"THE SKULL OF LORD DARNLEY."

BY

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WHEN Sir Arthur Keith, on August 1st, asked me to examine the reputed skull and femur of Lord Darnley I did not know that Professor Pearson's monograph (discussed by him in the *British Medical Journal* of September 8th, at page 456) was already printed. I subjected the skull and femur to radiographic examination, and concluded that neither could

FIG. 1.—Radiogram of the basi-cranial axis, showing the absence of any trace of recent union of the basi-occiput and basi-sphenoid bones.

have belonged to Lord Darnley, who was not more than 22 years of age at the time of his death. Furthermore, the lesions of the skull which are reputed to be syphilitic show none of the pathological bone changes associated with the disease. I submitted my report to Sir Arthur Keith on August 12th, and I propose to add nothing to it. However much one may admire Professor Pearson's

invincible patience in the attempt to rehabilitate one of the many red-haired hussies who have crossed the stage of time, and however much one may be impressed by his well-known partiality for the red-haired section of the community, anatomical truth is not concerned with virtue, morals, or the meretricious wiles of the satellites of the Court. I append the report which I submitted to Sir Arthur Keith on August 12th, and I suggest that a committee of the Pathological Society be asked to report on the question of whether the lesions of the skull are syphilitic or artefact, for there are still a few pathologists acquainted with the protean manifestations of syphilis. Professor Pearson might perhaps be excused for omitting to submit the skull to the examination of anatomists, for few anatomists know much about the age changes in the skull; but why the help of "a distinguished American pathologist" should have been sought as a diagnostic guide by one working in the precincts of the late Sir William Gowers is beyond me.

REPORT ON THE SKULL AND FEMUR OF "LORD DARNLEY."

A. THE SKULL.

I. Gross Appearance.

The skull is that of a male with a cranial capacity of about 1,350 c.cm., and is strikingly low in the brow. The auricular height is about 2 to 2.5 cm. below the average for British skulls. The thickness of the skull with the appearance of the section suggests no pathological condition, and is well within normal anatomical limits for a skull in the third or fourth decade.

II. Suture Union.

All the sutures are open except (1) the sphenoccipital suture, (2) the sagittal suture.

1. *The Sphenoccipital Suture.*—Both to naked-eye examination on the sectioned skull and to radiographic examination there is no trace of this suture of the basi-cranial axis. Further, there is no trace on the radiogram (Fig. 1) of the line of fusion. The faint parallel lines visible on the cut surface of the left half of the skull normal to the ventral surface extend but a portion of the way across the section, and correspond to the bony walls of a venous channel. This vascular channel with its surrounding bony condensation lies in the centre of the ventral aspect of the basi-occipital, and is too near the anterior margin of the foramen magnum to be related to the sphenoccipital suture. Thus the absence of the cartilaginous suture and the absence of the dense line of bony union at the suture suggest that the skull is at least more than 25 years of age.

2. *The Sagittal Suture.*—The sagittal suture is closed both ectocranially and endocranially except over a distance of

1 cm. at a short distance behind the bregma. The lapsed union of this small portion, in relation to the underlying motor and secondary sensory areas, is a common feature of any collection of skulls, and should be discounted in assessing age. The absence of any closure in the other sutures of the cranial vault suggests that the skull is definitely less than 38 years. The complete closure of the sagittal suture as a whole indicates that the age of the skull is over 25, and possibly over 30.

III. Radiographic Examination.

1. *Venous Sinuses of the Diploë.*—The radiograms of the two halves of the sectioned skull show a high state of development of the venous sinuses of the diploë. These venous sinuses usually reach their maximum development in the fifth decade. This skull, therefore, would appear to belong to a man in the fourth decade. It is extremely rare to see such development of the venous sinuses of the diploë under 30 years of age.

2. *The Meningeal Grooves.*—The grooves due to the meningeal vessels on the inner aspect of the cranium offer no abnormal feature. There is no evidence of pathological bone formation in relation thereto.

IV. The "Lesions" of the Vault.

Both naked-eye and radiographic examination fail to indicate any evidence of that tissue reaction which is invariably registered by areas of rarefaction in relation to areas of hyperostosis. The "lesions" are limited entirely to the outside of the skull, and especially to the right half. They are produced by an artefact such as a blunt burr or bradawl. The fact that the diameter increases with the depth, the absence of changes in the margin, and the relative uniformity of the lesions suggest the handiwork of man. Here and there several such "lesions" have been run into one another so as to simulate a serpiginous lesion. A "lesion" in the right mastoid process displays the non-pathological features clearly.

The radiograms illustrate the sites of the bony "lesions." There are visible on the radiogram a few dense shadows. These correspond to flecks of white paint on the outer surface of the skull; the ones near the postero-inferior angle of the left parietal and on the right frontal bone are very well marked (Fig. 2).

FIG. 2.—Radiogram of the right half of the skull, showing the areas of erosion devoid of surrounding areas of hyperostosis. The venous sinuses of the diploë and the meningeal veins are well shown.

V. Microscopic Examination.

The three slides show:

- (1) Scrapings of the white paint from the outer surface of the skull. These flecks are visible on the radiogram (Fig. 2).
- (2) Debris consisting of dust and varnish (shellac) from one of the depressed "lesions."
- (3) The negative result of repeated testing for haemin crystals.

VI. The Staining of the Skull.

The outer aspect of the skull has been coated with shellac varnish. The inner aspect is deeply stained on the left side with old blood clots, which may have been the result of the normal *post-mortem* changes apart from injury to the skull or

brain. The relative absence of staining within the right half suggests that the body lay after death on the left side.

The "lesions" occur mainly on the right side of the skull, and it was at first thought that molten metal (such as that from a lead coffin) might have produced the "lesions." No trace of a heavy metal could be found therein radiographically or chemically, and no trace of charred bone could be found.

Conclusion.

The skull is that of a well-developed but atypically low-browed male of at least 25 to 30 years, displaying no pathological lesion. In particular there is not the slightest evidence of syphilis.

B. THE FEMUR.

1. Gross Appearance.

The right femur is that of a well-developed male of a stature of at least six feet. The muscular and ligamentous markings are not salient and do not suggest association with a highly developed muscular system. There has been *post-mortem* destruction (probably mechanical) of the upper portion of the neck near the head, and, to a lesser degree, of the anterior aspect of the great trochanter. The anterior aspect of the shaft displays some amount of erosion. There is no naked-eye evidence of the lines of epiphyseal fusion.

II. Radiographic Examination.

The radiograms of the proximal and distal extremities of the femur show but little trace of the line of fusion of the upper epiphysis, and no trace of the line of fusion of the lower epiphysis. Thus the femur is that of a man of an age considerably over 21, and probably over 25 years of age. The absence of the line of fusion of the distal epiphysis suggests that the man must have led an active life for many years after reaching adolescence, as such lines tend to persist more markedly in those of a relatively sedentary habit. The circular area of increased density in relation to the medial border of the external condyle of the femur is the dense plaque of bone at the insertion of the anterior cruciate ligament.

III. Pathological Examination.

There is no trace on the bone or on the radiogram of any abnormal periosteal or endosteal inflammatory reaction. The femur has been heavily varnished with a shellac varnish, and a portion of the scale removed was seen to consist of shellac only. There is no evidence of a syphilitic periostitis.

Conclusion.

No syphilis. No Lord Darnley.

Australia.

[FROM OUR OWN CORRESPONDENTS.]

University of Sydney.

PROFESSOR F. P. SANDES and DR. AENEAS MACDONNELL have been nominated by the Senate to represent the University of Sydney at the first annual meeting of the College of Surgeons of Australasia, to be held at Canberra from March 31st to April 2nd next year. The Council of Advice to the Pastures Protection Board of New South Wales has intimated that approximately £2,500 per annum has been promised for a period of five years by various pastures protection boards for the purpose of assisting the University Veterinary Science School and the Glenfield Research Station with funds to enable research work to be undertaken as an extension to present activities. The council asked for advice how the amounts subscribed could be best expended. The late Professor Liversidge has bequeathed to the University a sum of £2,000 to form a scholarship fund for proficiency in chemistry, and a sum of £500 to found a research lectureship in chemistry.

Hospital Maintenance.

Figures furnished by the New South Wales Ministry for Public Health show that during the eleven months to the end of last November £531,696 had been spent in hospital maintenance, including subsidy, special grants, and the liquidation of overdrafts. Of this, the Sydney Hospital received £104,629, the Royal Prince Alfred Hospital £64,749, and the Royal North Shore Hospital £36,293. Since January 1st additions and alterations to hospitals throughout the State had been carried out at a cost of £74,448. Other items of expendi-

ture during the same period included the cost of ambulance services, £30,207; subsidizing of doctors in bush settlements, £3,982; bush nursing centres, £2,500; and institutions for the deaf, dumb, and blind, £3,050. In the relief of distress £80,282 was expended during the same period by the Chief Secretary's Department.

A Plea for Self-supporting Hospitals.

Professor R. J. A. Berry, dean of the Faculty of Medicine in the University of Melbourne, recently gave an address at Wesley Church on "Hospitals, voluntary or self-supporting?" He pointed out that the world's practice to-day was to concentrate all medical effort—hospitals, laboratories, and pre-clinical sciences—at the one spot, and to endeavour to bring all medical knowledge to bear on the study, treatment, and prevention of disease. This had resulted in the creation of self-supporting hospitals in place of those of the voluntary type. Professor Berry then explained his scheme for the creation of a great medical centre for Melbourne, an account of which was given in the *Journal* of April 21st (p. 680). Proceeding, he said that Great Britain was the home of the voluntary hospital, which was originally a noble charity, and which, up to the beginning of the present century, had fully met the needs of the times, and compared favourably with the hospital system of any other country. To-day, he thought, expert English opinion was against the system, because it had not developed in proportion to the needs of the community, and, further, it had failed to meet the growing needs of the middle classes, to maintain an adequate standard in regard to sites and buildings, and to co-ordinate its services in the interests of the community. Voluntary hospitals were, he alleged, demanding payment from their patients for board, lodging, and food, while for financial reasons they admitted many persons other than the indigent sick. Free medical service by the profession, however, was still retained in its original integrity. Of recent years there had been two main factors at work tending to destroy the voluntary principle: first, the rapid progress of medicine, which had compelled all hospitals to extend their medical activities and equipment; and secondly, the great war, which had impoverished the peoples of Great and Greater Britain. As a result the cost of upkeep per bed in the London voluntary hospitals had increased by 100 per cent., and repeated appeals for financial assistance had to be made to the most heavily taxed people in the world. Many patients, who formerly not only sought private medical advice, but also contributed their offerings to the voluntary hospital, were now seeking free hospital medical treatment—partly from economic reasons, partly because they thought that the well-equipped hospital gave better service than the private nursing home, and partly because the morale of modern democracy was being undermined by bonuses from the State. Professor Berry thought, therefore, that the voluntary hospitals—unless they could revolutionize their finances—were doomed. Although he had been educated under the British voluntary system, it had been impossible for him to pass, as he had done in 1927, from an examination of the voluntary system of Britain to the self-supporting hospitals of America without being profoundly impressed with the latter. These hospitals were not only open to all classes of the community, but were in association with the university. In addition, the medical staffs were well paid for their services, and a contented staff meant an efficient service. In the Canadian and American self-supporting hospitals the sources of revenue were: (1) receipts from endowments; (2) payment for medical and other hospital services from wealthy and middle-class patients; (3) payments from province, State, city, or municipality for the actual cost of board, lodging, and medical treatment accorded to those unable to pay themselves. Under this system the hospitals were not in debt, and the members of the medical profession and others working in them received payment for services rendered. There was no pauperization of the people, and no exploitation of the medical or of any other profession. Professor Berry, therefore, was of the opinion that to enlarge and extend the existing hospitals of the voluntary type on their present inadequate sites would be to perpetuate a system which was gravely open to question and contrary to the world's accumulated medical and practical experience.