

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.,

Fellow of University College, London; Formerly Medical Registrar and Pathologist to the City of London Hospital for Diseases of the Chest.

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 dissevered), 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 Deshasheh; 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 Nén 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

slightly smaller than the right, and its processes are distinctly so; the heads of the humeri show similar changes; elbow-joints scarcely affected; wrist-joints slightly affected. The hands still show the deformity produced by the disease, and alone would afford unequivocal evidence of rheumatoid arthritis. Viewed laterally, there is a depression over the centre of the small bones of the wrist. The metacarpal bones are displaced towards the ulnar side (see plate). The proximal phalanges are over-extended (dorsi-flexed) on the metacarpals, and the two terminal joints are strongly flexed, producing a typical example of the deformity known as the claw hand, so frequently seen in the later stages of muscular atrophy or in ulnar paralysis. But the small joints of the hands are swollen and fusiform, with small irregular nodular outgrowths, and present the typical changes of rheumatoid arthritis. The hip-joints are practically normal. The knee-joints are distinctly affected, especially on the left side; they show the cartilages affected with patches of erosion and eburnation, and present irregular nodular outgrowths, with marked swelling of the lower fourth of the femur. Ankles: The articular surfaces are normal, except on each inner side of the astragalus, where there is some erosion of cartilage with polished bone. The joints show slight irregular nodular outgrowths. The bones and joints of the tarsus are for the most part normal, but the calcaneo-cuboid joint is affected, and more so on the left than on the right side. The tarso-metatarsal joints show only slight changes, but the metatarso-phalangeal joints are markedly affected, the peripheral joints more than the proximal. The terminal joints in both feet are ankylosed in the position of flexion (see plate), and show marked irregular outgrowth of the nodules all round the joints.

Through the kindness of Dr. Blaxall, I investigated in his laboratory the microscopic structure of small portions of the articular surface of the lower knee-joint, with the hope that traces might still persist of the special dumbbell-shaped bacillus found by Drs. Bannatyne and Wohlmann, of Bath, in cases of rheumatoid arthritis, and more particularly investigated by Dr. Blaxall. Sections of the cartilage of the condyles of the left femur showed distinct fibrillation of the matrix (as pictured by Ziegler in cases of osteitis deformans).¹

On staining some sections by the method recommended by Dr. Blaxall with gentian violet and aniline methylene blue for three to five days, and then examining under the high power of the microscope in the ordinary way, one observed small bodies resembling in number and appearance the minute bacilli described by him as occurring in cases of rheumatoid arthritis, but the evidence was so doubtful that one had reluctantly to come to the conclusion that the presence of the specific organisms in this case remained unproved.

It will be seen from the above description that unequivocal evidences of the pathological changes of rheumatoid arthritis are present in these bones. The cartilages and bones of the joints show degenerative changes associated with hyperplastic bony outgrowths, and present a picture which is pathognomonic. The eburnation and grooving of the articular surfaces, combined with nodular outgrowth and lipping of bone, is only found in cases of rheumatoid arthritis (osteitis deformans). Moreover, the widespread distribution of the effects of the disease, and its incidence chiefly in the joints of the hands, producing a characteristic deformity, places the question beyond doubt.

The changes in the articulation of the atlas and axis in the maxillary joint, in the knee-joints, in the joints of the hands or of the feet, are alone in each instance quite sufficient to justify a diagnosis of rheumatoid arthritis. It is interesting to notice, however, that in many so-called cases of symmetrical disease the incidence of the disease is slightly more on one side of the body than on the other. In this case the left side is chiefly affected.

With regard to the position of the terminal phalanges of the hands, the position assumed (so-called claw-shape) is not common in rheumatoid arthritis. In this particular case the left ulna had been fractured during life at the junction of its lower third and upper two-thirds; and therefore it is probable that the ulnar nerve may have become more or less involved, and determining a certain amount of ulnar paralysis, may

have alone produced on that side the very commonly associated claw-shaped deformity, or have determined the deformity produced by the affected joints.

In another case which I saw the disease affected the knee-joints only, and in this instance the pathological changes were so marked as to form one of the most striking and typical examples of the disease which could be seen anywhere.

In some bones showing changes of osteo-arthritis brought before the Pathological Society by Mr. F. S. Eve,² and dating from the XVIII Dynasty, that is, about 1300 B.C., changes due to periostitis were associated, but in the subject of the present note no such changes were observable.

It is interesting to find evidences of rheumatoid arthritis existing so long ago as 3,700 years B.C., and more especially in a country the climate of which offers one of the best therapeutic factors which we possess for the treatment of this particular disease. It is possible that the person affected in this case may have been merely a visitor to Egypt. Intercourse between the Egyptians and Asiatics or Europeans was extremely common at this period of Egyptian history, and then, as now, persons frequently visited Egypt for the benefit of their health. But it is more probable, both from the characteristics of the skeleton itself, and from its having been found in an Egyptian cemetery, that the subject was an Egyptian. One has merely to observe how the modern Egyptians perpetuate the mode of living of their ancestors in being insufficiently clad, and constantly exposing themselves to varying changes of temperature and moisture, to realise how a disease whose chief causal factors are damp and cold may have originated.

As far as I have been able to find in medical works the above subject is more than 2,000 years earlier than any previously recorded case.

REFERENCES.

¹Bannatyne, *Rheumatoid Arthritis*, 1896, p. 72; Ziegler, *Lehrbuch der allgem. Path.*, Band II, 1895, p. 223. ²Bones of Ancient Egyptians showing Periostitis associated with Osteo-Arthritis and Symmetrical Senile Atrophy of the Skull, *Trans. Path. Soc.*, 1890, vol. xli

CARCINOMA OF PYLORUS: PYLORECTOMY.*

By T. R. JESSOP, F.R.C.S.,

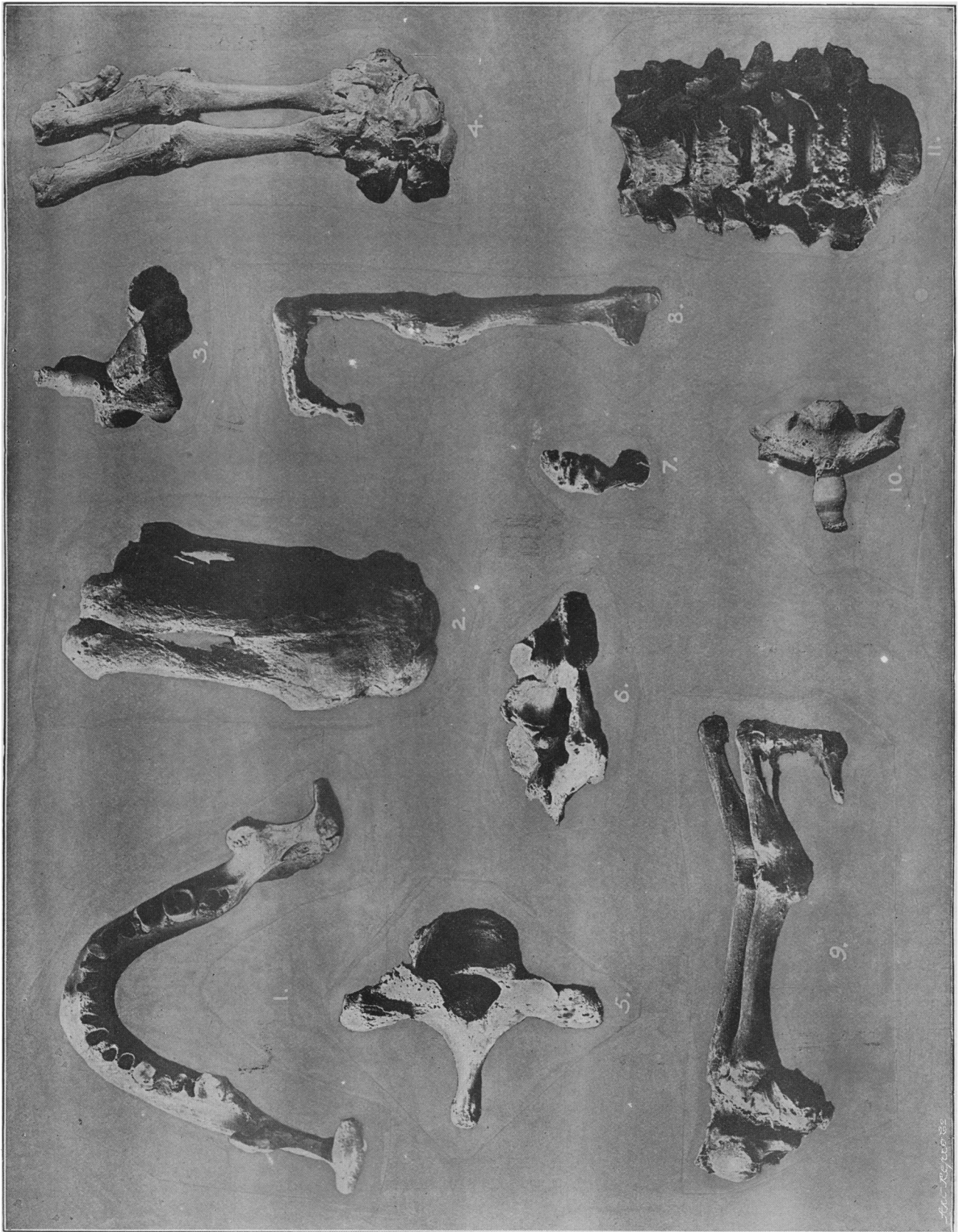
Consulting Surgeon to the Leeds General Infirmary.

THE operation of pylorotomy for cancer has not, to use a homely phrase, taken hold in the profession to an extent at all comparable with many other modern achievements in abdominal surgery. The difficulties and the uncertainty attendant upon an early diagnosis, the rapidity with which in many instances at least the disease spreads along the walls of the stomach and duodenum, and the consequent magnitude of the mutilation necessitated in its removal, the frequent absence or abeyance of unequivocal symptoms until the very last stages of the disease have been reached, the early infection of associated glands, the marked cachexia and low vitality which characterise a large proportion of the subjects of this disease, are amongst the most potent reasons for this halt in the general acceptance of the operation as an established mode of treatment. If only we could diagnose with certainty pyloric cancer in its early stages, whilst still it is limited in extent, and before it has commenced to disseminate its products, at a time, too, when the patient's powers are but little impaired, the cases already on record sufficiently testify to the immense value of the operation. A patient upon whom I operated in December, 1891, and whose history is given in the BRITISH MEDICAL JOURNAL of January, 1895, is still in robust health and suffers no inconvenience whatever from the removal of her pylorus.

The case I am about to relate—albeit two at least have been published in which more extensive removals were effected—presented by far the largest growth I have ever attempted to remove, and on this account, as well as for other reasons, is deemed worthy of being recorded.

History.—Mrs. D., aged 28, was sent on May 4th, 1896, by Dr. Hogarth, of Morecambe, with a note, in which he informed me that the patient gave a history of daily vomiting

* Read before the Yorkshire Branch at Scarborough.



To show some of the bones affected with rheumatoid arthritis 5,500 years ago. 1. The inferior maxilla showing affection of the condyles. 2, 4, 8, and 9. Bones of the hands, showing affection of joints and the resulting deformity. 5. Seventh cervical vertebra, showing enlargement and eburnation of the intervertebral articulations. 3 and 10. The axis showing eburnation, growing and lipping of the bones. 6. The atlas showing similar changes. 11. Changes in the vertebra (cervical). 7. Ankylosis of the terminal joints, of a toe with numerous nodular outgrowths.