passes through the epidermis, gives rise to a certain amount of burning, but produces such an amount of anæsthesia that boils may be opened without pain. Carbolic acid appears to have the peculiar power of irritating either peripheral ends or nerve centres, when applied to them, and also of completely destroying the power of conduction in sensory nerves, without causing any irritation in them.

Cresols.—A local anæsthetic power is also possessed by several bodies allied to carbolic acid, such as para-cresol.¹² These substances destroy the sense of pain but they do not destroy tactile sensibility. But carbolic acid coagulates albumen, and tends, like cold, to destroy the part to which it is applied, and causes ulceration. A similar objection applies to a cresol. But there are other substances also allied to carbolic acid, which are free from this objection. The most important of these is certainly cocaine.

Cocaine.—When this substance is boiled with water it splits up, yielding methylic alcohol, benzoic acid, and another substance, ecgonine. From ecgonine cocaine can again be built up by the addition to it of the radicals benzoyl, C_6H_5 , CO, and methyl, CH_3 . Ecgonine has no local anæsthetic action whatever, and in this it resembles tropine, which is a product of the decomposition of atropine.

Atropine.—Atropine splits up into tropic acid, and tropine, which has no local anæsthetic action, although atropine possesses it to a certain extent; but when tropine is combined with benzoic acid instead of tropic acid, the resulting benzoyl tropine, or homatropine, has a distinct local anæsthetic action.

Benzoyl Compounds.—This fact led Filehne to suspect that the anæsthetic property in cocaine probably resided in the benzoyl rather than in the ecgonine. Curiously enough, benzoyl ecgonine does not appear to have a distinct local anæsthetic action, although the addition of methyl, which converts it into cocaine, gives it this power in such an eminent degree.¹³ Yet Filehne's supposition is, to a great extent, correct, and he has found that the benzoyl derivatives of several substances have a marked local anæsthetic action. Amongst these are the benzoyl derivatives of morphine, hydrocotarnine, quinine, cinchonine, and methyl triacetonal-kanine. The latter has, next to benzoyl-tropine, most resemblance in its action to cocaine. Next comes benzoyl-quinine, and the weakest is benzoyl-morphine. Unfortunately, these substances, with the exception of benzoyl-tropine, have all an irritant action, which precedes their anæsthetic action, and when introduced into the eye they cause so much burning that they cannot be used as local anæsthetics. Benzoyl-tropine, although free from this objection, acts too much like atropine, and therefore is for many purposes inadmissible.

Anæsthetica Dolorosa.—The irritant action which a number of local anæsthetics possess has led Liebreich to divide local anæsthetics into two classes: those which cause local irritation and pain and those which do not. In a letter to the *Lancet*,¹⁴ I suggested that most of the substances belonging to the group of cardiac poisons, like digitalis, might have a local anæsthetic action. At that time I was unaware that they had nearly all been tested and found to have such an action by Professor Hoppe.¹⁵ Unfortunately, however, they nearly all cause more or less irritation before producing their anæsthetic action, and are practically not available.

WITHINGTON (Population, 23,000).—*Low Death-rate.*—Dr. Railton's annual report for 1888 is of a most satisfactory character, the death-rate—12.2 per 1,000—being very nearly the lowest of the past nine years. A number of tables set forth the statistics for the year, a comparison being drawn in every instance with preceding years, dating from 1881. A notable feature is the large number of deaths from whooping-cough, all in children under 5 years of age. Enteric fever caused four deaths. The deaths from diseases of the lungs, excluding phthisis, show a considerable diminution when compared with the previous year. The zymotic death-rate was lower than the average of the past twelve years, and compares well with the corresponding figures of other similar districts in the neighbourhood.

¹² Roger M'Neill, *Edin. Med. Journ.*, June, 1886, p. 115.

¹³ A similar effect is produced by ethyl, which converts benzoyl-ecgonine into cocethyline, a body having anæsthetic properties like cocaine, but without its power to dilate the pupil, and much less poisonous. Merck, *Ueber Cocaine*. Diss. Kiel, 1886.

¹⁴ *Lancet*, March 3rd, 1888, p. 446.

¹⁵ I. Hoppe, *Die Nervenwirkungen der Heilmittel*, 1856, Leipzig: Hermann Bethmann.

SUMMARY OF THREE LECTURES ON SOME AFFECTIONS OF THE GENITO- URINARY ORGANS.

Delivered at the Royal College of Surgeons of England.

BY MATTHEW BERKELEY HILL, F.R.C.S.,

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LECTURE II.

TREATMENT OF CHRONIC URETHRITIS.

Analysis of 110 Cases.—The different methods of treatment were compared, and the effects of these demonstrated by means of an analysis of cases prepared for the purpose. In 110 cases this analysis showed that one at least of the four following conditions was present:—(a) Abnormally small meatus; (b) stricture; single or multiple, slight or tight; (c) patches of inflammation; (d) granular areas. Though other conditions might be present with production of strictures, in the great majority of cases stricture was present. In 35 of the 110 cases there was but one stricture; and in 75 more than one. The strictures were most numerous between the third and fourth inch from the meatus, next to that in the first inch and a half. Stricture is not indispensable for the maintenance of the chronic discharge. In a patient who had had discharge for twenty-five months, No 27 millimetric bougie passed easily on the first examination. On the other hand, patients whose affections have relapsed for a few weeks or months, have not infrequently unyielding areas, which form two strictures. The average duration of the treatment in 90 cases was $2\frac{1}{2}$ months, but this includes treatment in many different ways.

SOLUBLE BOUGIES.

Among the remedies used were soluble bougies containing various drugs in amalgamation: 50 patients had been treated with this remedy, the average number being 12 per patient, although in one case 48 bougies were employed. In 10 a cure was effected, two were treated by rhatany; one by sulphate of zinc and belladonna; four by chloride of zinc and belladonna; and three by chloride of zinc alone.

Thallin.—Thallin, as prepared in Christy's bougies, was tried in nine cases, with the following result:—None were cured, four were made worse, one was slightly benefited, and four were not improved.

Iodoform.—Iodoform bougies were not used in any cases, as they are useless in chronic urethritis, and of little service in acute urethritis.

Permanganate of Zinc.—Permanganate of zinc has been used by the lecturer for several years; it was first recommended to him by Dr. Alder Smith, of Christ's Hospital; he prescribes it in all cases of urethritis, most frequently in the acute form. Notes of its use were taken in 70 cases, 10 were cured by it; in 54 it very greatly diminished the discharge; in four it did no good, and in two it made the discharge worse. Its use was particularly marked by the absence of any irritation. It should not be used in strong solution, one grain in eight ounces of distilled water, and should not be prescribed in conjunction with vegetable extracts, as an almost explosive mixture is thereby produced.

Sulphates.—The sulphates of zinc, alumina, copper, and iron are most efficacious in the later stages of the gleet. They appear to be easily absorbed, and penetrate deeply into the inflamed tissue. The alumina and zinc salts appear to combine with the discharge without penetrating deeply in the mucous tissue. Sulphate of copper, on the other hand, penetrates deeper, and must not be used in a strong solution, as it causes slough, which leaves a scar behind it. These notes were taken by observations through the endoscope. Sulphate of iron is of no great value but usefully affects the three preceding drugs. Twenty-five cases were treated with the four sulphates, in eight it was the third remedy employed, with four cures and four improvements. Used as the first remedy it cured twice and improved twice. The rest of the twenty-five it either cured or improved, with one exception. In that no improvement was marked. The strength of the solution as commonly used is:—

Sulphate of zinc	...	...	30 to 40 grains.
Alum	...	...	30 to 40 "
Sulphate of iron	...	...	20 "
Sulphate of copper	...	...	2 "
Water	...	...	8 ounces.

Nitrates.—In using solution of nitrate of silver, small instillations are made on the points of disease previously ascertained. The strength of the solution is from 5 to 25 grains—5 to 10 minims is the quantity injected. The irritation caused by this injection is unimportant. The effect passes off in a day or two, and must be repeated every third or fourth day until the granular patches no longer exist. Where induration of the submucous tissue exists as well as granular patches, these unyielding parts are stretched in the passing of the bougie before the instillation of the nitrate of silver. The nitrate of bismuth has but a restricted value as an astringent. In some cases it does good, in others none.

Chloride of Zinc.—For the value of chloride of zinc as an injection, 43 cases were analysed. In 17 of the 43 discharge ceased after its use, in 9 others it diminished.

Belladonna, Opium, Cocaine.—Extract of belladonna and extract of opium long used by the lecturer as sedatives appear to have but small influence in that direction. Cocaine in five per cent. solution applied before the injection is thrown in, is a very efficient anæsthetic, when much pain is caused by the injection. Parenthetically it was remarked that, during the acute stages of gonorrhœa when scalding is severe, the injection of ten per cent. solution of cocaine into the urethra entirely prevents the scalding pain of micturition.

Treatment of Granular Patches.—After a few remarks on the injurious effects of certain articles of diet, the lecturer described his method of treating the granular patches—being, first to pass bougies in order to dilate the contracted areas, and observations on the effect of bougies have shown this to be always the same, viz. not to stretch but to split. The splits pass through the fibrous areas and do not affect the naturally elastic membrane. The endoscopic tube is then passed down through the split part and a mop soaked in nitrate of silver solution was applied to the patches and to the split areas as the tube was withdrawn, the granular condition of the membrane or prostatic part being also treated at the same sitting by the instillation of a few drops of nitrate of silver through a catheter fitted for the purpose. The appearance of strictures split by the passing of bougies in the ordinary process of dilatation and some of the chronic strictures was demonstrated by drawings and diagrams; also others divided by internal urethrotomy were shown in comparison.

SOME AFFECTIONS OF THE PROSTATE CONSEQUENT ON CHRONIC URETHRITIS.

Prostatic Catarrh.—This is a very common accompaniment to chronic inflammation of the penile portion of the urethra. The liability was mentioned of urethritis to arise in gouty people on small provocation, such as excessive acidity of the urine. Such affections are increased by specifics against gonorrhœa and usually assuaged by alkalies and colchicum. The irritation caused by excessive excretion of phosphates in the urine was alluded to. The symptoms of the prostatic catarrh, and of the methods of diagnosing it were then described, one chief symptom being the sense of heat produced by the passage of a sound over the membranous-prostatic urethra. The changes of the surface as seen through the endoscope were described to be granular thickening, enlargement of the papillæ of the surface and erosions.

Infiltration and condensation changes in the membrane of that part of the urethra do not take place. The prostate becomes in catarrh regularly marked with slight elevations, and depressions of purple or crimson hue. In the depressions are placed little flocks of viscid matter. The shape of the prostatic portion varies considerably. When much congested, the surface rises into a rounded form. When congestion ceases, the surface sinks till nearly flat.

With mere prostatic catarrh the examination with the finger in the rectum does not usually detect any change of health. The treatment consists mainly of local applications and in a régime from which excitement and excessive exercise are excluded. The local treatment is repeated, injections of small quantities of astringent solutions of nitrate of silver as already mentioned. Occasionally the specifics, cubebs and buchu, sandalwood, copaiba, etc. are useful.

ABSTRACT OF THREE LECTURES ON THE MORBID ANATOMY, PATHOLOGY, AND TREATMENT OF HERNIA.

Delivered at the Royal College of Surgeons of England.

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LECTURE III.

THE measurements of mesenteries given in the previous lectures show that it is hard to estimate the share which the length of the mesentery has in the causation of hernia. But it may at once be conceded that those in whom the mesentery is long are more predisposed to hernia than those in whom it is short; but the evidence in support of this proposition is far from being of a convincing nature.

A case of congenital hernia has already been described in which the mesentery was only six inches and a half long, and in which, nevertheless, the patient died of strangulated hernia. Moreover, in the cases of acquired hernia, mesenteries five, five and three quarters, six, and six inches and a half long are met with, and only one case has been seen of either congenital or acquired hernia in which the mesentery exceeded in length the mesenteries of those who had neither hernial sacs nor bulgings of the abdominal wall. Furthermore, many of the subjects devoid of hernia had mesenteries which far exceeded the average length (which, it may be remembered, was seven inches and a half), and amongst them mesenteries whose length was eight, eight and a half, nine, nine and a half, and even ten inches were not infrequent. The only case of hernia in which the mesentery was longer than ten inches—that in which it was eleven inches long, and which has been mentioned before—is not free from doubt, because there is some reason for the belief that the sac was a congenital one of long standing, and that the elongation was an effect, not a cause, of the hernia. Finally, it may be added that no person has been met with during the course of these investigations in whom the mesentery was of such a length as to preclude the possibility of inguinal hernia. Therefore, taking all these considerations together, it is impossible to attach the same importance to the length of the mesentery as a factor in the causation of hernia which previous observers have done.

That the abdominal walls afford a support to the intestines is shown by a number of circumstances, and amongst others by the fact that their removal permits an extrusion of the intestines. If this premiss be allowed, it seems reasonable to argue that when the abdominal walls fail, as they do in acquired hernia, and cease to support the intestines, an excessive strain would fall upon the attachments of the mesentery, and that they would, in consequence of the fault in the abdominal wall, give way and permit the mesentery to become prolapsed. The weight of evidence, however, seems to point in the opposite direction. For instance, in congenital hernia there is clearly a deficiency in the abdominal wall, but there is no prolapse of the mesentery. Many acquired hernial sacs are likewise unassociated with prolapse of the mesentery. Furthermore, prolapse of the mesentery itself may occur without being accompanied by hernia, as in the following case.

The lecturer here narrated a case in which the flexura duodeno-jejunalis was on a level with the base line, but in which there were no definite herniæ, only slight bulging of the hypogastric fossæ and of the peritoneum over the femoral rings.

But these are not all the arguments which can be brought against the view that the fault in the abdominal wall permits the prolapse of the mesentery. For example, there are reasons for supposing that the prolapse precedes the hernia, and that its first effect is to cause bulging of the hypogastric fossæ. Furthermore, although it may be reasonable to attribute the prolapse of the mesentery to the fault in the abdominal wall, yet the other forms of prolapse which are associated with it preclude the possibility. For instance, it seems hard to attribute the oft accompanying prolapse of the hepatic flexure to the fault in the abdominal wall, or that of the splenic flexure; but more especially is it hard to attribute the accompanying prolapse of the right and some-