FIG. 44.

the upper part of the sacrum, owing to the fundus and rest of the uterus falling so much forwards, and over the pelvis.

Where this position of the uterus occurs, if the patient suffer inconvenience from the dragging pain it produces, she will derive much comfort by supporting the abdomen with the following kind of bandage:—You take a piece of thick linen cloth, either unbleached calico, sheeting, or old tablecloth, in length sufficient to extend from side to side, beneath the tumour to be supported, as high as to the margin of the ribs; in width it should extend from the umbilicus to the pubes. You then cut two long, triangular pieces out of either end, so that when their edges are sewn together they may make the central portion into a kind of pouch or bag. To either end of this long bag you sew two broad pieces of bandage, of a length sufficient to pass round the neck, and to cross backwards, underneath the axilla of either side.

Application.—You place the central broad portion of the bag beneath the most depending part of the abdomen, seeing that it evenly fits the shape of the tumour. The two long bandages are then passed upwards to the back of the neck, (in front of the shoulders,) and there crossed; they are then passed down behind either shoulder, beneath the axilla, and made to loop round the ascending portion of the bandage, placed in front; they are then turned backwards again, and tied at the back. The bandage is kept from slipping sideways, by being crossed at the back of the neck; and is prevented slipping forwards, by being looped beneath the axilla by the last turns of the bandage. (Fig. 44.)

BANDAGES FOR LYING-IN WOMEN.

All women, after labour, feel comfort from the support of a bandage passed evenly round the lower part of the abdomen, embracing the pelvis as well. It gives general support, and compensates for the loss of pressure which has been so long made by the large uterus, occupying the place of the viscera, and consequently putting the abdominal muscles on the stretch. For this purpose, you have a broad piece of linen, six or eight inches wide, made of sheeting folded, or table-cloth, and long enough to pass round the pelvis and lower part of the abdomen; the pelvis requires support as well, owing to the strain made upon the joints during the passage of the child's head. There are some cases, however, when the bandage is of higher importance still—namely, in helping to restrain uterine hæmorrhage after labour, the treatment of which it is not my business to enter upon here. All I have now to do, is to show you how to apply the bandage firmly and securely; and this is no easy matter without you make a bandage especially for the case. There are two objections to using the common broad spiral bandage in these cases; the one is, that it is difficult to pass a bandage round the pelvis, while the woman is lying on her back or side, and when your object, at the same time, is to keep her as quiet as possible; the second is, that when it is once applied, it is very liable to slip upwards and get out of place. Still you must use this if you can get no other. In

common cases, when you do not wish to make great pressure, but merely to support the pelvis or abdomen, the common broad band passed round, and pinned with three or four large pins, is all that is required.

The bandage I would recommend, when it can be obtained, and it generally can, by telling the patient to have it in readiness before her labour commences, is the following:—You take a piece of linen cloth, unbleached calico, or sheeting, long enough to pass round the pelvis, and two feet wide; you fold it in its long diameter, so as to make it only a foot wide, and then sew the edges together to keep its shape. You then take six bands, made of calico or thick linen cloth of some kind, and fold them twice to make them of sufficient strength; they should be each two feet in length, to allow of their being easily tied, and with a good purchase to pull with before so doing.

FIG. 45.

Six-tailed Bandage for making Pressure upon the Uterus.

Application.—You place the compress, of whatever it may be composed, in a situation to tell upon the uterus, and then place the bandage in a position that it may extend for half its width above the pelvis, while the other half surrounds the pelvis itself. You then tie the two lowest of the six strings or bands, and then the two uppermost, and finally the two middle ones. The reason of tying the middle bands last is, that the pad may not be tilted out of position, which it would be if they were tied before the upper ones. I believe this is the simplest, as well as the most efficient, kind of bandage for arresting uterine hæmorrhage, for any amount of pressure can be made by it, and without liability of slipping. Should it be inclined to do so, two thigh-straps may be attached to the fore and back part of it. The woodcut (Fig. 45) shows the bandage when applied.

If you use the common circular bandage, made of linen, or the round towel, the best way is to tie it in a large knot, and make the knot press just above the hypogastrium, either directly upon the uterus or upon a compress of some kind, (and a square book folded in a towel answers the purpose exceedingly well,) so placed that it can command the uterus, and prevent it rising upwards. There is some difficulty, however, in preventing the knot slipping; this may be guarded against, to a certain extent, by bringing the hanging ends of the knot (if long enough, and by tying pieces of bandage to them, if not) round beneath the thighs, and then pinning them above the hips to the lower edge of the broad part of the bandage in these situations.

ON EXTRACTUM CARNIS.

RECOMMENDED FOR ADMISSION INTO THE LONDON PHARMACOPŒIA, AS A MOST VALUABLE REMEDY IN THE TREATMENT OF DISEASE.

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THE healthy growth of plants, as well as of animals, depends entirely upon the materials which are afforded to them. Plants derive their food from the air and the soil; their growth increases or diminishes, in proportion to the abundance or the want of the organic, as well as of the inorganic, constituent parts of these. The formation of the embryo animal is the result of the contact of the two germinative

substances, on the one hand, and of the afflux of the maternal blood on the other; its normal or abnormal progress depends upon the normal or abnormal constitution of those substances, and especially upon the quality of the maternal blood itself. The healthy growth of tissues in the extra-uterine life likewise depends finally upon the materials which are brought into the system as food; and as it is impossible for a child to be born healthy, unless the mother's blood is healthy, so it is impossible to keep up the state of health, in extra-uterine life, unless food be taken, in due quantity, and of a proper quality. These general principles are too well understood, at the present time, to require any further discussion. The physiologist knows that the formation of a large number of monstrosities, especially of those which are to be considered as retardations of development, are caused by diseases of the embryo, the cause of which cannot be looked for but in the blood of the mother; the pathologist is aware that a great many diseases exclusively depend upon an unwholesome quality or quantity of the food taken, or upon an undue proportion between the quantity of nitrogenous and non-nitrogenous substances.

We are far from being at present acquainted with the chemical changes of the constituent parts of the system in diseases; a long time and indefatigable study are required, before we can arrive at this desirable state of science. However, there exists not the least doubt, that most of these chemical changes are owing to the want or the excess of some constituent part of the system. In gouty persons, we observe depositions of lithate of soda in the joints; an excess of nitrogenous substances in the blood, as well as of soda, must be the cause of them. In different pathological states of the system, we find exuberant enlargements of the bones: an excess of earthy phosphates, and especially of phosphate of lime, ought to be considered as present. A diminution of red blood-globules occurs in chlorosis: it seems to be the want of iron which causes this deficiency. We finally meet with a want of osseous substance in those patients who are afflicted with rickets, and I find that a want of phosphate of lime exists in their systems, large proportions of this substance being then eliminated from the economy by the urine.

But how are these excesses or deficiencies occasioned? I really cannot imagine that an abnormal loss or an excess of any material exists, if the materials are brought into the system in a normal quality or quantity, if the food is wholesome. I do not see any other way than that these losses or these excesses are produced, either directly by the food itself, or indirectly by pathological chemical changes, the origin of which is owing again to an unwholesome quality or quantity of food. The cure of these states will never be afforded, unless we pay the greatest attention to diet, which alone is very often sufficient, either for removing a pathological excess, or an abnormal deficiency, of any substance. In one case, we shall accomplish our purpose by preferring animal diet; in another, by recommending vegetable food; in a third, a wholesome mixed diet is preferable; and in a fourth case, an excess of fat, taken as food, may be considered as of the greatest importance. In one word, diet is, and remains, our most powerful remedy in all internal derangements of the system. No conclusion can be drawn with more certainty than this—that if wholesome ingesta be the first condition for health, unwholesome ingesta must be the first impulse to disease.

However, we must confess that our dietetical principles are still most deficient. The recommendations of one sort of food or another are generally so superficial, so little founded upon chemical principles, that we cannot trust to them confidently. Hence arise those many variations in practice, hence that uncertainty in advice to patients, which too often is complained of by the latter themselves. We really must admit that very little has yet been done to promote the invaluable knowledge of diet; that we are still in the period of childhood with respect to this important branch of medical science. I do not hesitate to believe, that until we are exactly acquainted with the chemical constitution of the different kinds of food in different countries, we shall never succeed in advancing such principles as can be trusted to; and admitting that the differences between nitrogenous and non-nitrogenous substances are generally well understood already, attention must be directed more to the inorganic constituents of the food. It is remarkable how little attention has hitherto been paid to these substances; still their presence is quite as important to existence as that of the organic compounds. As in plants the inorganic constituent parts of the soil are indispensably necessary for the formation of vegetable acids and seeds; no

vegetable acid being formed without the co-operation of the alkaline bases, no seed without the co-operation of the salts of phosphoric and sulphuric acid; so in animals the presence of alkali seems necessary for the formation of vegetable acid in the system, or the salts of phosphoric acid for the changes of nitrogenous substances. In a small work, "Ueber den Phosphorsäuren Kalk in Physiologischer und Therapeutischer Beziehung," which I have lately published in Germany, I have tried to establish the fact, that the phosphate of lime is not only required for the formation of bones, but that it is likewise indispensably necessary for the formation of cells—the fundamental process of the growth of all tissues and organs. This formation of cells not only requires the presence of albumen, and fat, but it likewise depends upon the presence of phosphate of lime. We further know, that in administering a vegetable diet, we do not only diminish the quantity of nitrogenous substances, but at the same time produce an increase of carbon in the system; that, on the other hand, in giving animal food, the salts of phosphoric acid become predominant, and the augmentation of nitrogenous substance cannot be considered as its only effect. Hence we may conclude how important the inorganic constituents of food are; and whenever we shall arrive at a rational system of diet, we must direct the greatest attention equally to both its organic and inorganic constituents.

Now it is well known that many pathological states occur, in which, according to experience in practice and to chemical facts, an animal diet is indicated; we give eggs, oysters, milk, and especially meat, broth, beef-tea, &c.; it is our intention in these cases, to supply the system with all the substances which are contained in them, with their organic compounds, as well as with their inorganic constituent parts. But what we intend to do, we really often do not; and this is a point which has been almost always overlooked hitherto, although easily understood. It is our method of preparing the food which interferes with our intentions, and especially with respect to the meat. Professor Liebig has shown, in an excellent work, "Researches on the Chemistry of Food. Translated by Dr. W. Gregory. London, 1847," that by the usual method of cooking we deprive the meat of many of its constituent parts, and that in administering the ordinary beef-tea, or boiled meat, we do not supply the system with all those substances which the meat originally contains. Liebig himself says, "It is obvious, that if flesh, employed as food, is again to become flesh in the body, if it is to retain the power of reproducing itself in its original condition, none of the constituents of raw flesh ought to be withdrawn from it during its preparation for food. If its composition be altered in any way, if one of the constituents which belong essentially to its constitution be removed, a corresponding variation must take place in the power of that piece of flesh to re-assume in the living body the original form and quality on which its properties in the living organism depend."

According, now, to the duration of the boiling, and the amount of water employed, there takes place a more or less perfect separation of the soluble from the insoluble constituents of flesh. "The water in which flesh has been boiled contains soluble alkaline phosphates, lactates, and inosinates, phosphates of magnesia, and only traces of phosphate of lime; the boiled flesh contains chiefly, with the fibrine, &c., the insoluble inorganic constituents, phosphate of lime, and phosphate of magnesia." "When, on the other hand, the flesh is introduced into the boiling water, the albumen immediately coagulates from the surface inwards, and in this state forms a crust or shell, which no longer permits the external water to penetrate into the interior of the mass of flesh. But the temperature is gradually transmitted to the interior, and there effects the conversion of raw flesh into the state of boiled meat. The flesh retains its juiciness, and is quite as agreeable to the taste as it can be made by roasting, for the chief part of the sapid constituents of the mass is retained, under these circumstances, in the flesh." "If, on the contrary, the piece of raw meat be placed in cold water, and this brought *very gradually* to the boiling point, there occurs, from the first moment, an interchange between the juices of the flesh and the water. The soluble and sapid constituents of the flesh are dissolved in the water, and the water penetrating into the interior of the mass, it extracts them more or less completely. The flesh loses, while the soup gains, in sapid matters; and by the separation of albumen, which is commonly removed by skimming (!) as it rises to the surface, the meat loses its tenderness and shortness, (as it is called,) becoming tough and hard."

It is clear, that in the first way we obtain the best meat

and in the second the best soup. However, in order to obtain a boiled piece of meat or soup, (beef-tea,) the meat is commonly placed either in cold or in hot water, and *boiled for a long time*; thus the albumen coagulates, which coagulum is commonly removed by skimming; and as some of the insoluble salts remain in the flesh as long as it has not been squeezed, neither the obtained meat nor the soup alone contains the constituent parts of the flesh. Each of them, prepared by one of these methods, and taken without the other, is not adapted for nutrition, and especially with respect to the soup, (beef-tea,) which is so often prescribed for patients; this point should be always kept in view.

But, moreover, as there are many pathological states which do not admit of the patient taking boiled or roasted meat, such as stomach derangements, diarrhoea, ulcerations of the intestines, perforating ulcers of the stomach itself, &c.; and as it is most desirable, in many of these cases, to supply the system with all the substances which are contained in the meat, it is a most important object to have a preparation of meat, which not only contains nearly all the original constituent parts of the flesh, but also becomes easily assimilated, and does not require any exertion of the digestive organs themselves. This being out of question, we are much indebted to Professor Liebig for showing the way of preparing a sort of beef-tea, which accomplishes all the purposes alluded to; and as the above-mentioned work, in which the method of preparing this beef-tea has been described by Liebig, is not generally known, I shall shortly subjoin his description.

"One pound of lean beef, free of fat, and separated from the bones, in the finely chopped state in which it is used for beef sausages, or mince-meat, is uniformly mixed with its own weight of cold water, slowly heated to boiling, and the liquid, after boiling briskly for a minute or two, is strained through a towel, from the coagulated albumen and fibrine, now become hard and horny. Thus we obtain an equal weight of the most aromatic soup, of such strength, as cannot be obtained even by boiling for hours from a piece of flesh. When mixed with salt, and the other usual additions by which soup is usually seasoned, and tinged somewhat darker, by means of roasted onions or burnt sugar, it forms the very best soup which can in any way be prepared from one pound of flesh."

I have often used this beef-tea, and from what I have myself experienced I cannot recommend it too strongly. In many diseased states it is not to be replaced by any other sort of food or remedy. I have administered it in scrofula and phthisis, especially in those cases in which derangements of the digestive organs were present, such as ulcerations, dyspepsia, tubercular deposits in the intestinal glands, &c. I have given it in the early and later periods of typhus, and I scarcely trust in any medicine more than in beef-tea, in this disease. I have, further, supplied it to patients suffering from inflammation of the cellular tissue, and rapidly wasting away in consequence of the most abundant suppurations, and there cannot exist a more rational remedy than beef-tea, to compensate the abundant loss of materials. I have, finally, given it in many other states which required a good nourishment by animal diet, and almost all patients who are convalescent from severe diseases are most beneficially influenced by it. I need not enter into a more accurate explanation of the mentioned effects of the beef-tea; it is self-evident, that a substance, containing all constituent parts of the meat, both inorganic and organic, and not at all causing any exertion of the digestive organs to recombine into nutritive material, must be of such an effect as no other special remedy can be expected to manifest.

This being a fact, it appears to be most desirable, that the beef-tea, which I should like to call *Liebig's beef-tea*, should be well known to every practitioner, and should be always given wherever the state of the patient requires a good animal, nitrogenous food. However, as I have often experienced, one meets in practice with many difficulties in having it prepared, or provided at all for the patients, especially in dispensary practice, where poverty appears with all its sad consequences and companions, and where so many cases occur, requiring a nourishing, strengthening treatment; in advising patients to take meat, beef-tea, &c., we hear them too often answering, "we cannot afford it." In private practice, we find single persons confined to their bed-rooms, with scarcely any assistance at all; perhaps we order them to take the before-mentioned beef-tea, but it is beyond all possibility for them to have it prepared, as it requires some attention and carefulness. And even in family-practice, it is necessary to describe each time the mode of preparing the beef-tea on the one hand, and questionable on the other,

whether the attendants of the patient prepare it with that accuracy which is required for the accomplishment of our purposes. Hence, it appears as desirable as possible, to have an opportunity for easily providing patients of all classes with a sort of food and a remedy, which cannot be replaced by any other; and I do not see any better way for affording this opportunity, than to have the beef-tea prepared at the chemists' and druggists' shops. It must be mentioned, that the above-described beef-tea, when evaporated in a water-bath, and cooled afterwards, forms a brownish-yellow extract, and this extract, to which we may give the name of *extractum carnis*, should be prepared and kept for sale by chemists.

In accurately following the above described method of preparing the beef-tea, the quantity obtained out of six pounds of meat may be evaporated to three ounces, and those three ounces, after having cooled, form the "*extractum carnis*." One ounce of *extractum carnis* is therefore equal to thirty-two ounces of meat, whence it can easily be calculated how much of it is required for providing a patient daily with the constituent parts of three, four, five, six, or more ounces of meat.

The idea of having the *extractum carnis* prepared at the chemists' shops is not quite new. Dr. Von Breslau, of Munich, tells me that it is to be received into a new edition of the *Pharmacopœia Bavarica*, which will be published in a short time; and he also states, that the *extractum carnis* does not undergo any change for years when kept in air-tight porcelain vessels.

As it is easy to adulterate the extract, "it ought to be easy for every well informed apothecary to distinguish the genuine extract from the false. Of the true extract nearly eighty per cent. is soluble in alcohol of eighty-five per cent., while the ordinary tablets of portable soup rarely yield to that menstruum four or five per cent. The presence of kreatine or kreatinine, (constituent parts of the juices of flesh,) the latter of which is instantly detected by the addition of chloride of zinc to the alcoholic solution (by instantly forming a precipitate of crystalline grains, appearing under the microscope as round masses, formed of very small needles concentrically grouped), as well as the nature of the salts left on incineration, which chiefly consist of soluble phosphates, furnish sufficient data for judging of the quality of the true extract of flesh." (Liebig.)

With respect to the administration itself, it is scarcely necessary to mention, that it is to be merely dissolved in hot water, and to be taken in this way by the patient. For improving the taste, some common salt, or caramel, &c., may be added.

That the *extractum carnis* must also be considered as of high importance for travellers, and especially for seamen, has already been mentioned by Liebig; they will always be provided thereby with a most wholesome nourishing food, which cannot be obtained so easily in any other way. The small quantity of six ounces of the extract is equal to a quantity of twelve pounds of meat. That, on the other hand, the tablets of so called portable soup, prepared in England and France, are not to be compared with the extract of flesh above described; that they do not answer at all the purpose of providing the economy with a nourishing wholesome food, has likewise been stated by Liebig. He says that these tablets are not made from flesh, but consist of gelatine, more or less pure, only distinguished from bone gelatine by its higher price; and although Dr. Gregory adds, that he has seen some specimens of portable soup, which, while consisting chiefly of gelatine, yet had a strong flavour of soup, and probably, therefore, contained a certain proportion of extract of flesh, it is certain that these tablets are adapted for nutrition, only in an inferior degree.

To conclude: I have only to repeat, that we shall never arrive at a rational mode of treatment of diseases, unless we pay the greatest attention to diet, in such a way as has never been done hitherto. The inorganic constituent parts of the food have been almost totally overlooked, notwithstanding their importance is quite as great as that of the organic compounds. I cannot help believing, that a time is coming, when we may look on one or the other sort of food, as on the most powerful remedy—a time, when the single constituent parts of the animal system itself will be administered according to the want or the excess of any of its substances, as remedies more powerful than the vast number of decoctions and infusions, the use of which too often shows the want of rational therapeutical principles.

I hope that practitioners will agree with me in wishing that the "*Extractum carnis*" may soon be received into the London *Pharmacopœia*. I have the less doubt that they will do so, as England is well known to favour propositions, the realization of which affords advantages and benefits to suffering mankind.

German Hospital, Dalston, Sept. 1850.