THE SKULL OF LORD DARNLEY.*

BY

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THE historian in search of light on the most poignant, hot-blooded, and human of all tragedies recorded in history is not likely to consult the pages of the leading biometrical journal of our time, and yet I am convinced that in those pages Professor Karl Pearson records facts which give us a clue to the behaviour of that embodiment of tragedy Mary Queen of Scots, in the very crisis of her drama. The secret he has to reveal is of a medical nature, for medical secrets have often a more important bearing on the events of national life than orthodox historians have realized. Incidentally, too, Professor Pearson illustrates the part which craniology may play as the handmaid of biography.

Let me first tell the story of the skull and thigh-bone which Professor Pearson attributes to Lord Darnley, father of James I and grandson of Margaret Tudor, sister of King Henry VIII. The skull and thigh-bone are in the Museum of the Royal College of Surgeons, England, and my predecessor, Sir William Flower, described them in the catalogue thus:

"Nos. 345-345¹. A remarkably depressed or tapeinocephalic cranium, and a femur, supposed to belong to the same individual, a male.

"These were purchased by the donor at the sale by Messrs. Sotheby and Co., on March 22nd, 1865, of 'a collection of Fossils and Minerals, etc., formed during last [i.e., 18th] century by the Hon. Archibald Fraser of Lovat,' and described in the catalogue [of the sale] as 'skull and thigh-bone of Lord Darnley.'

"The internal evidence afforded by both bones conclusively negatives their authenticity. Darnley, at the time of his death in 1567, was about 22 years old, and the bones are those of a man considerably more advanced in life and of great muscular development. The almost complete absence of frontal elevation, which is one of the most striking features in the skull, finds no corroboration in any of the known portraits and descriptions of the young Earl, and the femur could not be that of a person invariably described as 'tall' or 'long,' as, calculating at the usual ratio of 27.5 to 100, it would give a height of only 5 feet 2.2 inches.

"Presented by J. W. Belt, Esq., 1869.

"No. 345². A left femur resembling the previous cranium in character and inscribed: 'Thigh-bone of Lord Darnley, husband of Mary Queen of Scots, murdered and blown up Feb. 10th, 1567.'

"Said to have been purchased with the above inscription at a sale at Sotheby and Wilkinson's with two other bones, 'Thigh-bone of Little John, Robin Hood's companion, and shin-bone of Humphrey Duke of Gloster,' by Mr. T. M. Grimshaw (25, Gt. Ormond Street, Bloomsbury), from whom this femur was purchased July 1st, 1880. It is that of a very tall man, and is probably the real thigh-bone belonging to the cranium (345), 345¹ having been accidentally substituted. Length 538 mm."

In the light of subsequent events it is most probable that Mr. Grimshaw sold "Little John's" femur to Mr. Belt as that of Lord Darnley and later sold the real femur to our museum.

With such a verdict passed on them by my predecessor, the Darnley bones sank to the rank of bric-à-brac, and in that class they would have remained had not Professor Pearson come to their rescue. In recent years he has issued monographs "on skulls and portraits" of three famous men: of Sir Thomas Browne, prepared by Miss Miriam Tildesley; of King Robert the Bruce, and of George Buchanan, prepared by himself. It was probably during his search in Edinburgh for documents relating to the Scottish historian George Buchanan that Professor Pearson came across the tracks of Darnley's skull. He found that in 1793 a skull reputed to be that of Lord Darnley had been "preserved among the curiosities of the

Antiquarian Society of Scotland," and that it exhibited "a melancholy proof of the effects of his [Lord Darnley's] incontinence." Professor Pearson found, further, that when the secretary of the society, James Cummyng, "a most ardent collector," died in 1793, some items of the collection were sold along with Cummyng's effects, among them the reputed Darnley skull. The same skull, with the "melancholy marks of incontinence," passed into the possession of the Hon. Archibald Fraser of Lovat (1736-1815), whose collection was sold at Sotheby's on Thursday, March 22nd, 1865. The catalogue of the sale, it appears, is preserved in the British Museum; on consulting it Professor Pearson found:

"Lot No. 164. Skull and thigh-bone of Lord Darnley and cast from life of Oliver Cromwell preserved in the family of Noel."

The lot passed to "Grimshaw" for the sum of six shillings; royal skulls went cheaply in 1865. There is no doubt that the skull and thigh-bone bought by Mr. T. M. Grimshaw at the Lovat sale in 1865 are now the specimens numbered 345 and 345² in the museum of the Royal College of Surgeons.

Having traced the Darnley bones from Edinburgh to London, Professor Pearson turned his attention to their earlier history. Kirk-o'-Field was blown up on the night of February 10th, 1567; Darnley's body was found next morning in a neighbouring field or garden, with no outward injury, and had apparently been removed from his lodgings before they were blown up. His body was embalmed by the Queen's apothecary—for which he was paid £40—enclosed in a leaden casket, and on February 14th placed in the royal vaults of the Abbey Church of Holyrood. There it still was when the roof of the church collapsed in 1768. Later the royal vault became exposed, and somewhere between 1776 and 1778 Darnley's skull was stolen; later one or both of his thigh-bones were removed from his coffin. All we know is that these parts became missing, and that in 1793 a skull reputed to be that of Lord Darnley was in the possession of James Cummyng, an "ardent collector," and a thigh-bone said to be Lord Darnley's was then, or soon after, the property of a collector of curios—the Hon. Archibald Fraser.

Having read Professor Pearson's history of the Darnley bones, I turned again to their examination to see if I could obtain corroboration of his belief in their authenticity. The bones are of a brown tan colour—the colour which is given by burial in peat or in soil containing much vegetable matter. Always in such burials one finds the deep crevices and recesses of the bones—such as the depths of the ear passages and nasal cavities—packed with soil or earthy matter. On looking into the tympanum of the Darnley skull I found the ear bones in place and not a trace of soil, only the weathered tissues. On the deeper and unrubbed surfaces of the cranial bones, as on the femur, there clings a fine film of dry brown material, such as is never found on bones which have been buried in the ordinary way; the appearances seen can be accounted for only by accepting such a history as Professor Pearson postulates for Darnley's bones. Further, I have no doubt the skull and thigh-bones are parts of the same individual; there is a community in their texture and state of preservation which bears out this inference.

But what of the indications of age? Lord Darnley was two years younger than Mary Queen of Scots; he was in his nineteenth year when he married her, being then a tall lanky lad, with a countenance which has been described as effeminate. In February, 1567, when he was murdered, he was in his twenty-second year. Are the bones those of a young man of 22? We have seen that my predecessor regarded them as those of an older person. Professor Pearson scarcely touches on this important point. Dr. H. A. Harris, our leading authority on this matter, informs me that the lower growth line of the femur should be obliterated before the age of 22, and in Darnley's femur this line is not traceable except at one point. We can get no help in determining age from the teeth; they have fallen or been knocked from their sockets, but at their sockets are free from disease and consonant with youth. The other source of information is the state of the sutures of the skull. The growth sutures of the base are closed, as

* The Skull and Portraits of Henry Stewart, Lord Darnley, and their Bearing on the Tragedy of Mary Queen of Scots. By Karl Pearson. *Biometrika*, 1928, vol. xx, Part I, pp. 104, plates xiv.

they always are before the age of 22. All the other sutures are open save one—the sagittal, which passes along the vault and separates right and left parietal bones. It is abnormally short, and has become, throughout the greater part of its course, prematurely obliterated. Strangely enough, this, the most outstanding feature of the Darnley skull, has escaped Professor Pearson's attention. This abnormality of growth is, as we shall see, the key to the chief peculiarities of Darnley's skull. The state of the sutures of the skull and of the lower femoral epiphysis is in keeping with Darnley's known age, and supports Professor Pearson's claim for authenticity.*

Readers of Professor Pearson's monograph will be struck by the pains he has taken to prove that at no time was it possible for the roots of trees or plants to reach the contents of the royal vault at Holyrood. I fear I am the cause of this particular part of his inquiry. One aspect—the right—of the Darnley skull has scattered over it a series of punched-like pits of various sizes, which I regarded, when Professor Pearson began his inquiries, as areas which had been eroded by the action of spreading roots. I had compared the skull with others in the museum which were pitted by syphilitic gummata, and found none to show identical lesions; nor did I find skulls which were known to have been eroded and marked by root action show pits of exactly the same form and character. That a wild and dissolute youth who had grown up in the courts of France and England may have contracted syphilis is probable; historians have suspected that he was a victim. Professor Pearson has reviewed the evidence of his illnesses and is convinced that when Darnley, a youth of 19, left England in the spring of 1565, to woo the Scottish Queen, he had already contracted syphilis, and when he was dallying with the Queen in Stirling Castle the secondary symptoms were upon him. By the end of the following year (1566) the disease, in Professor Pearson's opinion, had made such outward progress that Darnley did not dare to appear at the baptism of his son, who became James I, "because he was unrepresentable." Less than three months later Darnley was murdered.

Professor Pearson holds that the skull now in the Museum of the Royal College of Surgeons is truly that of Darnley, and that its pittings are the result of syphilis which at the time of his death had entered its tertiary or gummatous stage. It is unusual to find syphilis running so rapid a course in these later times, but the course of the disease was probably more precipitate in the middle of the sixteenth century. If Professor Pearson is right that from the days of his courtship until that of his death Darnley was riddled with syphilis and displayed on his body all its loathsome manifestations, then we can understand Mary's feeling of repulsion towards him and take a somewhat more lenient view of her wayward, light, almost criminal conduct at this period of her career.

But is the pitting of the skull really syphilitic? I had given my opinion that it was not, but in the light of Professor Pearson's discoveries I have re-examined all the pits. None of them shows the slightest trace of any inflammatory reaction of the bone in their walls or vicinity; some appear almost as if they had been "punched" out. But at the bottom of most of them is a brown scab; a root which erodes a hole in bone leaves no scab behind such as this. On the other hand, the pits are distributed almost entirely over the right aspect of the skull—the aspect which I supposed had looked upwards in the grave and had presented itself to the down-growing roots; the left aspect, which I had supposed to be the lower, was almost unaffected.†

* Since the above was written Dr. H. A. Harris has made a searching radiographic examination of both skull and femur; his observations lead him to conclude that appearances indicate a man over 25 rather than under that age. Professor T. Wingate Todd, our leading authority on age changes, also thinks that the state of the bones indicates an age over 22 years. While influenced by these weighty opinions, I still believe that further observation will prove that the bones could reach the state here shown at the age of 22.

† Both Professor Todd and Dr. Harris regard the pits as produced by some artificial but unknown means long after death. Dr. Harris noted that both skull and femur had been coated by shellac and that the brown matter contained no haematin.

To settle this important matter, and being also mindful of Huxley's dictum that an unbisected skull is a disgrace to a museum, I caused the Darnley skull to be laid open, to see if there was any mark of syphilis within. There was no such indication, but there was the most definite evidence that the skull had rested on its left side, for in that half was the dried up rim of a pool of that same brown grumous matter which had stained the open interstices of skull and femur. The condition thus revealed supports Professor Pearson's history of the Darnley skull. Further, on examining the cut surfaces of the tabular bones I found a few small cavities in the diploe lined by a thick brown material; roots could not have caused them; I know of no disease which could occasion such cavities except syphilis. So in this matter, too, I was driven to accept Professor Pearson's diagnosis of syphilis and give up my own of root action.

For a youth who stood six foot in his shoes the Darnley skull has a small brain cavity; Professor Pearson's measurement makes it 1,336 c.cm.—about 150 c.cm. under English mediocrity. The "kenspeckle" feature of the skull, however, is its broad, very low, retreating forehead—such a forehead as cannot escape observation and remark in life. Professor Pearson notes the abnormal shortness of the sagittal suture, but leaves its premature obliteration undiscussed. Nor has he called attention to another very remarkable feature—the outward bulge of the squamous parts of the temporal bone. Yet the low, retreating forehead, the small distance which the vault of the skull rises above the ear passages, the short fused sagittal suture, the bulging sides of the skull, all result from the same cause—a breakdown in the normal expansion of the skull to accommodate the growing brain. In this expansion, growth of bone within and along the sagittal suture takes a considerable, if undetermined, share. Failure of sagittal growth demands increased expansion at other sites of growth. The drag backwards of the frontal and the outward bulge of the temporals are attempts to compensate for sagittal failure.

An examination of the interior and cut surfaces of the bisected skull leaves no doubt that the characteristics of the Darnley skull are the result of an inherited anomalous mode of cranial development. Professor Pearson is inclined to be unduly liberal in the application of ugly epithets to Darnley's skull, but for my part it is just those cranial characters, of which Darnley was apparently the victim, which deserve our commiseration. Darnley appears to have inherited this anomaly from his father, the Earl of Lennox, and to have handed it on to his son, James I. This uncommon disorder of cranial growth we may name the "Darnley anomaly," for I have seen other instances of it, and it has all the appearances of a character which may be transmitted in a Mendelian way.*

Does the skull attributed to Darnley correspond with known authentic portraits of the man? Professor Pearson has been at great pains to gain access to, and to reproduce, all the authentic portraits of Lord Darnley, husband of Mary Queen of Scots. Certainly the portraits of Lord Darnley as a lanky youth of 17, preserved in Holyrood and in Windsor Castle, represent just such a youth as we should expect to possess, when the age of 22 was reached, the femur which Professor Pearson attributes to him. But when we come to apply the outline of the skull to the face and head of the portraits we encounter a host of difficulties and contradictions. Most of the portraits are of boyhood; between boyhood and manhood the face undergoes great changes. The facial parts, the jaws, cheekbones, and supraorbital ridges, all the animal parts concerned in mastication, parts which mature after puberty, are strongly developed in the skull now attributed to Darnley. The portraits, especially the early ones, reveal a youth with rather an effeminate face. At all times artists have painted to please their sitters, and the sitters' friends, rather than to produce an anatomical likeness. An artist selects an attitude which pleases himself rather than serves the needs of the craniologist. In my opinion

* Professor Bolk examined the skulls of over 700 young children and found two in which the sagittal suture was completely obliterated and ten in which it was partially obliterated.

one has to strain a point to fit the Darnley skull into his known portraits. Yet the fact remains that the youthful Darnley face revealed by his portraits may have developed into the robust development preserved in the "Darnley" skull.

For my part I hold that, although Professor Pearson has not completely proved his case, he has rendered it highly probable that the skull and thigh-bone preserved in the museum of the Royal College of Surgeons did form part of that youth who played so prominent, proud, and somewhat ignominious a part in a most tumultuous crisis in the history of Scotland. I am indebted to the author of this monograph for demonstrating to all the world how cranio-logy may be made to serve as a handmaid to history, for just as the knowledge of a home gives us a clue to the men and women who occupy it, the knowledge of a skull gives us an intimacy with the kind of brain which at one time had its home within it.

I have reviewed Professor Pearson's monograph at length because it is the result of long and serious inquiry and because it raises a number of important questions which I, as well as other medical men, should be in a position to answer. Is it possible for a femur and skull to have reached the stage of growth seen in the Darnley bones at the age of 22? The answer, in my opinion, is Yes. Is it possible for syphilis in less than two years to pass from the secondary to the tertiary stages of its manifestation and to produce the form of lesion seen in the skull? Is it possible for a youth with effeminate features at the age of 17 to possess such a robust development of jaws as is seen in the skull at the age of 22? Is it possible that it may be a skull from another embalmed burial? When we have obtained evidence to settle all of these questions, or when others have obtained it for us, we shall be compelled to acknowledge that Professor Pearson has proved his contention.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

ANNUAL MEETING IN GLASGOW.

THE ninety-eighth annual meeting of the British Association for the Advancement of Science opened in Glasgow this week, this being the fifth time that the Association has visited that city. Last March a Royal charter of incorporation was granted to the Association. On Wednesday the incoming president, Sir William Bragg, delivered an address dealing with modern developments of the physical sciences and their relation to national problems. The scientific proceedings of the meeting are arranged in thirteen sections—namely, mathematical and physical sciences; chemistry; geology; zoology; geography; economic science and statistics; engineering; anthropology; physiology; psychology; botany; educational science; and agriculture. The variety of topics dealt with under these headings can be imagined, and the programme for the present meeting includes such contrasting subjects as the sources of tin in prehistoric Greece, the metabolism of iodine, the question of hours in industry, the land of the Tuaregs, insects and Empire trade, factors affecting cell growth, the scope of the Child Guidance Clinic, and the biological aspect of the decay of stone in buildings and monuments.

An important announcement was made to the General Committee of the Association with reference to Down House. It will be recalled that on September 10th, 1927 (p. 464), we referred to the welcome news that Mr. George Buxton Browne, F.R.C.S., had generously bought the estate, and established a fund for its upkeep, to permit future generations to visit Darwin's home. It is proposed that the house and grounds shall be used by the British Association for the benefit of science, and that certain of the rooms, in particular the old study in which the *Origin of Species* was written, should be furnished as when Darwin lived in them, so far as may be possible. For this

purpose the original documents of Darwin's works, and various articles of furniture, are being collected by Mr. Buxton Browne and others. The Hon. John Collier has painted replicas of the well-known portraits of Darwin and Huxley to hang on the walls.

The Glasgow meeting is to continue until September 12th, and we hope to publish some further reference to the proceedings in our next issue.

Presidential Address: Craftsmanship and Science.

In his presidential address Sir William Bragg dealt particularly with the relations between science and craftsmanship in this country. He defined craftsmanship as the skill which was exercised in the production of whatever was wanted for human welfare, the qualities of which it was composed, including knowledge of materials, imagination, technical skill, perseverance, love of work, and sympathy both with the use to be made of it and with user. Sir William remarked that love of good work and delight in successful accomplishment were among the most powerful motives activating mankind, and when satisfied were sources of real happiness. Of all the motives which sway the world these were among the purest and best. By a simple analogy he showed that a people lived on what it made or earned, and that its success depended on its craftsmanship. He illustrated his point by reference to the productions of the Greeks, the Romans, and Indian workmen, adding that the craftsmanship of a people was an expression of the best of its very self, its very life, and an index of its health. He traced the development from the simple workshop of the old single-handed craftsman to the vast complex factory of modern industry which had come about owing to the urgent desire of the individual to better himself and his neighbours. He then showed how the craftsmen had called scientific knowledge to their aid, and he uttered the warning that hindrance of the growth of science in any way impaired the growth of craftsmanship; for the purposes of industry it was therefore necessary that there should always be a certain number of laboratories, or parts of laboratories, where scientific research might not be hampered by immediate thoughts of possible applications. Recent scientific discoveries had given rise to such thriving industries as those which were concerned with dyes, explosives, fertilizers, rubber, and artificial silk. Elaborating his main contentions he referred to the general connexion between science and mass production in industry, and remarked that, while many were benefited by the results of mass production, yet, when its processes called for little intelligence in their working, it would be found in the end that people of little intelligence were taking charge; science was therefore both the builder and the destroyer in respect of mass production. If craftsmanship was to improve continually, fresh industries and further adaptations of old ones must be sought. Moreover, improved craftsmanship depended in large measure on the absorption and adaptation of scientific discovery, and there must be direct practical contact with the problems to be solved. Sir William spoke of the new class of worker who was engaged in research associations and industrial research laboratories, and emphasized the importance of these men keeping in close touch with employers and shop workers. Such research workers deserved all possible encouragement. As an example of the subtle problems raised by new discoveries, he cited the radiation theory of light, upon which were largely based the great advances of nineteenth century physics; within the last twenty or thirty years, however, a new field of optical research had been opened up, and had shown that light had the properties of a stream of very minute particles. Here were two conflicting views about the nature of light, both of which had to be accepted; each hypothesis was used by physicists on appropriate occasions, though no reconciliation of the contradiction was as yet possible. In his peroration Sir William Bragg added that to the student of science there came a message to put his whole heart into his work, believing that in some way which he could not fully comprehend it was all worth while; every straining to understand his surroundings was right and good, and led him to be of use to his fellow men.