trophied, and during life the veins in the neck would occasionally stand out like tubes the thickness of one's little finger. The pulse at first was rather hard and incompressible, later on small and jerky, whilst towards the end of life it became very rapid and small, but never to any extent irregular. Taken in conjunction with my remarks upon the distended right chambers of the heart and the venous system generally, the two attacks of profuse epistaxis are worthy of notice.

NOTE ON THE STAINING AND MOUNTING OF TUBE CASTS AND OTHER ORGANIC URINARY DEPOSITS.

By BYROM BRAMWELL, M.D., F.R.C.P. EDIN.,
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THE interesting paper by Dr. Harris in the *BRITISH MEDICAL JOURNAL* of June 23rd leads me to publish the following note, which was written several years ago, on the staining and mounting of tube casts and other organic urinary deposits. It will be seen that the method is simple, and that no apparatus, other than the ordinary clinical appliances in everyday use, is required. The results are eminently satisfactory, and the preparations permanent.

THE STAINING OF TUBE CASTS.

The detection of tube casts when the urine is copious, the deposit scanty, and the tube casts few and far between is, as everyone knows, a matter of considerable difficulty, and one which involves (when the ordinary method of examination is employed) the expenditure of considerable time and trouble. And yet it is just in those cases in which the detection of the casts is most difficult (cases of polyuria, with scanty deposit and a small amount of albumen), that the presence or absence of tube casts is of the greatest importance for the purposes of diagnosis.

The recognition of tube casts under such circumstances is greatly facilitated by the use of staining reagents. Picro-carminic is the stain which I chiefly use. The method which I adopt is as follows:

1. An ordinary conical urine glass is filled with equal parts of urine and an aqueous solution of boracic acid and set aside until the deposit settles.

2. The deposit is then drawn off by means of a pipette and transferred to an ordinary test tube in which a small quantity (half a drachm is quite sufficient) of picro-carminic solution has been previously placed.

3. The urine and staining fluid are then thoroughly mixed by inverting the test tube two or three times, the end being, of course, closed by the thumb.

4. The test tube containing the urine and staining fluid is then set aside to stand for twenty-four hours.

5. The deposit, which has by that time settled at the bottom of the test tube, is then drawn off by a very fine-mouthed pipette (most of the pipettes used for clinical purposes are far too large in the mouth),¹ placed on a slide, covered, and examined under a low power.

If any tube casts are present they are very easily detected by this method.

When a cast is detected with the low power, it should be carefully brought to the centre of the field; the high power should then be applied, and the structure of the cast more carefully studied.

If there is reason to suspect the presence of amyloid degeneration of the kidney, a solution of methyl violet may be used instead of picro-carminic; for in some cases of waxy disease of the kidney, the tube casts give, with methyl violet, the characteristic rose-pink reaction.

PERMANENT PREPARATIONS.

In order to bring out the fine details of tube casts, which have been stained in the manner described above, and in

¹ The best pipette is, I find, a narrow glass tube which has been drawn out to a fine point; the end then broken off and heated in the flame of a spirit lamp so as to round off the edges. A pipette with as small an orifice as may be desired can be made by anyone for himself in this way in the course of a few minutes.

order to preserve them as permanent preparations, they may be mounted in Farrant's solution.

The procedure which I adopt is as follows:—

1. A small test tube—one of the small glass tubes, in which Messrs. Burroughs and Wellcome pack their specimen tabloids, answers the purpose admirably—is filled three-quarters full with Farrant's solution.

2. The stained deposit from the test tube containing the mixture of urine and picro-carminic solution is drawn off by means of a fine-mouthed pipette, and transferred to the small test tube which contains the Farrant's solution.

3. The small test tube is then securely corked, inverted two or three times in order that the coloured urine containing the stained deposit and the Farrant's solution may be thoroughly mixed, and set aside to stand until the tube casts or other urinary deposits have settled to the bottom.

4. In the course of three or four days a minute drop of the deposit, which is of course mixed with a certain amount of Farrant's solution, is drawn from the bottom of the test tube by means of a very fine-mouthed pipette, placed on a slide, covered and examined by the microscope.

5. The preparation may, in the course of a few days, be sealed in the ordinary manner, if it is desired to preserve it as a permanent preparation.

If the preparation mounted in this manner is overstained with the picro-carminic solution (that is, when the mounting fluid as well as the deposit is coloured) the deposit which has collected at the bottom of the small tube should be drawn into the pipette and transferred to a second small tube containing fresh Farrant's solution. The deposit which settles in this second small test tube is, after it has settled, then drawn off and mounted in the ordinary manner. The tube casts stained in this way and mounted in a perfectly transparent and unstained medium make beautiful microscopical preparations, their minute characters can be studied with the highest powers of the microscope.

Any organic urinary deposits may of course be stained, mounted, and preserved in the same manner.

HEREDITARY MALFORMATION OF THE HANDS AND FEET; WITH OPERATION ON ONE SUBJECT.

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AND

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In April, 1894, a boy, aged 15 years, with malformed hands and feet, was brought by his father to Dr. Smith, on account of pain and difficulty in walking, due to the malformation of the feet. The case was of more than merely passing interest on account of the persistency and consistency with which the malformation had affected several generations. It will be well to begin by giving an account of the structure of the boy's hands, then to compare them with the father's hands; afterwards to describe the malformation in the feet, and to give the history of these malformations so far as it can be traced through various generations.

CONDITION OF THE BOY'S HANDS.

The malformation in the boy's hands affects the middle and ring fingers. The right hand shows these fingers webbed to the tip. The conjoined nails exhibit a slightly elevated ridge running from the lunule and ending at a notch in front; and at the tip of the conjoined fingers there is a small linear depression running from the nail notch to the palmar surface of the tip. These are the only indications of separation of the digits. Each digit has the usual number of phalanges. The ring finger has its first phalanx rather shorter than normal; the second phalanx is articulated to it at an obtuse angle, the distal end of the first phalanx forming thus a

rounded protuberance like the stump of an amputated digit. The terminal phalanx is jointed to the second phalanx also at an angle, the tip being directed towards the little finger. The middle finger has the first and second phalanges of the normal size. The first interphalangeal joint is not easily made out, owing to the small amount of movement at it; the two phalanges being like a long bony rod. The third phalanx is jointed at an angle to the second phalanx; the tips of the two terminal phalanges of the ring and middle fingers being thus brought close together. There is a considerable space between the first phalanges of the two fingers. This we find occupied by a nodule of bone articulating with the head of the fourth metacarpal at the metacarpo-phalangeal joint, and running downwards and outwards to be attached to the middle of the shaft of the first phalanx of the middle finger.

The left hand differs from the right in the following respects: There is no well marked angle at the first phalangeal joint of the ring finger. The first phalanx is normal in size. The tip of the terminal phalanx of the middle finger comes to lie in front of the tip of the corresponding phalanx of the ring finger. This disposition of the bones has affected the external configuration of the tips of these fingers, the tip of the middle finger looking as if it were twisted in front of the ring finger, while the nails, which in the right hand lie in the same plane, form in the left a well-marked angle with one another. An extra nodule of bone between the heads of the metacarpals exists in this hand also, though it is not so large as in the other; it is attached to the head of the second metacarpal, and runs downwards and outwards to the middle of the shaft of the first phalanx of the ring finger. On the palmar aspect there is another extra bone; it lies under the head of, and to the inner side of, the fourth metacarpal bone, and runs downwards parallel to the first phalanx of the ring finger almost to the first phalangeal joint; it is distinctly, but not freely, movable on the bones it lies in contact with. The small amount of movement obtained may be due to the difficulty of grasping the bone through the palmar fascia and soft tissues. The thumb, index, and little fingers are normal, except for a webbing of the little finger to the ring finger as far downwards as to the first interphalangeal joint.

CONDITION OF THE FATHER'S HANDS.

The father's hands show the same main features of malformation as the son's. In the right hand the phalanges are not articulated to each other at so great an angle as in the boy's hand; the bones of the two fingers are also more closely approximated, while the terminal phalanges are bent, not to the ulnar side, as in the boy's hand, but to the radial. There appears to be no accessory bone between the head of the fourth metacarpal and the first phalanx of the middle finger. It is also worthy of mention that, owing to contraction of the palmar tissues in front of the first phalangeal joints of the index and little fingers, these digits cannot be fully extended. This condition is most marked in the index finger of the right hand, and might be partly accounted for by the nature of the man's occupation of labourer.

The left hands of both father and son are almost identical in form. The web between the ring and little finger in the father's hand is carried lower down. The first and second phalanges of the middle finger are represented by one long slender bone, there being no joint corresponding to the first phalangeal joint, as in the boy's hand. The bones of the middle and ring fingers are approximated more closely in the father's hand, bringing the terminal phalanx of the middle finger more in front of the corresponding phalanx of the ring finger.

As regards movement in the malformed fingers, in the hands of both father and son a slight amount of flexion can be produced in the terminal phalangeal joints, but not by voluntary muscular effort. The metacarpo-phalangeal joints can be flexed almost as far as normal, but flexion requires more exertion than usual. Both father and son are unconscious of any inconvenience arising from the malformation of the fingers. They can perform all the work of individuals with ordinary hands.

CONDITION OF THE BOY'S FEET.

Each foot has six toes. The second and third toes of both are webbed almost to the first interphalangeal joints, the

fifth and sixth toes up to the nail; the fourth toe being comparatively free. Each toe is normal in size, and has the usual number and disposition of the phalanges, with the exception of the great toe, which is larger than normal. The fourth toe is superimposed on the fifth toe, this condition being more marked in the left foot. The sixth toe of each foot, as far as we can make out by manual examination, possesses only two phalanges, a not uncommon condition of the normal little toe.

On the right the sixth toe, and to a less extent the fifth also, has become rotated inwards, so as to bring the nail in contact with the ground in the act of standing or walking. This causes great pain. In order to avoid this pain he everts and rotates the foot outwards, so as to lift this toe from the ground, and throw the weight of the body on the front part of the great toe, which he crosses as far as possible over the fore part of the foot. He also keeps the foot well arched to further raise the sixth toe from the ground. This method of walking has resulted in the formation of a well-marked bunion at the upper and inner side of the metatarso-phalangeal joint of the great toe, and in hypertrophy of the bones in its neighbourhood. The displacement of the fourth digit is doubtless caused by the use of boots too narrow for the abnormally broad foot. The boots were always bought several sizes larger for him than the length of the foot necessitated, and even then the upper of the boot had to be cut close to the sole on the outer side to allow greater ease to the toes. It had also to be cut over the bunion. The first phalanx of the third toe of the left foot is hypertrophied on the upper surface at the proximal end, similarly to the corresponding bone of the great toe of the right foot.

The manner of articulation of the extra toe on each foot cannot well be made out. On the right side this toe seems to be articulated to the outer part of the head of the fifth metatarsal bone. On the left side there is either an extra tarsal (a depression can be felt, but its nature is uncertain) or the fifth metatarsal is broadened out at the extremity so as to allow articulation of the phalanges of the fifth and sixth toes side by side.

The boy, though in good health now, suffered when young from rickets, and this disease has left its mark on the thorax, in some slight enlargements of the condyles of the humerus, and in curvature of the tibiae.

CONDITION OF THE FATHER'S FEET.

The father's feet show almost exactly the same peculiarities as the boy's with this exception, that the great toes, instead of being large, are even smaller than normal. He walks without any inconvenience.

FAMILY HISTORY.

The genealogical table appended gives the history of the malformation so far as we could investigate it. Where the members are unmarried, or where, if married, they are without family, no note is made:

M=male; F=female. Heavy type denotes malformed hands and feet; light type denotes normal hands and feet.

E. J., the boy's father.

(a) Had both supernumerary toes removed by operation; both hands are "exactly like" E. J.'s right.

(b) Boy operated on by Dr. Ramsay Smith; his hand shows some minor differences from the father's as noted above.

(c, d, e) All died young, and all had the same malformation of the hands as E. J.

(c, f, g) Have both hands "exactly like" E. J.'s right.

One interesting point in this record is that malformation of the hands is always associated with malformation of the feet; in no instance is there a malformation of the hands alone or of the feet alone; and the malformation, so far as can be ascertained, shows very little variation.

Another point is that it seems to go very much in the female line. It missed a generation in E. J.'s grandmother,

Fig. 1.—Boy's hands.

Fig. 2.—Boy's hands.

Fig. 3.—Father's hands.

but all her children had it save one, and three out of seven of that one's children had it. Again, all E. J.'s brothers and sisters had it; but, on the other hand, he has transmitted it to his whole family of four, while his sister has transmitted it to only two of a family of three. Looking at the genealogical table as a whole, one is struck by the firm hold that

Fig. 4.—Boy's right foot after operation.

Fig. 5.—Boy's left foot.

the abnormality has taken of the family, twenty one out of twenty-eight being malformed.

Another fact that ought to be recorded in this connection

is that E. J.'s wife was previously married, and had borne children by her first husband. Inasmuch as, in such circumstances the wife has had impressed upon her certain features of her former husband, it is somewhat remarkable to find that all the children she has borne by her second husband inherit the malformation possessed by him.

NOTE ON THE OPERATION. BY DR. RAMSAY SMITH.

The case was suitable for operation. The foot was becoming deformed, and walking was difficult and painful, on account of the boy's efforts to keep the supernumerary toe off the ground, or from pressing on the sole of the boot. In choosing the method of amputation several things had to be considered. In the first place, the fifth and sixth toes were united as far forwards as to the nails. This put the oval method of amputation out of account, unless I had made the incision on the outer aspect of the foot, a proceeding that had obvious disadvantages. In the second place the condition of the skin on parts of the supernumerary toe had to be considered—parts were hard and horny, and otherwise undesirable to have in a flap. On the whole I thought it best to use a Λ shaped incision, and to preserve a flap from the outer part of the supernumerary toe. With this end in view I made the knife enter between the fifth and sixth toes, passed it backwards, keeping the edge well outwards, as far as the articulation with the metatarsal; then, having dislocated the bone, I turned the edge of the knife forwards, keeping it well inwards, and cut towards the front. By this method the tissues were dissected very perfectly from the phalanges of the toe I was removing, thus leaving as much tissue as possible on the outer aspect of the fifth toe and in the flap; this at most was not much, but it included all the fibrous tissue of the part. I united the flap with the side of the foot by five catgut sutures placed deeply. The operation was done under strictly aseptic conditions, and the wound healed without any complication. The result of this method of operating is that the cicatrix has a course from behind forwards along the dorsal surface of the foot, then along the upper outer face of the fifth toe and downwards to the under surface of that toe, whence it passes back a little way. This avoids having any part of the cicatrix on the point of pressure on the sole of the foot, and leaves the contour of the foot exactly as if no supernumerary toe had ever existed.

I did not interfere with the left foot; there was not the same urgent necessity. I had for several reasons to perform the first operation as expeditiously as possible; besides, the surroundings of the patient were very unfavourable to good results, and it seemed easier to keep one wound aseptic than two; and, lastly, I wished to see the result of the first operation in order to find out if the method could be improved upon in amputation of the toe of the other foot.

The boy was able to walk in about a fortnight. A photograph taken nineteen days after the operation, and several days after the boy had been walking in boots, shows the appearance of the cicatrix at that date. I have placed alongside of the foot the amputated toe which, although somewhat altered by being preserved in spirit, gives an idea of its comparative size. The left foot, which was almost identical with the right, is shown for the purpose of comparison.

ON THE EFFECT OF THYROID EXTRACT IN EXOPHTHALMIC GOITRE AND IN PSORIASIS.

By A. G. AULD, M.D.,

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THE following brief notes of two cases seem worthy of publication in view of the questions which are at present occupying attention, and awaiting more definite observations.

EXOPHTHALMIC GOITRE.

It has been alleged that Graves's disease is benefited by thyroid extract, though I have not come across any reliable data on the subject. A consideration of the facts and suggestions so ably propounded in the last Bradshawe Lecture

by Professor Greenfield¹ would tend to lead one to the opposite conclusion. To bring the matter to a practical test may be so far possible, although in cases of *active* Graves's disease the difficulties and pitfalls encountered are self-evident. The following case, however, seemed peculiarly suited for this purpose, and at the suggestion of my friend Professor Charteris the treatment was begun by giving one of Burroughs and Wellcome's tabloids every three days. Dr. Charteris also closely watched the case along with myself.

The patient, a young woman aged 26, had been under my care for two years for Graves's disease. For the first year the symptoms were typically developed, but the patient then got gradually better until latterly the disease seemed to be in a dormant or resting condition. At this time the thyroid gland itself was considerably enlarged throughout, but this enlargement was of a variable character, showing temporary fluctuations. A slight, but by no means obtrusive, degree of exophthalmos was present; the pulse-rate was from 90 to 100, and the temperature normal. As soon as the treatment was begun, the pulse and temperature were recorded twice daily. By the end of the first week, the exophthalmos had become much more pronounced, a symptom commented on by both the friends of the patient and by herself. The right eye was more affected than the left. The patient also complained of returning pulsation in the neck, which had become more swollen, and she felt weaker and out of sorts. After two weeks there was in addition diarrhoea, and the patient was paler and thinner. In the third week the dose was suddenly increased to two tabloids per day, continued for nine days, when sickness and perspiration ensued. The heart's action rose from 99 to 138, and the temperature record for a fortnight was as follows: Morning (before treatment) 98°, evening (after first tabloid) 100°; morning 99°, evening 99°; morning 100°, evening 100°; morning 99°, evening 100°; morning 100°, evening 99°; morning 99°, evening 99°; morning 100.6°, evening 99°; morning 100.6°, evening 100.8°; morning 100.4°, evening 99°; morning 100°, evening 99°; morning 100.6°, evening 101°; morning 100°, evening 100.8°; morning 99°, evening 99°; morning 100°, evening 100°. The sudden increase in the dose did not affect the temperature.

These facts speak for themselves. It seems to me that the effect of the thyroid extract was to rekindle the symptoms of the disease, and so support the view that Graves's disease is caused by a hypersecretion on the part of the thyroid gland.

PSORIASIS.

The papers of Dr. Byrom Bramwell, on the treatment of psoriasis by thyroid extract,² induced me to make a trial in a case which came under my care at the Royal Infirmary, on May 4th. The patient was a young man, aged 19, thin, anæmic, and undergrown. The arms and legs were covered with angry-looking inflamed patches, while frequent patches also occurred on the trunk. He had been taking a mixture containing iron, quinine, and arsenic, with alleged benefit. The disease, the patient said, came out every year about February, and tended to get well towards the end of the summer; usually, however, a few patches were left over the knees. He was given one tabloid daily of the thyroid extract with no other treatment, and by the end of a week every trace of the disease had disappeared.

I freely admit the remarkable character of this result, for even granting that the disease in this case had a natural tendency to disappear, it seems clear that the thyroid treatment had a marked, nay a specific, effect. I have observed marked desquamation of the skin follow thyroid feeding in some cases of myxœdema, and it is probable some skins are more susceptible than others. It is advisable to continue the treatment for some time after the disappearance of the psoriasis to prevent a relapse.

¹ BRITISH MEDICAL JOURNAL, December 9th, 1893.

² BRITISH MEDICAL JOURNAL, October 23rd, 1893, and March 24th, 1894.

THE late Professor G. Brugnoli, of Bologna, has bequeathed the bulk of his estate, amounting to about £40,000, to the Ospedale Maggiore and the University of Bologna. Substantial legacies are left to the Mutual Help Medical Society, to the Medico-Chirurgical Society of Bologna, and to the Royal Academy of Sciences.