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XXVI.—*On the Value of the Microscope in the Determination of Minute Structures of a Doubtful Nature, as exemplified in the Identification of Human Skin attached many Centuries ago to the Doors of Churches.* By JOHN QUEKETT, Esq., Assistant-Conservator of the Museum of the Royal College of Surgeons of England.

(Read April 26, 1848).

THE vast number of highly interesting and valuable facts in natural history and in philosophical anatomy which are daily being revealed to us by the aid of the microscope, have quite established a new era in these sciences.

The links in the great chain of animated nature which heretofore may have appeared wide and discordant, have, by an intimate knowledge of structural anatomy been brought more closely together. Zoological classification, which in early times was based principally upon certain distinctions and peculiarities in external form, now begins to take a higher stand.

In one order of animals the nervous system, in another the digestive system, and in others the minute structure of the external or internal skeleton, form at the present time the best grounds for classification. Nature works with but few tools, but the material used, though often of one and the same substance chemically, is nevertheless moulded into an infinity of forms, and each form so perfectly characteristic of the genus, or sometimes even of the species of animals, that a microscopic examination only is required to identify them.

The force of this argument may be well exemplified by the structures termed Hair or Wool. In any two animals, of totally different genera, the hair when examined chemically may be in composition identical, but when submitted to the microscopic test, may be found so manifestly different that the unpractised eye can readily discriminate between them. No one, I am certain, is better aware of this than our worthy President, who has paid particular attention to the structure of hairs in different classes of animals, and no one is more likely

either to coincide in the opinions which will be here put forth, or to suggest some other explanation. Having premised thus much, I will now proceed to the immediate object of this communication. Early in the month of April, 1847, I was asked by Sir Benjamin Brodie, whether it were possible to determine if skin, which had for many years been exposed to the air, were human or not? I replied, I thought it would be possible if any hairs were present. He then spoke of a friend of his, Mr. Albert Way, whose name is so distinguished in the antiquarian world as one of our first archæologists, who was desirous of knowing whether certain specimens of skin, stated to have been taken from persons who had committed sacrilege, and which for centuries had been attached to the doors of churches, were unequivocally human. In reply to this, I stated again that if hairs were present, I had no doubt but the discrimination would be comparatively easy. Here the matter dropped, but on the 25th of May, 1847, I received the first of a series of five letters on this interesting subject, and as no language of mine could better explain the circumstances connected with it, I will take the liberty of reading such parts of these communications as will be necessary for our present purpose.

(No. 1.)

Wonham Manor, Reigate,
May 24, 1847.

Sir,

At the suggestion of my kind friend, Sir Benjamin Brodie, I am induced to trouble you with an inquiry, regarding which I shall feel much obliged if you will favour me with an opinion. A tradition exists in Worcester that a man having been caught in the act of committing robbery in the cathedral, was flayed, and his skin nailed upon the doors as a terror to the sacrilegious. The doors have been recently replaced by new ones, but they are still to be seen, and having written to a correspondent at Worcester to ascertain whether this strange tale were still remembered, he has sent me a portion of the skin, which is now only to be found under the iron hinges and clamps of the door. One small portion is enclosed, the inner side of which appears to have received the impression of the grain of the wood of which the door was formed. Would you have the kindness to tell me whether you can form an opinion from such a fragment as to the probability that it be *human* skin or not? The

inquiry may perhaps appear trivial, but as a similar tradition is to be found in two other places in England, and no reasonable cause can be suggested why the door of a church should be covered with skin, except from such motive as has been assigned, the question may not be wholly devoid of interest, were it only as regards the durability of human skin, exposed to the atmosphere in such manner.

I remain, Sir, yours faithfully,

ALBERT WAY.

On this specimen, which was about an inch long and half an inch wide, I succeeded in finding two hairs, and thus communicated to Mr. Way the result of their examination, "I have carefully investigated the portion of skin which you forwarded to me for my inspection, and beg to inform you that I am perfectly satisfied that it is human skin, taken from some part of the body of a light-haired person, where little hair grows. A section of the specimen, when examined with a power of a hundred diameters, shows readily that it is skin, and two hairs which grow on it I find to be human hairs, and to present the characters that hairs of light-haired people do. The hairs of the human subject differ greatly from those of any other mammalian animal, and the examination of a hair alone, without the skin, would have enabled me to form a conclusion. I may state that this is the second occasion in which from the hairs alone I have been enabled to pronounce an animal substance to be human."

In reply, I received this second communication.

(No. 2.)

Wonham, Reigate,
June, 4, 1847.

Dear Sir,

On my return home this evening I found your obliging and very satisfactory reply to my inquiry, and I hasten to return you my sincere thanks for your kind attention to my request. I must confess that I had almost feared you would have thought my curiosity of too trifling a nature to induce you to bestow on the little fragment I sent you such a scientific opinion as you have given me. I must remark that if Cuvier had not set us the example of eliciting valuable information from vestiges of the most trivial nature, we might not have attached so much importance to the evidence which may be

adduced from objects apparently insignificant. You have now excited my anxiety greatly to obtain specimens of the skin in the two places to which I alluded, — if tradition be of any value the duration of the animal covering must in these cases be very great, for the story is that the skin was taken from a Danish pirate, — this would take us back nearly nine hundred years. I hope to send you a sample. I can only state that Sir Harry Englefield accredited and communicated the tale to the Society of Antiquaries, a good many years since, and that when I was last in Essex, it was not forgotten. As regards Worcester, and the little portion which you have examined, you may rely on its being as described taken from a very ancient door now condemned and replaced by modern wood-work. There is another fragment of this skin in the collection formed by the late Dr. Prattinton, of Bewdley, bequeathed by him to the Society of Antiquaries, and this first drew my attention to it. If you think such a trifle worthy of a place in the invaluable Museum under your care, as connected with so strange a story, I hope to be successful in sending you a specimen of Dane's skin, older than the Conquest to place by it.

I remain, dear Sir, yours very truly,
ALBERT WAY.

On the 14th of July, I received a third communication, as follows.

(No. 3.)

Wonham, Reigate,
July 14, 1847.

Dear Sir,

I am enabled to forward to you a fragment, small indeed, but authentic, of the skin, traditionally supposed to have been that of a *Dane*, attached time out of mind to a door of the church of Hadstock, Essex, supposed to have been pillaged by him. You will very much oblige me if you can, according to your kind promise, aid me in verifying this singular tale, as you did so successfully in regard to the story at Worcester. Will you preserve the fragment for me, as the person who has sent it to me, has, I fancy, a value for the *relic*. I am chiefly curious as to the fact, which by your kind assistance, I hope, may be elucidated.

I remain, dear Sir, yours truly,
ALBERT WAY.

On this specimen I found three hairs without much difficulty, and wrote to Mr. Way as follows:—"I have been again fortunate in making out the specimen of skin you last sent me to be human; I found on it three hairs, which I have preserved. I should further state, that the skin was in all probability removed from the back of the Dane, and that he was a fair-haired person." At the end of the following month I was again addressed by Mr. Way to the following effect.

(No. 4.)

Wonham, Reigate,
Aug. 31, 1847.

My dear Sir,

I have again to trouble you in this curious inquiry regarding human skin attached to the doors of churches. I have been fortunate enough to obtain from the Incumbent of Copford, Essex, a portion of skin taken from the church door, and to which the like strange tradition had been assigned as in the two former cases, which you have so kindly taken the pains to elucidate for me in so satisfactory a manner. I am anxious to place these curious facts on record. Will you permit me to state them on the authority of the microscopic examination which you have had the kindness to give to these specimens? As soon as you may favour me with a verdict upon that now submitted for your kind consideration, I shall prepare a short statement for publication in our Quarterly Journal. If the portions of skin to which these strange traditions, long preserved, have by your friendly aid, been authenticated, should appear worthy to be deposited in the valuable collection under your charge at the College of Surgeons, I shall be much gratified in placing them at your disposal.

I remain, dear Sir, yours very truly,

ALBERT WAY.

On this portion of skin I found numerous hairs, which were both larger and darker than those from the other fragments, and to Mr. Way's communication I replied as follows:—"I am happy to tell you, that I have succeeded in making out the Copford specimen to be human, as well as the others: I have shown the hairs from

this, as well as from the others, to some friends who were sceptical, but they are now quite of my opinion.”

(No. 5.)

Wonham, Reigate,
Sept. 24, 1847.

My dear Sir,

Pray accept my best thanks for your kindness in enabling me, so satisfactorily, to establish the strange traditions respecting these relics of humanity. My kind friend and neighbour, Sir Benjamin, has interested himself in the progress of the inquiry, and I hope to inform him, on his return to-morrow, of this fresh discovery. I hope that you will make such use of the facts as you may desire, and if you should wish for any further information, I shall be most happy to supply it. I think, however, that I stated the circumstances and tradition in each of the three cases, as I submitted them to your discriminating skill. Mr. Neville writes to me, that Mr. Towneley, the rector of Hadstock, had just obtained a scientific opinion in regard to the skin from that church, fully in accordance with your decision. I have enclosed the specimen from Hadstock—as you have been pleased to regard these relics as of sufficient interest to merit a place in the precious collection under your care. I wish the samples had been less diminutive; possibly you might have been able to give us an opinion as to the skin having been submitted to any preservative process. Regretting that they are so trifling in dimensions, I am gratified to be able to add to my sincere thanks any token both of my esteem for your kindness, and of my satisfaction at this alliance and cooperation betwixt Science and Archæology.

I remain, dear Sir, yours very truly,

ALBERT WAY.

For the information of those who may be called upon to undertake similar investigations, I will here state the mode of manipulating which was adopted in order to obtain the hairs from the three specimens of skin above described. The upper surface of each specimen

was carefully examined as an opaque object, with a magnifying power of forty diameters, and as soon as a hair was found it was seized with a pair of very fine-pointed forceps and torn out; the hair was then placed between glass, either with or without fluid, and viewed with a power of two hundred linear, which will be found quite sufficient to exhibit all the characters so fully known to microscopists. These are well shown in Pl. 24, figs. 1, 2, 3, by the accurate drawing of Mr. Leonard, and their identity will be established beyond a doubt, when figs. 1, 2, 3 are compared with that exhibited at fig. 4, which represents a small light-coloured recent hair taken from the arm.

It would, probably, be needless to dwell longer on the characteristics of human hair, as since the invention of the microscope no object has been more frequently examined, consequently its peculiarities of structure are universally understood. There is, however, one other point of great interest connected with human skin, that here deserves mention, and this is the comparatively small number of hairs with which certain parts of its surface are supplied; on reflection, we shall find that no mammalian animals, save those nearly allied to man himself, have any part of the body unprovided with hair, and had other than human skin been exposed to the same circumstances, some evidence of the abundance of the hairy covering would have been observed on microscopic investigation; but the present specimens, in the paucity of hairs found on them, fully bear out all the opinions that might, *à priori*, have been predicted of them. The specimen from Worcester, on its under surface, shows the markings of the grains of the wood, and the paint with which the door was covered; this would go far to prove that the skin was laid on when in a moist state, or soon after its removal from the body: but neither of the other specimens exhibits the same appearances.

Besides showing the great scientific value of the microscope, in bringing to light otherwise hidden truths, these specimens fully establish the wonderful power of skin and hair to withstand for centuries atmospheric influences, and serve to point out, that next to the bones, they are the most durable parts of the human frame.