hæmaturia to deal with; but little benefit resulted, as the urine was still considerably darker in colour than normal, and the proportion of albumen, although decreased, was still one-eighth to one-fourth.

In the beginning of November, the urine again became darker in colour, and eventually to 9 Vogel, again followed by a petechial crop, and, as a consequence, a diminution of the hæmatin. When examined microscopically, it retained the characteristics already mentioned, and still no blood-corpuscles. His medicine was now changed to seven minims of spiritus turpentine every four hours, which seemed to be acting well, as in about ten days after this treatment was adopted the urine became normal in colour, but a faint trace of albumen was still present.

At the beginning of December, he was again similarly attacked, with the same development of the petechial crop, for a few days, and, with its cessation, an improvement in the urine.

On January 1st, 1878, the urine again returned to its abnormal state, the petechiæ successively appearing and disappearing with diminution in the colour of the urine.

I now changed his medicine to five grains of the chloride of ammonium four times a day, this drug being much lauded by the late Dr. Warburton Begbie in hæmaturia. In a few days, his urine became almost normal in colour, and a very scanty precipitate was the result of the addition of nitric acid.

On February 3rd, the urine again became darker in colour, but not nearly so marked as in the former "attacks"; this was not followed by the petechial crop; the attack, if I may so call it, only lasted two or three days. He was advised to continue the medicine, and he has not had any recurrence of the symptoms, and in June 1878 was as strong and healthy as ever he was, and his urine in a perfectly healthy condition.

In the immediate and hasty history narrated, you will observe the disease appeared as the result of a cold, which is regarded as one of the exciting causes of this, as of almost every other, disease; but, although the onset may be fairly attributed to it, the subsequent course and recurrence of the disease cannot, as during the whole time he was under treatment he was confined, for the most part, to his bed, and most rigidly to his room, which had a fire lit night and day, so that the chances of his fresh "taking cold" were reduced to a minimum. Another cause assigned for this disease is hepatic derangement; as in a case of Dr. Harley's, whenever the urine assumed a darkened colour, a congestion of the chylipoietic viscera, of a transient and periodic character, was the precursor; but, in this case, there was no trace of any complication of the liver whatever. A third, and one on which Dr. Wm. Roberts lays great stress, is ague, and he clearly traces two out of four cases narrated to malarial origin; but, in this case, there was no trace whatever of it, not even the invading rigor peculiar to diseases arising from cold.

Dr. Begbie, however, in his able article,* says, "According to our present knowledge, unquestionably defective, I think it very probable that in paroxysmal hæmaturia the primary morbid change takes place in the blood. The kidney, however, speedily suffers;" and further on he states, "that the renal function should be so seriously, although only temporarily influenced, so as to determine the passage of either albumen, blood, or blood-colouring matter, it may, I think, be presumed, and more particularly in the latter case, that some morbid change in the blood itself, although it has as yet eluded detection, has existed, probably, some product of faulty hepatic function being the *fons et origo mali*," thereby coinciding to some extent with the experience of Dr. Harley.

Of the symptoms demanding a passing notice are the following.

1. Pain in the joints has been mentioned by Dr. Roberts as having occurred in one of his patients, but there was, accompanying it, swelling which was not present in this case; there is no doubt it was of neurotic, or what amounts to the same thing, rheumatic character.

2. Pain over the loins was almost a constant symptom in the cases quoted, but in this case there was a marked absence, even at the time it would have been most expected; viz., before the outbreak of hæmaturia, although undoubtedly the pain around the umbilicus was analogous to it, and dependent on the kidney-affection, as all medicaments to relieve the bowels were worthless.

3. The presence of excessive colouring matter of the blood in the urine was the chief symptom in this case, and is the crucial and distinguishing symptom of the disease. The urine was of a dark portwine colour during the height of the attack, and contained no blood-corpuscles, but only granular matter with urates and oxalates.

4. There was one symptom in connection with this case which throws some light upon it, viz., the petechial eruption which generally appeared two or three days after the onset of the attack, and was followed by a diminution of the blood colour in the urine. The presence of petechiæ opens a doubt whether this was really a case of hæmatinuria, or whether it was not a symptom or concomitant of purpura; the presence of both symptoms no doubt lead one to infer that the disease is really of a purpuric origin, but there were in this case none of the manifestations of purpura, such as spongy gums, epistaxis, or melæna, that would have been expected in such a condition.

If Dr. Begbie's view be adopted as to the causation of the malady, hæmatinuria is essentially of a blood-origin, and that the circulatory system is surcharged with effete material that, under normal circumstances, would have been eliminated by the kidneys, and they, having too much stress or pressure brought to bear upon them, fail to excrete the excrementitious matter. The blood according to Dr. Begbie, relieved itself by throwing out some portions in the form of petechiæ, one would, however, have expected that, in such a case, they would have been general and not confined to the lower extremities; and the non-selection of the mucous surfaces, where purpuric extravasation invariably takes place, is an important diagnostic mark to the exclusion of purpura. The microscopic appearances allay any doubts on this point, as in purpura there is, along with the other symptoms, blood in the urine, whereas here we had only the blood-colouring matter.

Treatment.—All remedies seemed to be of no avail, except the chloride of ammonium, which Dr. Begbie recommends; and the good effects he had seen following its administration in relieving neuralgic affections, warranted him in concluding that it would exert a beneficial influence on a disease in which he considered that a disturbance of the blood and nervous system co-existed.

NOTE, January 1883.—This lad has been in good health ever since, and follows the precarious occupation of a sailor; but, notwithstanding the inclemencies incident to his vocation, he has not had any return in any degree of the symptoms detailed.

A NEW OPERATION FOR SPINA BIFIDA.*

By A. W. MAYO ROBSON, F.R.C.S. Eng.,

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KNOWING the pathology of spina bifida to be deficiency of the neural arches of the vertebrae, with a projection of the spinal membranes through the cleft, it has seemed to me that the methods of cure hitherto adopted have been either dangerous or uncertain, or both, and have all been wanting in scientific aim. These methods are: ligature; elastic ligature, leading to gradual removal; injection of tincture of iodine, or of iodine and glycerine; simple excision; and removal by the clamp. But their value may, perhaps, be best judged of by the following paragraph, taken from Holmes's *Surgery*: "Viewing, then, the great danger of any effectual surgical treatment, it seems better to watch the case carefully, and not to interfere, unless the tumour is growing."

More than a year ago, I thought over an operation, which, however, I have had no opportunity of performing until a few weeks since. The following account of the case I am about to show will serve to illustrate the method I advocate.

Mrs. S. consulted me concerning her child, a few days old, which was the subject of a spina bifida in the lumbar region, of the size of a tennis-ball. She told me that, during the early part of her pregnancy, she had been very much "out of sorts," and had eaten very little. This, I think, may possibly have had something to do with the deformity in the child—just as underfeeding a pregnant mother may produce hare-lip in the infant.

The tumour had such thin walls that, in certain parts, as may be seen in the specimen on the table, it was perfectly transparent. There was a distinct impulse on coughing or crying; and the communication between the dilated sac and the spinal canal could be felt to be more than an inch in length, and over half an inch wide.

I advised an operation, but suggested that it should be done after a month or two, in order that the child might gain strength; but,

* *Edinburgh Medical Journal*, vol. xxi, 1875.

* Paper read, and Child and Specimen shown, before the Leeds and West Riding Medico-Chirurgical Society.

on October 26th—i.e., when it was six days old—the skin had become so red and thin over the upper part of the swelling, that I saw it would burst if left a day longer: hence I decided to operate at that early period.

Mr. Wm. Hall kindly gave chloroform, and, when the infant was fully anaesthetised, I made a vertical incision on each side of the tumour, about half an inch from its base, through the skin, and then very carefully dissected the integuments from the meninges, until I reached the laminae of the vertebrae; this required very careful dissection, as the membranes left were so thin as to be perfectly translucent; the fluid was now let out by puncturing with fine scissors, which were also used to cut away the redundant membranes. The cauda equina was fully exposed, lying on the floor of the spinal canal. I now had two folds on each side, each fold being of a different width, the two inner meningeal folds three-fourths and half an inch respectively, and the two skin-flaps of the same width; but whilst the wider meningeal flap was on the right, the wider skin-flap was on the left. Thus, when sutures were applied, the lines of union were not opposite.

Acting on the same principle as is carried out in uniting the peritoneum, I brought together the serous surfaces of the arachnoid by several sutures, so as to completely shut off the spinal canal.

Mr. Mayo had, in the meantime, been kindly dissecting (under the antiseptic spray) the periosteum from the femur and frontal bone of a rabbit, which he had just killed. This periosteum I now placed, with its osteogenic layer underneath, over the closed meninges, and carefully sutured it to the periosteum of the laminae on each side, and to the bony margins above and below. After this the skin was sutured, a layer of protective applied, and a pad of salicylic wool placed over the wound.

The whole operation, which occupied more than an hour, was performed under the eucalyptus air. Catgut ligatures were employed, and the instruments and sponges were well carbolicised. On the second day, the nurse, in applying the napkins, displaced the dressing; but although the skin-wound slightly opened, there was no formation of pus, and no slough came away; in fact, through the small opening, I could see that granulations had sprung up from the superficial surface of the interposed periosteum.

The child has thriven, and has not had a single bad symptom.

As yet I cannot feel any bony crackling, but the skin is level with the surface, and the case is practically cured; if bone form, however, the covering will be all the firmer, and the spinal canal will be physiologically perfect.

I had mentioned my intention to Mr. Jessop, a short time before I performed the operation, and he kindly offered to let me have some periosteum from an amputated leg; but, unfortunately, the inflamed condition of the sac gave me no chance of choosing my time. The capability of grafting living tissues, and seeing them still live, has been proved in the case of cuticle on the surface of ulcers and skin in cases of ectropion; the special instance which suggested the grafting of periosteum to my mind, was the witnessing of the continued vitality of two flaps of skin which I detached from the forearm and transplanted to the nose, in a case of nasal deformity.

The points of interest to which I would draw attention are:

1. The performance of the operation with strict antiseptic precautions, the eucalyptus air being used instead of carbolic spray.
2. The principle of closing the meninges, by bringing together the serous surfaces, as in peritoneal surgery.
3. The possibility of transplanting periosteum, and its continuing to live.
4. The entire absence of adverse symptoms.
5. The illness of the mother during early period of pregnancy, and its questionable bearing on the condition of the child.

The following description of the specimen, which is preserved in the Leeds Medical School Museum, has been furnished by the curator, Mr. F. H. Mayo.

The sac, somewhat contracted from being in spirit, is about the size and shape of half a swan's egg, being 2½ inches in length, from above downwards; 1½ inches in breadth, from side to side; 1½ inches in depth, from base to apex. The sac-wall consists of true skin and subcutaneous tissue, lined by serous membrane, and is about the thickness of ordinary skin, except at one point, about the size of a sixpence, situated just to the right of the apex, where it is so thin as to be quite transparent, appearing to consist only of the serous membrane and a very thin layer of epidermis, and where fresh minute blood-vessels could be distinctly seen ramifying over it.

February 10th, 1883.—It is now four months since the operation,

and two months since the child was shown to the Leeds and West Riding Medico-Chirurgical Society.

It has thriven well, and is now strong and healthy. The skin over the lumbar region is quite flat with the rest of the back, and the site of the tumour is only marked by the line of incision.

Apparently no new bone has formed, since the structures covering the spinal hiatus feel soft. They seem to be thicker than the skin and meninges employed to cover in the gap; therefore, it is just possible that the transplanted periosteum has survived, and now renders the covering more firm than it otherwise would be.

Although one cannot help feeling disappointed that new bone has not formed, I shall hope to have better success when I can transplant periosteum from a recently amputated limb, and not from one of the lower animals.

With or without the transplantation of a bone-forming membrane, this method seems to me to be worthy of further trial; as in the above recorded case, the cure is as good as can be desired.

INJURIES OF THE HEAD IN RELATION TO CRIMES OF VIOLENCE.

By CLIFFORD L. DREW, M.B., M.R.C.S. Eng., etc.,
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THE subject of crimes of violence in connection with cranial injuries is, I believe, as far as the Convict Service is concerned, an uninvestigated field. All scars, or other cranial injuries, are entered in the description of the prisoner on his medical history sheet, but I am not aware of any possible connection of these with the prisoner's position being considered in the light of cause and effect. My attention was called to this subject by several very interesting cases, which were sufficiently well marked to at least make one wish the subject could receive more attention. A very shrewd observer told me that, after nearly thirty years' experience among prisoners of the most violent and dangerous type, he was fully convinced that the cranial injuries received by prisoners did, in some way, influence their careers. One thing is certain; that, among convicts, a great number of epileptics is found; and when one considers that it is quite exceptional to find a prisoner of the lower class without the remains of a scalp wound, the question naturally occurs—what effect has the injury had? Out of one hundred cases, taken indiscriminately, I found only 8.8 per cent. without some cranial injury or other. As many prisoners have led exceedingly vicious lives, and many, probably, have inherited tendencies, it would very likely be impossible to ever draw any reliable conclusion on the subject of simple scalp wounds.

The subject which these few remarks is intended to open up, is that of depressed fractures in relationship to murderous assault and crimes of that order. The following are good examples of different types of cases referred to.

CASE I.—The prisoner, a mate of a vessel, well educated, and with an exceedingly retentive memory for dates and names, was sentenced to penal servitude for attempting to shoot one of the crew. As a rule, his certificates showed that his conduct had been excellent, but one or two told a different tale. On several occasions he had broken out in paroxysms of frenzy, and had attempted violence, for which he was placed under restraint. This man was put under medical observation, as he showed signs of mental derangement. His one great complaint was "an undue quantity of blood to his head," and, indeed, this remark first drew my attention to his condition. A lengthened observation confirmed the suspicion of his mental state, and he was eventually removed on this account. He always objected to answering questions, as he said he became confused, and could not correctly state what he wanted to say. During a conversation one day, he told me that, at the former prison, he had received corporal punishment for insolence to an official. I can hardly believe this, as that sort of punishment is now only resorted to in extreme cases. I should fancy that no director would undertake the responsibility of according such a punishment for an offence of that nature. If his statement were true, it would be conclusive proof that his mental condition had not been suspected. This man had a depressed fracture of the frontal bone, caused many years ago by falling on a nail.

CASE II was that of a different type of criminal from the last. This convict, during work, made a murderous attack with a shovel on a warder. In his case, there was also a deeply depressed fracture of the skull. His intellect was of a low order, but he showed no evidence, during many months of observation, of passion.