healthy brain, any series of cell groups in the cerebral cortex which is sufficiently frequently stimulated in this parrot fashion, may get into the habit of discharging, after the fashion of a barrel organ. But the labour involved in committing to memory a series of facts in this (parrot) way is, for most of us, enormous; few brains, and probably no old brains, are capable of acquiring, and much less capable of retaining, even if they could acquire, a cram knowledge of this kind of the multitudinous facts which go to constitute a knowledge of systematic medicine. And even if a knowledge of medicine were acquired by dint of prodigious labour and innumerable repetitions in this way, it would be of little or no real use in dealing with disease in the living man. In order to recall a series of isolated facts or sentences which are learned by rote in this manner, the repetition must commence at the beginning, the individual links in the chain (the facts or sentences) must follow one another in a definite and constant order. In repeating such a series of facts or sentences, the less the consciousness is brought to bear upon the matter the better. Should the reciter be nervous, should he be interrupted in the middle of his task, the cortical discharge ceases or the association becomes deranged; he is unable by a voluntary effort to recall the next fact, and he has ignominiously to begin again at the beginning.

Medical facts which are crammed up by dint of much repetition, and without the aid of the intellect, are acquired and remembered very much in the same manner. The labour involved in acquiring them is (comparatively to that involved in the true and intelligent method of learning by means of the understanding) enormous; the result is eminently unsatisfactory, for few brains can retain for any length of time and recall (remember when required) a large number of isolated facts. Cram knowledge, as everyone knows, is essentially temporary and evanescent; it may and (shall I say unfortunately?) it often does, enable a student to scrape through his examinations, but it is of little or no real use in future life.

Now, as I have already told you, what we teachers have to aim at is not merely to supply the student with the information which will enable him to pass and to get qualified, but what is infinitely more important, we should endeavour to give him such a knowledge of the subject as will be of real and permanent use to him in his future career—in his daily life as a practical physician. Probably at least 90 per cent. of our students mean to practise medicine—to earn their daily bread by endeavouring to cure and relieve disease in general practice. And each individual lecturer, whether his subject be practical or scientific, should, I venture to suggest, keep this, the main object of the students' wants, constantly and prominently in view.

I repeat that what we have to aim at in learning and in teaching medicine is to make the facts hang intelligently together. It cannot, I think, be too forcibly and too emphatically stated that a knowledge of pathology (together, of course, with anatomy and physiology) is the true memory basis—the essential and fundamental key to an intelligent knowledge of the principles and practice of medicine; and that a large bedside experience—a first-hand acquaintance with the phenomena of disease as they occur in the living man—and practical knowledge of the effects of drugs in different diseased conditions and of the methods of dealing with disease and diseased men and women is the only sure foundation for true and genuine success—success in the proper sense of the word—in actual practice.

And here let me say that you will find it a most instructive exercise to try to work out for yourselves the clinical phenomena (symptoms and signs) which different pathological lesions produce. When, for example, you are commencing the study of aortic regurgitation, acute croupous pneumonia, poliomyelitis anterior acuta, or any other disease which has a definite and distinct morbid anatomy and pathology, first endeavour clearly to realise the morbid process, and then try to work out—to picture to yourselves—the symptoms and signs which the lesion will be likely to produce in the living man. If your knowledge of anatomy, physiology, and pathology is sound and satisfactory, you should be able to predict many of the leading clinical features of these diseases. After puzzling out the subject so far as you are able for yourself,

you should next read the textbook description. You will then read it with interest. If you find that it differs in any particulars—as of course it is sure to do—from the ideal picture which you had formed in your own mind, do not merely be content to note the fact and accept the correction, but try to find out not only where you were wrong, but why you were wrong. I assure you that if you will only conscientiously endeavour to study disease after this method, you will make great and rapid progress; that you will soon get an intelligent grasp of the subject, and you will find that the study of medicine is a pleasure rather than a toil.

FORCIBLE STRAIGHTENING OF THE SPINE IN POTT'S DISEASE.

(With Special Illustrations.)

By R. W. MURRAY, F.R.C.S.,

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FORCIBLE reduction of angular curvature of the spine resulting from Pott's disease is at present being extensively practised, and any facts that may help us in forming an opinion as to the ultimate benefits likely to follow this line of treatment should be recorded.

My experience has been far too recent to permit of any dogmatic statement as to whether forcible reduction of an angular curvature will or will not in the future be a recognised surgical procedure, but as two of my cases have died, and I have had the opportunity of seeing the condition of the spines of these children two and three months after operation, a short description of the condition found will no doubt be of interest.

The first case was that of a boy, 4 years of age, who had suffered from spine disease for three years. He was admitted into the Liverpool Infirmary for Children under my care in September last. There was a marked angular curvature in the lower dorsal region, but the child was otherwise in fair health. There was no abscess, nor was there any paralysis.

Fig. 2.—E. P., aged 3½ years, before operation.

I forcibly straightened the spine under chloroform on September 17th, and applied a plaster jacket. The child was sent home ten days later, and I did not see him again until November 6th, when he was suffering from pneumonia of the right lung, from which he died on the following day. The condition of the spine is represented in the accompanying photograph (Fig. 1), kindly taken for me by my friend, Mr. Robert Bickersteth. The disease had involved three of the

Fig. 1.—A. R., aged 4 years. History of spine disease for three years. Marked angular curvature lower dorsal region; no abscess, no paralysis. Forcible straightening September 17th, 1897. Death from pneumonia November 7th. The disease involved three vertebrae and completely destroyed one. The gap caused by the forcible straightening has resulted in the formation of a false joint, which was bounded by caseous and diseased tissue. There was no evidence of repair. From a photograph by Mr. Robert Bickersteth.

Fig. 3.—Spine of E. P. three months after operation. From a photograph by Mr. Robert Bickersteth.

dorsal vertebræ, completely destroying one of them. There was not the slightest evidence of repair, but the gap formed by the straightening had resolved itself into a "false joint" bounded by caseous and diseased tissue. There was no abscess nor evidence of general tuberculosis, and the immediate cause of death—extensive pneumonia of the right lung—could be in no way attributed to the operation. The specimen of the spine was shown at a recent meeting of the Clinical Society.

The other case was that of a girl, aged 3½ years, who had suffered from spine disease for about two years. She was admitted into hospital in August last, and her condition then is well shown in the accompanying photograph (Fig. 2), for which I am indebted to Dr. Llewellyn Morgan. The spine was forcibly straightened on August 20th, and she was sent to a convalescent home ten days later. She subsequently returned home in good health, but was readmitted into hospital on November 10th with symptoms of meningitis, from which she died on November 15th—three months after her back had been straightened.

After death her back was found to be very "wobbly" at the seat of fracture. The condition of the spine is represented in the photograph (Fig. 3) taken by Mr. Bickersteth, and is much the same as in the other case. Though the child had been kept lying since the operation—that is, for three months—there was not the least evidence of repair nor any attempt at the filling-in of the gap. There was general tuberculosis, the immediate cause of death being tuberculous meningitis.

Knowing as we do the remarkable absence of the formation of new bone in tuberculous disease, the state of affairs found in the above cases is in no way surprising; but, in view of these facts, it will surely be wise to stop operating for the present and await results, even if we have to wait for two or three years.

I feel sure that some permanent advance in the treatment of spine disease will be the outcome of the revival of interest in this branch of surgery. That it will not be such a great advance as some surgeons would have us believe I think there can be little doubt; but I sincerely hope it will be a greater advance than some of us expect.

RHEUMATOID ARTHRITIS (OSTEITIS DEFORMANS) AFFECTING BONES 5,500 YEARS OLD.

(With Plate of Illustrations.)

By W. PAGE MAY, M.D., B.Sc., M.R.C.P.,

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I AM indebted to Professor Flinders Petrie for his kindness in allowing me to examine and publish an account of the following interesting and important case. The bones were discovered by Professor Petrie, and form one of the many valuable finds of his last winter's exploration. They are now at least 5,500 years old, and show pathognomonic signs of having been affected with rheumatoid arthritis (osteitis deformans). Professor Petrie has kindly favoured me with the following information respecting them: "The body was found complete (not disassembled), at full length, in wrappings of linen, in a solid block coffin without a lid. The tomb was in the middle of a cemetery of the Fifth Dynasty, at Deshashah; and the burial, both in the mode of wrapping and the coffin, was like others of the above date around it. No doubt can be raised as to its being of the same age as the 150 tombs of that cemetery. The hooked position of the fingers is due to disease, and not to intentional arrangement, for no such bending has otherwise been found."

The date of the cemetery is fixed with certainty to the old empire by the pottery and the scenes in two inscribed tombs, and to the Fifth Dynasty rather than to the Fourth, by the style (very definite and now quite well known) of some statues of Nef Kheft Ka.

Perhaps it will be interesting to give at first the dimensions of the skeleton:

	Mm.		Mm.
Left tibia	382	Scapula, height	145
Right tibia	384	" breadth	105
Left femur, maximum ...	396	Skull, length to the brow (Broca) ...	181
Right	451	" length over brow (Flowers) ...	180
Fibula, maximum	366	Parietal breadth	139
Humerus, maximum	313	Bi-audicular	121
" oblique	310	Height	135
Radius, maximum	236	Baso-nasal	100
" axial	223	Baso-alveolar	90
Ulna, maximum	257	Orbital height	34
" axial	252	Orbital breadth	42
Clavicle, maximum	152	Nasal height	46
Sacrum, from tip to tip ...	111	Nasal breadth	26
Maximum breadth	115	Between eyes	24

These are the measurements by Professor Petrie. The skeleton was that of a man between fifty and sixty years old. The skull was well formed, but slightly asymmetrical. The right frontal region and eminence and right parietal eminence are slightly fuller than the left. The interparietal suture is completely ankylosed, and also for the most part, the occipito-parietals. The skull shows nothing abnormal, except in the maxillary joint, which is irregular on both sides. The articular surface is very hard and polished, but without grooves, and at the margins of the articular surface of the glenoid fossa there is a nodular outgrowth of bone, most marked posteriorly, where it forms a projecting lip about one-eighth of an inch deep. At the anterior margin of the foramen magnum there is a small facet, which must have been more or less in contact with the elongated odontoid process of the axis.

Inferior maxilla: There are changes in the articular surfaces on both sides. The left condyle is enlarged to nearly twice its normal size, though the right if anything is a shade smaller than normal. Both articular surfaces are smooth and polished, but towards the margins are somewhat granular. Around the margins of the articular surface, and especially in the sigmoid notches, there is very distinct nodular outgrowth with irregular lipping of bone. On the right side there is some absorption of bone and the distance between the inferior dental foramen and the condyle is less than on the other side.

The condylar surfaces are normal, but the articular surface for the odontoid process is polished, eburnated, transversely ridged, and about twice its normal size; it is expanded upwards into an irregular outgrowth of porous bone, in which are visible several enlarged Haversian canals. The middle portion of the articular surface is quite smooth like glass, but the marginal portion is more or less porous.

Axis: The odontoid process shows pathognomonic changes due to rheumatoid arthritis. Its articular surface with the atlas is strikingly polished, eburnated, transversely ridged, and is expanded upwards. Above, it extends to the level of the small facet on the anterior margin of the foramen magnum, and terminates abruptly in a flattened facet, which was in contact, though not ankylosed, with that small facet. The anterior margin of the lower border of the body of the axis projects a little irregularly downwards. The remaining articular surfaces are normal, but around them there is a little nodular irregularity.

All the vertebræ are distinctly pathological, but the disease seems to have affected the segments of the vertebral column in direct proportion to their mobility. Hence the cervical vertebræ are more affected than the dorsal, and the dorsal vertebræ more than the lumbar.

The bodies of the vertebræ are flattened, while their anterior margins, both above and below, seem squeezed out into irregular lip-like projections, as shown in the plate, and the bone is very porous. The articular surfaces are mostly normal, but here and there, notably the seventh cervical vertebra (see plate), are enlarged, glossy, and eburnated. The dorsal vertebræ show similar but less-marked changes. There is no ankylosis anywhere; the articular surfaces with the ribs are practically normal, but the intervertebral articular surfaces are, in some cases, affected. Shoulder-joints: Distinctly though slightly affected, and more so on the left than on the right side. The cartilage of the glenoid cavity is for the most part smooth, but in the lower portion of the left side shows a crescentic ridge. The bone is partly eburnated. On the outer portions of the articular surface of the glenoid cavity, and especially marked in its lower quadrant, are small nodular bony outgrowths. The left scapula is