that of a normal gland. In a similar class of cases we have glands which in outward appearance are simply enlarged, but which, nevertheless, differ both in minute structure and in their history. Either the newly formed gland decays, in which case we call the tumour scrofulous, or it becomes hard, loses somewhat of its cellular elements, and shows an increase of the fibrous element. Then there are cases in which, by inflammation and thickening of the capsules and connective tissues, a group of glands become adherent, and a lobular mass is formed which may be regarded as a tumour. Our powers of observation do not permit us to draw any fixed line between the two cases. There is a third class of cases, in which the enlarged glands are in direct connexion with masses of newly-formed tissue around them, which penetrate or infiltrate the neighbouring parts, and convert them into similar structure. This we call an infective or a malignant tumour. Yet there are such cases in which the structure of these adventitious masses differs little, if at all, from that of a normal gland. These instances may suffice to show that hypertrophy passes, by insensible degrees, into a condition resembling the most pronounced forms of new growth, both in their distinctness and in their generalisation, and even in their infectiveness. Whatever the mechanism may be by which hypertrophy is produced, cell proliferation and multiplication takes a very important share in it. It is therefore desirable to inquire what are the minuter changes by which this increase in parts is effected, and whether these minuter changes, as well as the larger features of hypertrophy, are also comparable either to those which are concerned in embryonic development, or to those which are concerned in the production of tumours. Enlargement of organs appears to be partly effected by increase in the size of the elementary parts, and partly by the multiplication of those parts. The latter process, which has been called hypercrasia, is no doubt the more important. It is not always easy to get precise observations of these changes in an early stage; but in hypercrasia of connective tissue it is evident that the first step is the multiplication of nuclei. This is the process I have referred to as indifferent cell-formation. The human omentum in advanced life becomes thicker, shorter, and oftener adherent to neighbouring parts, while adhesions are found between the parts of the membrane itself. These changes are twofold. The amount of homogeneous intercellular substance contained in the membrane becomes diminished; and, on the other hand, the fibrous element increases, and fibrous growths are formed which effect the adhesions and contractions of distant parts. Changes of this kind are seen in all normal tissues. It is quite clear, from the changes shown in the diagram of a small sarcomatous tumour, that it is formed of nothing else but a multiplication of small cells, which is comparable in its main features to the multiplication of the small cells constantly going on in the organ. We may conclude that a hyperplastic process, or one involving cell-proliferation, is the chief factor in hypertrophy as it is in embryonic development in repair, in inflammation, and in the new growth of tumours. The element common to all these processes is one which is also normal in certain parts of the body, and connected with the process by which certain fundamental changes are effected.

SECRETION OF BILE.—Professor Stricker and M. Röhrig have recently instituted a new series of experiments with the object of determining the secretion of bile under various circumstances. A canula was introduced into the ductus choledochus, and connected with a cucurbit by means of an india-rubber tube. The experimenters stated that every cause which produced hyperæmia of the hepatic vessels increased the secretion, whilst anæmia caused a diminution. During fasting, ligature of the portal and hepatic veins stopped the secretion; ligature of the hepatic vein alone, as of the aorta in the situation of the diaphragm, caused only a diminution of bile. Ligature of the ascending vena cava stopped it immediately. All the conditions which favour the contraction of the vessels also diminished the secretion. On the other hand, the secretion increased after meals; it became more abundant with the introduction of water into the stomach and intestines, of cathartics like croton oil, colocynth, jalap, calomel, Epsom salts, and also with ligature of the aorta below the origin of the celiac artery.

ABSTRACT

OF A

Clinical Lecture

ON A CASE OF

THE EMPLOYMENT OF THE CAOUTCHOUC ELASTIC LIGATURE.

Delivered at St. Vincent's Hospital, Dublin,

By FRANCIS J. B. QUINLAN, M.D.,

PHYSICIAN TO THE HOSPITAL.

AFTER some introductory remarks upon the different modes of removing vascular growths by the galvano-cautery, the écraseur, and by ordinary ligature, Dr. Quinlan said:—

The case under our consideration, and lately under your observation, is that of Bridget G——, a healthy, well-nourished countrywoman, of plethoric temperament, aged twenty-seven years. Upon examining her, we found, at the upper part of the vulval opening, a large vascular tumour, of the size of a very large orange. This tumour was of several years' standing, and bore quite an exact resemblance to a small cauliflower. It was connected with the site of the clitoris by a pedicle resembling the stalk of that vegetable, which was topped with the arborescence of the tumour. From either side of the pedicle descended two hypertrophied labia minora, like enormous cockscombs. The case was evidently one of syphilitic hypertrophy—a diagnosis which was thoroughly confirmed by crops of condylomata around the anus and on the folds of the nates. The cauliflower tumour, which was divided into two portions by a fissure extending to the very root of the pedicle, was evidently the hypertrophied prepuce and frenum of the clitoris, and the peculiar arborescent appearance was attributable to the trabeculae of the erectile tissue in this part of the labia restraining the hypertrophy of the rest of the tissue, and, by binding it down in bundles, producing the arborescence. The condylomata and the local irritation being reduced by rest and appropriate treatment, the question arose as to the best and safest method of removing this disfiguring hypertrophied mass; and it struck me that the newly introduced elastic ligature would admirably act in the case of this most vascular growth, so liable to cause dangerous hæmorrhage. Accordingly, on the 20th of December I ligatured the whole mass with a solid india-rubber cord two millimetres in thickness. I used this solid cord because the result of some previous experiments had satisfied me of the inadequacy of drainage-tube or any other variety of hollow caoutchouc tubing. The solid cord which I used is to be obtained at most india-rubber shops, the only difficulty being to procure it of sufficient thinness; when thicker than I have mentioned, it is unmanageable, especially for small growths. When drawn out to four times its rest length, this cord is not more than half a millimetre in thickness, and the tension upon half a metre of it is 1230 grammes. It is thus admirably adapted for this gradual ligaturing and cutting process.

Having etherised the patient, I tightly ligatured the whole mass, tying the knot by the ingenious plan, devised by Sir Henry Thompson, of the addition of a series of ordinary ligature knots of sewing silk to prevent the india-rubber knot slipping. Immediately the temperature of the tumour fell from 98.3° F. to 96.5°. After a few hours it rose again slightly, and the tumour became very tense. The temperature then fell again rapidly, and the sphacelating process steadily continued until the growth became destroyed.

The pathological process thus occurring is plain, and it is in this that the great merit of the elastic ligature consists. When it is applied there is a brief interruption of all circulation, but quickly the arterial flow recovers itself, the venous system being still impeded. Great distension of all the capillaries naturally ensues, superinducing a condition of things resembling that which is the cause of varicose ulceration of the legs. The danger of the process (I speak

solely from theoretical considerations) appears to be the presence of a mass of gangrenous organic matter immediately opposite a granulating and highly absorbent surface. For this reason in our recent case we kept outside the india-rubber ligature a loose skein of cotton yarn, about the same thickness as the ligature, and well soaked in carbolic oil. This was renewed three times a day, and a piece of lint kept well wetted with a permanganate solution prevented any offensive odour. On the third day it became evident that the ligature was no longer acting, and on examination it was found to be quite loose. You may remember the simple way in which this difficulty was combated. A slender rod of ivory, one millimetre in thickness, was passed through the ligature circle and twisted round a few times, in the manner in which a ready tourniquet is made from a handkerchief tied round a limb with a stick twisted through it. These ivory rods can be had of various thicknesses in the shanks of ivory crochet-needles. Ivory is, I think, the best material, on account of its strength, lightness, smoothness, and rigidity; and by this simple means ligatural pressure can be kept up to the very last to any degree of tightness required. On the fifth day the mass dropped off, leaving a surface which healed up kindly; and, with some constitutional treatment for the syphilitic taint, the patient made a good recovery.

I would particularly impress upon you that at the time of application, and while it is cutting through the skin, the ligature is painful. For this reason, just before commencing, we injected hypodermically a quarter of a grain of acetate of morphia in the neighbourhood of the operation, a procedure which much assisted the anæsthesia, and reduced subsequent local pain, by keeping the patient throughout the whole day of the operation in a drowsy, quiescent state.

THE SPIRIT RATION.

By SURGEON-GENERAL W. C. MACLEAN, M.D., C.B.,

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NETLEY.

SOME of the readers of THE LANCET are aware that on the 16th February I gave a lecture at the Royal United Service Institution on the Sanitary Precautions to be observed in the Moving and Camping of Troops in Tropical Regions. The subject of the issue of spirits to troops came fairly within the scope of my subject, and I accordingly offered some observations on it. So many communications have since been addressed to me by officers who take an interest in this subject that I venture to ask for space for a few remarks on it. In the lecture I thus expressed myself:—

“*Spirits*.—If there be any point of military hygiene that may now be regarded as settled beyond doubt or cavil it is this, that spirits are not only not helpful, but are hurtful to the marching soldier, everywhere I believe, but nowhere more so than in hot climates. The evidence on this point is overwhelming. The medical officers of the French army who have had great experience in the arduous campaigns in Algeria denounce the spirit ration as hurtful; and Dr. Morache, already quoted as a high authority on military hygiene, declares that unless coffee had taken the place of spirits it would have been impossible for the troops to surmount the fatigues of what he justly calls *ces pénibles campagnes*. Were I the medical chief of an army destined to take the field in a tropical climate, not a drop of spirits should, with my consent, accompany it, save what the requirements of the ambulance service demanded. The evidence shows that wherever soldiers, by accident or design, have been cut off from the use of spirits on marches, on active service, in temperate climates exposed to wet and cold, or in the tropics to ardent heat, or in laborious sieges, they have maintained their health, spirits, and discipline far better than when the once-deemed indispensable grog was in daily use. My colleague, Dr. Parkes, and the late Count Wollowicz, in a series of careful experiments on the use of alcohol carried on at Netley, and published in the ‘Transactions of the Royal Society,’ have placed on a sure scientific basis what was before a matter of observation, and have established that

alcohol, far from increasing the power of bearing fatigue, even when given in a quantity which many spirit-drinkers would deem within the limits of moderation, lessens muscular force, and a quantity in excess of this, it was shown, entirely destroyed the power of work. The reason, Dr. Parkes says, was twofold. There was, in the first place, *narcosis* and blunting of the nervous system—the will did not properly send its commands to the muscles, and the muscles did not respond to the will; and, secondly, the action of the heart was too much increased, and induced palpitation and breathlessness which put a stop to labour. The inference was, ‘that even any amount of alcohol, although it did not produce symptoms of narcosis, would act injuriously by increasing unnecessarily the action of the heart, which the labour alone had sufficiently augmented.’ For fatigue, rest and food are the proper remedies. Alcohol given alone under such circumstances can only stimulate the already nearly exhausted heart to fresh exertion. Under some very exceptional circumstances it may be a matter of absolute necessity to do this, but even then we must follow Dr. Parkes’s rule—namely, to give spirits in small quantity, not more than an ounce of brandy, and if possible it should be mixed with Liebig’s meat extract, which has a great power of removing the sense of fatigue. Dr. Parkes even gives a formula, which is worth bearing in mind, for use under such circumstances; as for example, when troops, after a fatiguing march, are obliged to engage the enemy without time for rest and food, he advises two ounces of red claret wine, with two teaspoonfuls of Liebig’s extract, in half a pint of water. Wine not being available, half an ounce of brandy or rum would be a good substitute.

“I cannot leave this important subject without adding that for twelve years I have, at Netley, had unrivalled opportunities of studying the effects of habitual dram-drinking on the persons of our soldiers, and I add my testimony to the immense weight of evidence accumulated by medical men in civil and military life, to the effect that alcohol is one of the most active agents in causing degeneration of the human tissues—in other words, disease, premature decay, and death. If this be true, as I believe it is, those officers who, by precept and example, strive to wean their men from the practice of this our national vice may with truth be said to be engaged in a patriotic work, and to deserve well of their country. Let me ask you to look at this alcohol question from another point of view. I hold in my hand a copy of a work known, I dare say, to many present—viz., ‘The Sepoy War,’ being the private journal of General Sir Hope Grant, edited by Captain Knollys, R.A. A modest record of very distinguished service. At page 108 we have the following passage, referring to the siege of Delhi:—‘In order to fight to perfection, British soldiers must eat, and they must drink. Would they drank a little less. There never appears to have been any lack of provisions, and vast quantities of spirituous liquors fell into our men’s hands. Drunkenness became fearfully rife, entailing with it increased sickness, as well as a relaxation of discipline, which it was necessary to repress with an iron hand.’ We all know the stake played for at Delhi. It was the Empire of India. Mark how alcohol put the issue in peril. Mark also that from this danger we were saved only by that unrivalled power of maintaining discipline which British officers have shown at all times, in all places, and under all circumstances.

“*Coffee*.—It is almost superfluous to add that the best substitute for alcohol is coffee or tea. The French military medical officers vaunt, and with justice, the superiority of the light wines of their own country over the more strongly branded wines of Spain and Portugal; and they point to the fact that, when used in moderation, the aromatic principles and the various salts they contain exercise an effect on the digestive organs which is alike wholesome and agreeable. With all this the best of them give a decided preference to coffee. Morache, in particular, is emphatic in his testimony, and is even eloquent in its praise as an article of diet, a safe stimulant, an aid to digestion, and an efficient refreshment under fatigue. Coffee forms no part of the ration of the French soldier in time of peace; but Morache does not hesitate to urge its issue instead of brandy, and he instances certain regiments in which the custom of substituting coffee for the morning *petit verre* had much advanced the cause of temperance.