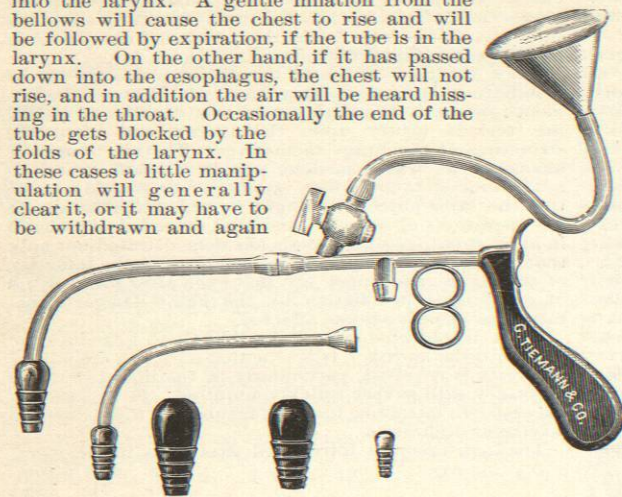


Fig. 2087.—Matas' Modification of O'Dwyer's Tube. (From his article on "Intralaryngeal Insufflation.")

introduced. It is hardly necessary to say that these manipulations should be executed with gentleness and deliberation. The most common mistake is to see the operator frightened at a little delay in getting the tube in proper position and the inflow of air started. Seconds seem minutes in such cases, but it is very rare to see cyanosis develop which is not quickly cleared up when the bellows has been compressed once or twice.

The Fell-O'Dwyer apparatus is certainly the simplest and most efficient instrument so far invented for carrying on artificial or "forced" respiration. In 1897 Doyen ("Technique Chirurgicale") described an apparatus for insufflation, which he had devised for use in operations upon the thorax, to prevent the alarming symptoms of sudden pneumothorax. He was led to this invention by the experimental work of Tuffler and Hallion, Quenn and Longuet, who, recognizing the great danger from sudden pneumothorax, tried to find a way to prevent it. This they accomplished by insufflation, but they did not produce a suitable instrument. Doyen's apparatus is a

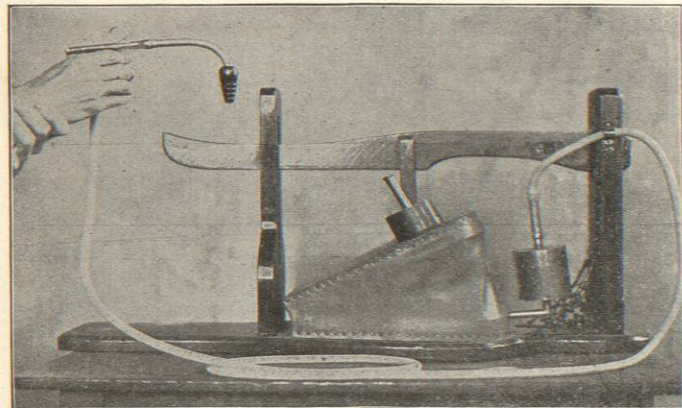


Fig. 2088.—Dr. J. D. Bloom's Modification of Fell-O'Dwyer's Apparatus as used in New Orleans Charity Hospital.

credit to his inventive genius, but is manifestly inferior to the Fell-O'Dwyer apparatus.

The latter is an admirably practical addition to our resources, and it is confidently recommended in the treatment of asphyxia in the following classes of cases:

1. In asphyxia neonatorum, by the use of Dr. J. D. Bloom's modification. The small size of the instrument permits its inclusion in any obstetrical bag. When its use is successful, the feeble and infrequent heart beat becomes more rapid and distinct. The skin loses its livid color and assumes the rosy hue of health, and even when no effort at independent respiration has been made by the infant the circulation appears to be perfectly normal. Generally a very short time elapses before the child can be left to carry on its respiration without assistance. I have myself now resuscitated too many asphyxiated infants with this instrument to feel any doubt of its superiority to any other method of meeting this condition.

2. In opium poisoning, with respiratory failure. This is the condition for which Fell originally recommended the method. Any one who has witnessed the transformation which occurs in the appearance of such a patient after the establishment of "forced respiration" with the Fell-O'Dwyer apparatus, and has compared its quiet efficiency with the strenuous and unsatisfactory effects of artificial respiration by Sylvester's and other methods, or with electrical stimulation of the respiratory function, will need no further argument to recommend it. Under its use the lividity of cyanosis is replaced by an unusually rosy color, the heart's action is improved, and, these two centres being kept going, the system has time to eliminate the poison. The use of the instrument is to be continued

until, when the bellows is stopped, the patient breathes of his own accord at least twelve or fourteen times a minute and shows signs of being aroused from the narcotic stupor.

We have frequently noticed that even after having regained consciousness these patients will lie quiet and permit the operator to carry on respiration for them. Sometimes after having regained the power to breathe for himself the patient will relapse and the tube will have to be again applied. At the Charity Hospital in New Orleans the apparatus has been used continuously for twelve or more hours, with ultimate success in saving the patient's life. It has undoubtedly saved cases which would have been fatal under other methods of treatment. It has markedly reduced the number of cases of post-narcotic pneumonia, which was formerly very frequent.

(3) In other cases of respiratory failure, as instanced by the following case: A young woman was brought into the Charity Hospital unconscious. She had been drinking long and heavily and appeared to be in a condition of alcoholic coma. No trace of opium could be found in either the stomach contents or the urine. The pulse was fairly good; respiration rapid and shallow. Suddenly the pulse became very feeble, the pupils became dilated and unequal, respiration practically ceased, and the skin quickly got blue. The pupils remained unequal for several hours afterward. Hypodermic stimulation and artificial respiration were at once resorted to, but she could not be made to

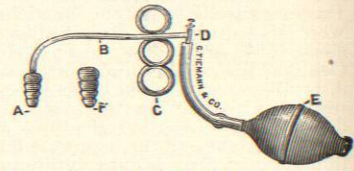


Fig. 2089.—Dr. J. D. Bloom's Adaptation of Fell-O'Dwyer's Apparatus for Use in Asphyxia Neonatorum. A and F are tips of different sizes; D is the ball valve to replace operator's thumb; C, metal rings into which the operator's fingers may be introduced; E, air bulb.

breathe. Death seemed imminent, when the Fell-O'Dwyer apparatus was introduced. In a few moments the pulse had slightly improved, and under the influence of the regular respiratory movements the cyanosis disappeared. After three hours she was sent to bed

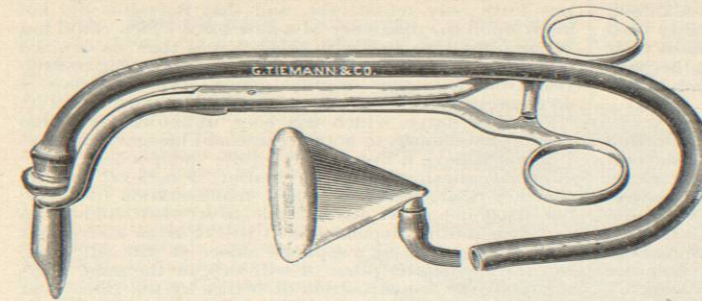


Fig. 2090.—Doyen's Intralaryngeal Tube and Rubber Connections, with Funnel Attached, for Laryngeal Tamponade and Chloroform Anæsthesia. The cut shows the special forceps used to introduce the tube. The intubating cannula may be used for direct air insufflation. (From Doyen's "Technique Chirurgicale," Fig. 43, p. 123.)

breathing for herself, and on the next day she was partly conscious. Total suppression of urine, however, terminated her life in coma.

(4) In chloroform narcosis, when the respiration fails before the heart. Unfortunately, in most cases the heart fails along with the respiration, and then I believe nothing will save the patient.

(5) In the surgery of the mouth, to prevent the entrance of blood into the trachea and to secure free admission of air to the lungs, the anæsthetic being given through the tube; a very limited field of application, and one better met by preliminary tracheotomy.

(6) In thoracic surgery, when the pleura is widely opened and there is danger to life from the production of sudden pneumothorax, with collapse of the lung. As demonstrated by Parham at the Charity Hospital, in a case of sarcoma of the ribs, the frightful anxiety which attends this accident may be prevented by the use of the Fell-O'Dwyer apparatus, and the expansion of the lung quietly maintained while the organ is being secured to the chest wall by sutures.

There can be no doubt that the most brilliant future for this method of "forced respiration" lies in the field of thoracic surgery. Milton, of Cairo, has succeeded in doing some remarkable work upon the mediastinum with the assistance of insufflation, and Parham has, in this country, conclusively demonstrated its wonderful utility in forestalling the pneumothorax which has always been the bugbear of operative interference with the thoracic walls. Erasmus D. Fenner.

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FENNEL.—FENICULUM. The fruit of *Feniculum Feniculum* (L.) Karst. (**F. capillaceum* Gilibert, U. S. P.—fam. Umbellifera).

From a perennial or biennial herb with a tall, smooth, green, branching stem, and pinnate, skeleton-like leaves, the latter consisting of but little more than straggling, branching midribs and veins, arising from broad, concave, half-sheathing petioles. Umbels compound, naked, many-flowered.

Native of Southern Europe, Western and Southern Asia, etc.; it exists in several varieties, and has been long and extensively cultivated.

Of two separate or united carpels, each 0.5 to 1 cm. ($\frac{1}{2}$ to $\frac{3}{8}$ in.) long, about one-third as broad and one-sixth as thick, oblong or a little narrowed at the summit, more or less curved, bearing five very prominent and stout light-colored ribs upon the back, otherwise smooth, yellowish or brownish-green; pericarp containing an oil tube between each two ribs and two upon the flat side; odor pleasantly aromatic; taste sweet and pleasantly aromatic.

Sweet, or Roman fennel, with very large, long, light-colored, pale-greenish fruits, and a particularly pleasant odor and taste, from cultivated plants of southern Europe, is much the best. German, or Saxon, with shorter and proportionately thicker fruits, is cultivated in Germany. Wild, or bitter fennel, is from wild plants growing in the south of France.

Fennel contains about three and a half per cent. of an essential oil very much like that of anise, being composed of a large proportion of anethol, a smaller one of a hydrocarbon of the terpene series, etc.

Fennel is a mild aromatic of exactly the same medicinal qualities as anise. It is, however, less used in medicine than that, but is considerably consumed as a flavor in cordials, as a spice and in veterinary practice. It also enters, as a carminative, to prevent griping, into the compound infusion of senna, and its oil similarly into the compound spirit of juniper and the compound licorice powder. Both are often added to prescriptions, with this object. The dose of fennel is 0.5 to 2.0 gm. (gr. viij.—xxx.). W. P. Bolles.

FENNEL OIL OF—a volatile oil distilled from the above—is thus described in the Pharmacopœia:

A colorless or pale yellowish liquid, having the characteristic, aromatic odor of fennel, and a sweetish, mild, and spicy taste.

Specific gravity: not less than 0.960 at 15° C. (59° F.). Between 5° and 10° C. (41° and 50° F.) it usually solidifies to a crystalline mass, but occasionally it remains liquid at a considerably lower temperature.

Soluble in an equal volume of alcohol, the solution being neutral to litmus paper; also soluble in an equal volume of glacial acetic acid.

The oil is not colored by the addition of a drop of ferric chloride T. S. (absence of some foreign oils containing phenols, and of carbonic acid).

If the oil be dropped into water, without agitation, it should not produce a milky turbidity (absence of alcohol). It should contain about sixty per cent. of anethol. The relatively higher temperature at which crystals of this substance begin to separate indicates its percentage and of course determines its quality. Another substance present in it is *fenchone*, with pinene, phallandrene, etc. Its properties and uses are precisely like those of oil of anise, and the dose is \mathfrak{m} i. to v. The official water (*Aqua Feniculi*), having a strength of one-fifth of one per cent., is usually employed as a vehicle, but is carminative in doses of 8 to 30 c.c. (fl. $\frac{3}{4}$ to 1). Henry H. Rusby.

FENUGREEK.—FENUM GRÆCUM. The seeds of *Trigonella Fenum-Græcum* L. (fam. Leguminosæ), a very ancient food and drug of India, produced upon a cultivated and wild erect, branching herb. The seeds are about one-eighth inch long and nearly as broad, and a little more than half as thick. They are irregularly rhomboidal, with rounded edges, and grooved diagonally, on both sides. They are of a peculiar brownish-yellow, sometimes grayish-yellow, smooth, peculiarly and not very pleasantly odorous, and of similar fatty and bitter taste. About one-fourth of their weight is gum, nearly as much albumin, and there is seven per cent. of ash, with