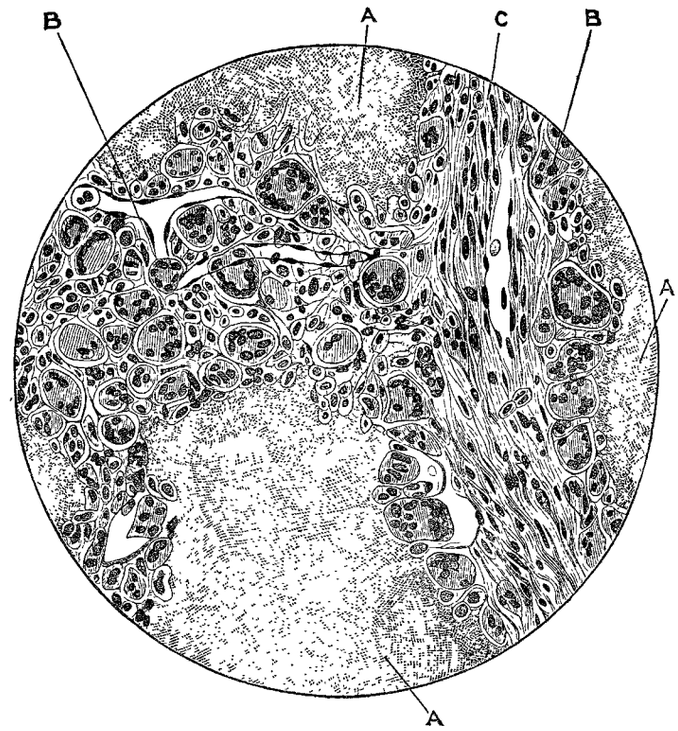
process, as is well known, consists of an abnormal vegetation of adenoid tissue in the bone marrow, which on post-mortem examination is found to be soft (lymphoid) from the preponderance of cellular elements; or at times it is sclerotic from the development of fibrous tissue, the fat being completely and the trabeculæ and cortical substance of the bone more or less extensively atrophied. If the proliferation is mainly active in the subchondral part, it is apt to perforate the cartilage and to induce in it metaplastic changes[12]; it may also pass out of the medullary cavity, along the channels of the nutrient vessels, and then spread in the periarticular tissues. In these circumstances myeloma is prone to simulate rheumatism—not merely rheumatism in the loose sense in which the term is commonly used, but an acute form which as nearly as possible approaches the adopted prototype in all its essentials, and another subacute or chronic form which not infrequently leads to extensive fibrous ankylosis and deformities of both the large and small joints.[13] From what I myself have seen I have no doubt that those cases of rheumatism which were especially noticed on account of their supposed complications with "rheumatic buboes,"[14] or the chronic arthritis with enlarged glands,[15] are really instances in point.

But myeloma may also counterfeit gout when the joints of the hands and feet are primarily or mainly affected. The articular manifestations are, as a rule, preceded for an indefinite period by fixed or neuralgiform pains in those parts of the osseous system which retain lymphoid marrow throughout adult life. At this time the clinical picture is not sufficiently distinct nor, perhaps, adequately appreciated to allow any other but the soothing diagnosis of neuralgia, lumbago, &c. At last the fingers, toes, heels, ankles, and wrists become simultaneously or successively red, swollen, and painful[16]; and after a week or more all those symptoms subside, either without leaving any traces or with the production of the deformities above mentioned. The patient and his friends almost welcome the open attacks of the enemy, whose existence had long been suspected; for gout has no terrors but is considered rather a mark of some social distinction. But even the unbiased observer may meet here with equivocal and misleading elements. There may be, and often is, a considerable amount of obesity concealing the inroad of the anæmia. The patient usually preserves an almost ravenous appetite and, without being necessarily intemperate, is in the habit of taking a fair quantity of stimulants. The disease itself may run a course, protracted for years,[17] during which the process is arrested in one bone and reappears in another,[18] so that paroxysms of acute suffering alternate with intervals of comparative well-being, which enables the sufferer to resume without much effort his usual pursuits of business or pleasure. A small number of lymphoid or fibroid neoplasms of various sizes may develop themselves either imperceptibly or under slight irritation in the skin of the face or around the joints. Nay, the thread test, if practised, would reveal the presence of uric acid in the blood and the serum.

No resemblance could be closer and nothing could apparently more fully justify a diagnosis of gout upon the current principles than the facts just enumerated. This seeming identity in the clinical aspects of both diseases obtains additional support from a similarity also in the anatomical details; for I may here state that the gouty nodules and nodes—commonly called tophi—whether upon the ear, in the pulp of the finger, around a joint, or within a bone, not infrequently present a texture which is not unlike some forms of sarcoma. Fig. 3, for instance, shows a section of a nodule in the first metatarsal bone in Case 1, as above related. The tophus was of white colour, of the size of a cherry stone, situated about a quarter of an inch from the inner margin of the articular cartilage and surrounded on all sides by spongy tissue. Scrapings from the white mass gave the murexide test. On microscopical examination there were found hyaline (Ebstein's necrotic) areas (Fig. 3, A, A, A), thickly coated with urates in the shape of needles, which have been washed out in the present preparation, and between them nests of giant cells (Fig. 3, B, B) and vascular fibrous tissue (Fig. 3, C). Yet, notwithstanding all those points of contact, there remains this difference—that in the one set of cases there are uratic deposits and in the other set of cases there are none—a difference, as it appears to me, due more immediately to the relative states of the kidneys. For in gout there is a recurrent form of nephritis which terminates in granular atrophy, and though the compensation of the defect may for a time be almost complete, it is yet readily disturbed, with well-known consequences; whereas in the myeloma

FIG. 3.



Section of a tophus in the subchondral part of the first metatarsal bone of Case 1. A, A, A, Hyaline [Ebstein's necrotic areas. B, B, Nests of giant cells. C, Vascular fibrous tissue. Zeis, D.O. 3.

here under notice those organs, if involved at all, are found to be larger than normal and the seat of a diffuse or circumscribed lymphomatous infiltration, in spite of which changes they continue to eliminate all waste products as long as the energy of the heart is not too much impaired. In addition to the copious watery discharges from the skin and the gastro-intestinal canal, the quantity of urine within the twenty-four hours is above the normal and of high specific gravity; the uric acid excreted during the same period is relatively and absolutely increased, and continues so before, during, and after the paroxysms almost until the fatal end. Casts are of rare occurrence, at all events in the early stages, but albumose is generally present from the commencement and persistently appears throughout the course of the disease.

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[12] Waldeyer: Diffuse Hyperplasie des Knochenmarkes, &c., Virchow's Archiv, vol. lii., p. 316. 1871.

[13] Vide Busch, loc. cit. — Zahn: loc. cit. — Kozuszkiewicz: Ueber Pseudoleukaemie, Inaugural-Dissertation, Halle, 1887.

[14] Brissaud: Revue de Médecine, 1885.

[15] Barlow: Clinical Society's Transactions, vol. xxii., p. 328.

[16] O. Kahler: Zur Symptomatologie des multiplen Myeloms, Prager Medicinische Wochenschrift, 1889, No. 4.

[17] Fifteen years in the case of Waldeyer; eight years in that of Kahler.

[18] Penfick quoted by Mosler: Symptomatologie der myelogenen Leukaemie, Berliner Klinische Wochenschrift, December, 1876, p. 703.

ON THE ADVANTAGE OF THE STEEL SCREW IN THE TREATMENT OF UNUNITED FRACTURES.

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THE results of the treatment of ununited fractures by operation have in my hands differed very considerably from those obtained from the performance of similar operations upon recent simple or compound fractures. I have operated on a large number of recent fractures, both simple and compound, of such bones as the patella, tibia, fibula, clavicle, jaw, &c., and have always succeeded in obtaining good bony union. In every case I have thoroughly exposed the fragments, removed everything that intervened between the broken surfaces, and retained them in accurate apposition

by means of wire sutures. Such operations present no difficulty whatever unless the comminution is considerable. In ununited fractures, however, the results obtained by operative interference are too often disappointing. They usually bear a direct proportion to the length of time that has elapsed between the fracture and the operation. Even after the most thorough removal of the acquired amphiarthrodial joint and the most careful attempts to retain the sawn surfaces in apposition by means of silver wire I have too often found that bony union did not result. In the case of such bones as the patella and olecranon the result of the operation is always satisfactory, since if bony union is not obtained the fibrous tissue uniting the fragments is so dense and shallow as not to allow of any play whatever or to make the discovery of this imperfect union difficult or even impossible; but in the case of ununited fractures in the shafts of long bones, and especially in those of the lower extremity, the presence of ligamentous union, however firm, means a more or less completely useless limb. In order to obtain success in operating in such cases I find that the two following conditions must be complied with: 1. The surgeon must not be satisfied with removing a thin layer of bone on each side of the fibrous ankylosis, but a good thick slice must be taken off the end of either fragment so as to expose the normal structure of the shaft. It would seem that the bone in the immediate vicinity of the acquired amphiarthrodial joint undergoes such vascular changes as interfere with its taking an active share in the formation of callus and bony ankylosis of the fragments. If a thick slice of bone which has been sawn off one of the fragments in such an operation is divided vertically, the bone in immediate relationship with the false joint will be found to be dense and comparatively evascular, and this condition will be found to extend for an unexpected distance into the shaft. Therefore in order to obtain bony union with any certainty it is necessary to sacrifice a considerable portion of the length of the limb, and the amount of bone removed from each fragment must bear a direct relationship to the duration of the interval that has elapsed since the injury. Such operations are sometimes the most difficult in surgery, especially when performed for ununited fractures of the tibia in its upper third. The difficulty is sometimes greatly increased by the necessary removal of a portion of the fibula, this bone not having been broken at the same time as the tibia, or, if it had been, union had ensued in it. Such conditions of non-union of fractures in the leg are, in my experience, always the result of the application of the principle of the vertical footpiece, and I trust that since the fallacy of that treatment has been satisfactorily exploded [1] surgeons will not have to deal with such difficult cases in the future. 2. The recently sawn surfaces of bone must be retained immovably in accurate apposition. I have frequently found the greatest difficulty in retaining the freshly sawn surfaces of bone in accurate and firm apposition by means of silver wire, for the reason that the oblique sectional planes presented by the fragments are in different vertical levels and tend, when fastened together with wire, to separate vertically, however firmly they may be clamped together during the boring of the holes, and however great the strain exerted on the wire during its fixation in position. Again, the circumstances are quite different from those present in a recent fracture, where, as is well known, if sufficient care and trouble are taken the broken surfaces will correspond exactly. In the case of the ununited fracture the plane of the fracture is often only to be guessed at, since it has been much modified by the formation of callus &c. I have been much disappointed on several occasions, on cutting down on cases of ununited fracture in which an operation had been performed without success, to find the loop of wire lying comparatively loose in the bones. I therefore determined to try what I could do by using screws instead of wire and then found that I was able to bring and to retain the opposing surfaces of bone into the most accurate and forcible apposition by means of this powerful instrument. The use of two screws is much more advantageous than of one alone, for the reason that any rotation of the bony surfaces upon one another around the screw as an axis is completely obviated. The screws produce no irritation whatever and do not require to be removed. I should have found some of these operations impracticable but for Gowan's osteotome, which is an invaluable instrument under these circumstances. With it one is enabled to ensure accuracy of parallelism in the sectional planes with a minimum of damage to adjacent vessels (a matter occasionally of no little importance), and by using the clamp portion of the instrument without the saw the cut surfaces can be held firmly and immovably in apposition during the boring of the holes and while the screw is being driven in. It is well to remember that it is by means of the final turns of the screw that firmness and accuracy of apposition are obtained.

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[1] The Fallacy of the Vertical Footpiece, Brit. Med. Jour., 1893.

CASE OF CEREBELLAR HÆMORRHAGE, WITH HYDATID DISEASE OF LIVER.

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A MARRIED WOMAN fifty-two years of age was admitted to the Counties Asylum, Carlisle, on July 15th, 1892, suffering from an attack of mania. She had been in the asylum on three previous occasions for the treatment of mania, the first time being in 1876. The patient was a tall spare woman, a good deal run down in bodily health. She had a mitral regurgitant murmur, otherwise no marked organic disease was noted in any of the viscera; there was the scar of an incision for removal of a tumour of the right breast, operated on before her first attack of insanity in 1876. The family history was negative. Her former attacks of excitement had been of short duration, and on none of these occasions had any bodily disorder beyond mitral incompetence been detected while she was in the asylum. She remained subacutely excited for some time after admission, and up till the date of her death she had frequent short but severe outbreaks of excitement; in the intervals she was quiet, orderly, and a good worker. With good diet and the administration of tonics her bodily condition improved, and she became stouter and more healthy in appearance. During all the time she was in the asylum she made no complaint of sickness or abdominal pain; her abdomen was not visibly distended, and there were never any symptoms calling for detailed physical examination of the abdominal viscera. On the afternoon of Sept. 18th last the patient was in a restless, excited state, running about and talking in a noisy, incoherent manner. She suddenly complained of feeling sick, fell down powerless, said she felt as if she were dying, and almost immediately became unconscious; her bowels were moved loosely. I saw her within a few minutes of the attack and found her completely comatose, lying on her back with her eyes half open; the conjunctivæ were quite insensitive; the pupils were contracted, the left being slightly larger than the right; both pupils reacted very sluggishly; the respiration was 16 per minute, laboured and stertorous; the pulse was 78, irregular, and the tension rather high. She was hemiplegic on the left side, but occasionally moved her right arm and leg; the superficial and deep reflexes were abolished. There was a rough mitral systolic murmur. The coma steadily deepened, the pulse became very feeble, flickering and irregular, the respiration became slower and less noisy, and the pupils contracted to the size of pin points. She died within an hour of the onset of the attack. Just at the time of death the pupils became widely dilated.

Post-mortem examination, eighteen hours after death.—The brain showed thickening and adhesion of the dura mater, opacity of the arachnoid, and some atrophy of the cerebral convolutions, with excess of subarachnoid fluid; the vessels at the base were atheromatous. The cause of death was found to be a large hæmorrhage into the right lobe of the cerebellum, the interior of which was completely disorganised and filled with recent blood-clot; there was some laceration of the under surface of the right lobe of the cerebellum, from which blood-clot was protruding, exercising pressure on the medulla and pons. The left ventricle of the heart was hypertrophied. The mitral valve was incompetent, its cusps being thickened and contracted; the base of the aorta was atheromatous. The right lung was bound down by extensive old adhesions to the chest wall, otherwise it was healthy. The left lung was healthy and free. The kidneys were cirrhotic. The spleen, stomach and intestines were healthy. The liver was greatly enlarged; it weighed 98 oz. The enlargement affected the upper and posterior portion of the right lobe, which projected upwards towards the right pleural cavity; there was little or no displacement downwards of the lower edge of the liver; there were two large cysts lying side by side in the region of