

rently a perforation of the stomach, with an attack of localised peritonitis, which was controlled, however, by opium. In January of this year, there was first noticed a remarkable condition of the urine. Although perfectly clear and of a pale yellow colour when first passed, after a short period of exposure to the air it assumed a dark brown, almost black tint, and finally deposited a brown precipitate. The condition continued with intermissions up to April of this year, when Dr. Gray kindly sent me a specimen of the urine for examination.

The urine, as I received it, that is, after being corked up for some little time, was of a dark brown colour, and was alkaline from fixed alkali. Its specific gravity was 1032, and it contained no albumen. It showed a very slight reducing action on Fehling's solution, but an ammoniacal solution of nitrate of silver was at once reduced in the cold to the metallic state. There was neither blood nor bile present. Heat produced no effect. Acetic acid rendered the colour lighter, while liquor potassæ had the opposite effect, and made it much darker. Nitric acid showed merely a dark rim at the point of junction of the fluids, this being probably due to indican. The addition of an equal volume of hydrochloric acid developed a pinkish colour, due, again, to indican. On standing, a white sediment formed, consisting of triple and stellar phosphates. If the urine were exposed to the air, it became still darker in colour, while, if corked up tightly, the dark colour was, to a great extent, lost. If, then, the cork were removed, so as to admit air to the bottle, the urine could be seen to grow dark from above downwards. This conclusively proves that the pigment was a product of oxidation. It has been stated that the urine, at intervals, remained of the normal colour on standing. It was found, however, that in these intervals the urine was acid, and not alkaline, as when the dark colour appeared. Dr. Gray also sent me a specimen of the urine during these intervals. To one portion of the urine, liquor potassæ was added, and to another, a little acetic acid. The two specimens were then exposed to the air, and, in a short time, the alkalised urine became dark brown from above downwards, while the acid urine retained its light colour. Thus, we may conclude that alkali as well as oxygen was necessary to develop the dark colour, and that the reason why the urine, at intervals, did not show the phenomenon was that it then had an acid reaction. From the above reactions, it would not be certain whether we had present pyrocatechin or protocatechuic acid; and, indeed, in the earlier observations of such urines, it is probable that the distinction was not made.

The following reactions of the urine in question would, however, show that we had to deal with protocatechuic acid, and not with pyrocatechin. To a portion of the dark urine a weak neutral solution of ferric chloride was added, when a bluish green colour was produced. The addition of ammonia to this caused a change of colour to a darkish red. If pyrocatechin had been present, the ammonia should have produced a violet colour. The dark urine, when alkalisied, did not give up its colour on shaking with ether, neither did the colouring matter nor the colour-producing matter distil over on heating, as should have been the case if pyrocatechin had been present. Pyrocatechin shows a marked reducing action on Fehling's solution, while protocatechuic acid has no such reducing action. Now, the urines described by Ebstein and Müller, Bödecker, etc., mentioned above, reduced Fehling's solution markedly, while the urine I have described only showed a slight reducing action on the copper, no more than, I think, would be accounted for by the uric acid present. We may hence conclude that the urine contained protocatechuic acid. As far as I can ascertain, the only other case on record in which this body was discovered was reported by Dr. Smith in the *Dublin Medical Journal* for 1832. Dr. Smith described an urine, possessing reactions and peculiarities closely corresponding to those I have mentioned; and he showed that it contained protocatechuic acid.

We may now inquire what was the source of this substance in the case I have reported. The patient was not taking any drug which could cause the peculiarity of the urine. It is necessary to mention particularly that, although tannic acid had been prescribed for the hæmatemesis from which she had suffered, it had not been administered for some time before the urine showed its peculiar behaviour. The patient was hysterical, but every precaution was taken to prevent simulation. Pyrocatechin and protocatechuic acid are contained in certain plants, but this source was also excluded in the case of Dr. Gray's patient. The phenomenon could not, therefore, be referred to anything exterior to the body, and must be entirely pathological. We know, however, that compounds of the aromatic group result from pancreatic digestion. The most abundant of these is indol, from which probably the indican of the urine is derived. Phenol and its derivatives are also formed thus; and I should be inclined to think that we had here the source of the protocatechuic acid in the urine I have described. Possibly adhesions from the attack of peritonitis

may have delayed the passage of the intestinal contents, and so favoured the absorption of the by-products of digestion.

I have entered into some detail concerning this case, because, apart from its pathological and chemical interest, it also possesses a certain amount of clinical importance. Such a condition of the urine would naturally cause considerable alarm to the patient, and possibly some perplexity to the medical attendant. To both, however, it would be reassuring to know that the appearance was due to an entirely functional disorder.

The other substances I have to mention, which colour the urine in this manner, require only a very short notice.

Pyrogallie and Gallic Acids.—These are similar compounds to those mentioned, and are produced, as their formulæ given above will show, by substituting, in the benzol group, three molecules of hydroxyl for a similar number of hydrogen atoms. When used medicinally, these bodies are excreted by the kidneys; and then the urine, on the addition of caustic potash, absorbs oxygen, and becomes of a dark brown colour. These substances do not occur naturally in the body, and hence are not of so much interest as some mentioned above.

Melanin.—Patients suffering from melanotic tumours, especially when such tumours affect the liver or the skin, occasionally pass a urine loaded with a dark pigment called melanin. The fact was first pointed out in 1820 by Norris. In 1826, also, a full account of melanosis, with the condition of the urine, was published by Fawcington, a Manchester surgeon. In some such cases, however, the urine, although pale when passed, contains a body, melanogen, which on oxidation, either by exposure to the air, or by the addition of a mixture of sulphuric and chromic acids, yields melanin. I have not met with a very typical example of such a urine. A patient in the Manchester Royal Infirmary, a short time ago, under Mr. Jones, had a melanotic tumour of the foot, for which amputation was performed; subsequently, a group of glands in the groin, melanotic in character, was also removed. The urine of this patient showed some darkening of colour when a mixture of sulphuric and chromic acids was added to it, but the change was only slight. The patient has now left the hospital, and I have not had an opportunity of watching the progress of the case.

A most interesting case has recently been reported by Zeller,⁷ which throws considerable light on the origin of the pigment in these cases. In Zeller's case, the melanin varied in amount in inverse proportion to the amount of urobilin present in the urine. Since the urobilin is probably derived from the liver, a similar origin is claimed for the melanin.

NOTES OF A CASE OF EXTIRPATION OF THE LARYNX.

By T. HOLMES, M.A., F.R.C.S.,
Senior Surgeon to St. George's Hospital.

THE operation of extirpation of the larynx is still on its trial. It has been, if I mistake not, rarely performed in England, certainly in London, and its justifiability is still a matter of dispute. All cases, therefore, should, I think, for the present at least, be recorded.

The patient, H. V., a man aged 63, was admitted on May 16th, 1884. He had been in perfect health up to Christmas. Then he began to complain a little of sore-throat, and deafness in the left ear. Soon afterwards, the neck became stiff, and he was conscious of a swelling on the left side. For the past six weeks, he had had difficulty in swallowing and breathing. Solids seemed to stick about the level of the cricoid cartilage, and sometimes to come up into his mouth again. Lately, he had had a very troublesome choking cough, with frothy blood-stained expectoration. He had no fits of dyspnoea, but his breathing was becoming more difficult. For the last month, his voice had been very hoarse; he had found it very difficult to talk long, and had been forced to live on fluids. He had been getting weak and losing flesh.

On admission, he seemed tolerably well nourished. His complexion was dusky, and his voice hoarse and indistinct; respiration was noisy and laboured, and cough was frequent. The thyroid cartilage was expanded and bulged, especially on the left side. Above the larynx, there was considerable fulness on this side, reaching up to the jaw, and extending in an irregular manner up the neck. The new growth here seemed firmly attached to the structures around, but the trachea was quite free. The larynx was examined by Dr. Whipham, who reported that the growth involved the epiglottis chiefly, but also, probably, the arytenoids. A portion of the epiglottis had been destroyed

⁷ *Archiv für Klinische Chirurgie*, Band xxix, p. 245.

by the ulceration of the growth. No view of the larynx could be obtained.

If the case were to be treated at all, two courses presented themselves: to wait until the obstruction to breathing or swallowing became formidable, and then either perform tracheotomy simply, or attempt the entire extirpation of the growth; or to make that attempt at once. The fact that the man was suffering more from pain in deglutition than from dyspnoea, rendered it very important to remove the ulcerated epiglottis; while the extent to which the disease already extended outside the larynx rendered it doubtful whether it could be removed even at present, and nearly certain that, in a little while, it would be beyond the reach of operation. It was therefore decided to explain the state of things to the patient as clearly as might be; and, as he was anxious that the operation should be performed, it was undertaken on May 26th.

Under ether, a vertical incision was made from the hyoid bone to about the fifth ring of the trachea, and was crossed by a horizontal incision; and after the surface of the windpipe had been carefully exposed by dissection, about three rings of the trachea were divided, and the trachea plugged with Semon's modification of Trendelenburg's tampon. Then an incision was made in the middle line of the cricoid and thyroid cartilages, with much difficulty, owing to their extensive ossification. The thyro-hyoid membrane was exposed and divided, the upper corner of the thyroid separated from the hyoid bone, and the right half of the larynx removed; on the left side, the left half of the cricoid cartilage was left, as that cartilage was quite unaffected. On that side, much difficulty was experienced in defining the morbid mass, which lay external to the larynx, extending up towards the tonsil; ultimately, after conducting the dissection as high as possible, it was felt that something had been left behind. The pharyngeal wall had been very freely removed. Not much blood was lost, as the vessels were easily secured as they were divided. On the termination of the operation, a tube was passed down the œsophagus, and the greater portion of the large incision was united.

He was fed, partly through the œsophageal tube, partly by nutrient enemata, but never rallied satisfactorily, and died at 5 A.M., May 28th, about forty hours after the operation.

The disease was epithelioma, and affected almost the entire epiglottis, and the portions of the larynx immediately adjacent. The mass outside the larynx was continuous with that inside, and a portion of the mass outside the windpipe, on the left side, had been left behind, and lay in contact with the pharynx, extending as high as the tonsil.

REMARKS.—The above case is the only one in which I have myself extirpated the larynx, and it is only the second in which the operation has been performed at St. George's Hospital. The former case, which was under Mr. Pick's care, is reported in the *Clinical Transactions*, vol. xiv. The patient survived the operation about four days, dying of acute pleurisy, probably pyemic. In that case, as in this, the disease was found not to have been entirely extirpated. But Mr. Pick's case was a much more promising one, as far as the disease was concerned, for the tumour was almost certainly non-malignant, and if the patient had consented to the operation at an earlier period, there would have been a fair prospect of its success. The small portion of the growth which was left behind was below the seat of operation, and might have been afterwards recognised and removed.

Having this case in my recollection, I determined not to lose any time, if the operation were to be performed. And my case seemed to be a fairly appropriate one for the operation, allowing the operation to be in itself justifiable. It is true that the disease had spread external to the larynx, and that it might prove (as it did prove) impossible to completely extirpate the disease. But this could not be determined before operation. Expectant treatment held out no better prospect, and, as there was no serious dyspnoea, tracheotomy could do no good. On the other hand, the man was rapidly wasting, from the difficulty of swallowing occasioned by the condition of the epiglottis and parts around it, and the only chance of relieving this appeared to be removal of the affected parts.

But the history clearly shows how formidable the operation is, and how uncertain is the prospect of even succeeding in removing the whole disease, when the latter is of a cancerous nature. Readers of Mr. Butlin's work on *Malignant Disease of the Larynx* will recollect that he lays down (on page 63) the doctrine that extrinsic carcinoma is an incurable disease, in which extirpation affords no prospect of benefit; and that, in intrinsic carcinoma, though extirpation may be practised with fair prospect of benefit when the disease is limited to the laryngeal cavity, yet, when it has spread beyond the larynx, or has affected the glands, the prospect is almost as hopeless as in extrinsic carcinoma. The above case certainly supports this doctrine.

I may add that, if I should ever be called upon to repeat this operation, I think I would perform the preliminary tracheotomy a few days previously to the extirpation. The operation is one attended with profound shock, as this case testifies, even when there is no excessive hæmorrhage and no operative accident; and this might be lessened by dividing it into two parts.

OBSTETRIC MEMORANDA.

ALCOHOLIC INJECTIONS IN UTERINE HÆMORRHAGE.

It is always useful to know of any remedy which can be used, upon the spur of the moment, in cases of uterine hæmorrhage; and it is useless to talk about injections of cold or hot water, when there is no injection-apparatus at hand to use. So also is it with perchloride of iron and subcutaneous injection of ergotine; but, if you do not go prepared with these remedies, the patient in most cases would be dead before they could be obtained.

I have used the strong perchloride once, with perfect success, in a very bad case, taking it with me in a case of *post partum* hæmorrhage; once in a case of this accident, which recurred after twelve hours; and once when the patient died, it arriving too late to save life. Being driven into a corner over a case where most severe hæmorrhage took place immediately after the placenta was expelled, the blood running off the bed into the room—one woman who was present fainting, and another running away—I caught hold of a bottle of whisky, which was standing near the washand basin, and, pouring half the spirit into the basin, I soaked a napkin, and introduced it into the uterus, when I had the satisfaction of feeling the uterus immediately contract; the hæmorrhage ceased, and my patient made a good recovery. I have used this treatment several times since, and with the same result.

THOS. F. HOGWOOD,
Albion House, Stockton Road, Sunderland.

VERSION FOR LINGERING LABOUR IN A CASE OF HEAD-PRESENTATION.

ON October 2nd, at 6 P.M., I was called in to attend Mrs. E. in her third confinement. Her first was a shoulder-presentation, and the second a natural labour, but the child was very small. She got over both of them quite well. When I saw her this time, the liquor amnii had come away shortly before my visit.

On examination, I found the vagina moist and swollen, and the os high up and flabby. It was, as far as I could make out, almost undilated, and nothing of the child could be felt. I left her, and was not sent for till fourteen hours after, when matters were found to be much in the same condition. She had then a full dose of ergot, as, from external manipulation and auscultation, I concluded it was a head-presentation. In the usual time the pains became more frequent and severe, but little alteration took place in the parts. I then passed in my hand, and felt the head far up, soft, and evidently elongating. The pelvis was narrow, and the back of the symphysis projecting. Acting on the principle of "a bird in the hand," I got hold of the two feet and turned. There was a little difficulty in extracting the head, but the result was quite satisfactory. This case might suggest other methods of treatment, but the success of that adopted may indicate that it was not the worst.

JAMES BRYDON, M.D., Hawick.

THERAPEUTIC MEMORANDA.

HAZELINE AS AN UTERINE HÆMOSTATIC AGENT.

I HAVE, with unusual interest, watched the effects of hazeline as an uterine hæmostatic, both in the practice of Dr. Duncan, late of St. Thomas's Hospital, and in my own; and I can confidently assert that it is of comparatively little value in about 30 per cent. of suitable menorrhagic cases. Mr. Gunning, in the *JOURNAL* of the 11th instant, speaks in high terms of hazeline in two cases. The first is that of a young lady, aged 13, who suffered from menorrhagia and pain.

It is now, I believe, a very well established fact, that ovarian irritation, and consequent congestion, play a very frequent and troublesome part in the production of menorrhagia, in young women who have just commenced to menstruate. In those cases, I have always found bromide of potassium to act like a charm, unaided by any hæmostatic agents. I feel certain that, if Mr. Gunning would give bromide of potassium, in twenty-grain doses, thrice daily, a trial in his next case, he would be very gratified with its results.—Yours truly,

JAMES MERCES, M.R.C.S. Eng., L.R.C.P. Lond.

Bath General Hospital, Bath.