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ON THE CALVARIA FOUND AT BOSKOP, TRANSVAAL, IN 1913, AND ITS RELATIONSHIP TO CROMAGNARD AND NEGROID SKULLS.

By W. P. PYCRAFT, Fell. Roy. Anthropol. Inst., F.Z.S., F.L.S.

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WHEN I undertook the examination and preparation of a report on the calvaria discovered in 1913 in the Potchefstroom District of the Transvaal, I little suspected how difficult, and in many respects unsatisfactory, my task would be.

To begin with, I found that these remains had already formed the subject of an able memoir by Dr. S. H. Haughton, the Assistant Director of the South African Museum. Dr. Haughton's descriptions and measurements I have, as the auditors say, "examined and found correct," so much so that it seems to me no useful purpose would be served by again recording the same details. It is only on some matters of interpretation, arising out of our attempts to restore the skull, that I venture to differ from him.

For the sake of those who have not seen the original description, or cannot obtain ready access thereto, it will be well to give the essential features of these remains before proceeding to discuss the conclusions to which Dr. Haughton and others, including myself, have come.

These remains, then, consist of a calvaria, a temporal, and a fragment of a mandible, all in a highly mineralized condition, and found in a field, bordering on the River Mooi, 6 feet 6 inches from the surface.

The calvaria shows evidence of distortion, though not to a serious extent, along the left side. On the right side, fortunately, a tongue-shaped fragment of the parietal has been saved. I say fortunately advisedly, because this fragment shows traces of the sutural surface for the articulation of the temporal, and therefore furnishes a clue of first-rate importance in determining the auricular height of the skull.

As Dr. Haughton points out, this skull had a conspicuously narrow forehead, the maximum frontal diameter not exceeding 120 mm.; the maximum parietal diameter, on the other hand, was exceptionally great, though *post-mortem* distortion, by a slight crushing in of the left side, has made it difficult to determine the actual breadth of this region. Mr. Haughton's estimate is "probably 154 mm." I venture to think, however, that this is rather an over-estimate, and am inclined to regard 150 mm. as nearer the mark; but even then the difference between us is not great.

Norma verticalis.—This conforms fairly well, and this is significant, with Sergi's "*Beloides Ægyptiacus*." In the narrow frontal, the great breadth of the parietal

region, and the presence of a conspicuous median parietal groove, the roof of this skull agrees, in a very marked degree, with skulls of Guanches and Bushmen, and of many ancient Egyptians; but it is much longer than any of these that I have seen.

Norma facialis.—The supra-orbital region is represented only on the right side, where the external angular process is preserved almost entirely, only the outermost angle being missing. But although no more than the outer segment of the orbital margin has been preserved, enough of the frontal remains to show that the supra-orbital ridges were feebly developed: they were, indeed, quite in keeping with the slender external angular process. The area of the orbital region which has been preserved extends, approximately, from the external angular process inwards as far as the supra-orbital notch. There is nothing, then, even remotely “Neanderthaloid” about the frontal region of the skull. Paired and very slightly developed frontal eminences are present, but they are very inconspicuous.

Norma lateralis.—This shows a markedly high and straight forehead, passing backward into a conspicuously flattened roof. At a point immediately behind a vertical line rising up from the centre of the *meatus auditorius*, and at right angles to the *meato-nasion* line—used here to supersede the less exact, but conventional “Frankfort line”—the curve of the roof takes a downward and backward course, to form a long, gentle slope, as far as a point answering, as nearly as possible, to the upper limit of the lambda. Here the slope bends slightly upon itself, but still continues backwards as far as a point well below the upper limit of the fossæ for the cerebellar lobes, which are to be found on the inner aspect of the calvaria. At this point the calvaria ends abruptly. There are no external sutural landmarks.

In the peculiarities of this skull so far outlined, Dr. Houghton sees a strong likeness to the “Cromagnon” skull, and there can be no escape from his conclusion, more particularly in regard to the contour-line of the sagittal section. The median parietal groove Dr. Houghton regards as negroid. “This feature of the skull,” he remarks, “is not paralleled by any skull in the possession of the South African Museum, although, according to M. Boule, it has been seen in some negro skulls, and also upon a Namaqua skull now in the Paris Museum.” But this feature, it is important to notice, is a characteristic of Bushman skulls, and I have found it in many skulls of ancient Egyptians, as well as in Guanches.

Dr. Houghton makes no special mention of the absence of the sutures in this calvaria, but so completely have these disappeared that I have found it impossible to determine, with certainty, the position either of the bregma or the lambda, and this fact has added to the difficulty of determining the meatal (auricular) height.

THE ENDOCRANIAL SURFACE.

The endocranial surface is remarkable rather for its negative than its positive characters, all its sutures having become obliterated, though a fairly deep groove

marks the position of the coronal suture. The characteristic depressions for the lodgment of pacchionian bodies are wanting, and the sulci for the meningeal vessels are but feebly developed. But there is one really striking feature about this surface. This is the surprisingly large size of the *crista frontalis*, which projects backwards for a distance of 52 mm. So far I have found a like development only in skulls of Bushmen and of Ancient Egyptians. It forms the median partition between two well-marked fossæ for the frontal lobes of the cerebrum, and of these the right is conspicuously the larger. The horizontal plate of the frontal is wanting.

THE TEMPORAL.

The peripheral area of this bone is unfortunately greatly damaged. The alisphenoidal and parietal borders, including the posterior half of the *pars mastoidea*, are missing.

The area of the *linea temporalis*, usually referred to as the *supra-mastoid ridge*, at once arrests attention on account of its unusual prominence. Over the *meatus auditorius externus* it forms a prominent, widely overhanging, sharp-edged shelf, the free edge of which sweeps up, and backwards, in the form of a well-marked swollen ridge. The ultimate history of this ridge is lost, owing to the fact that the superior and posterior borders of the *pars mastoidea* have been broken off.

The strong development of the *supra-mastoid ridge* is sometimes cited as the mark of the negro and as a characteristic of a degraded type of skull. But this is by no means true. It may be found almost, if not quite, as much developed in modern British skulls, but, of course, exceptionally.

Immediately beneath this ridge, and behind the *meatus auditorius externus*, lies an unusually wide, and relatively deep, semicircular depression, passing downwards, forwards, and inwards into the *meatus auditorius externus*. The mastoid process which is conspicuously "set out," away from the skull, is very small, and has a quite peculiar, and deeply incised, posterior border. Behind this border lies an exceptionally large and deep *digastric fossa*. In its superficial area I have found it slightly exceeded in a Tasmanian skull, but in this case the fossa was shallower, and much more constricted below.

The *supra-mastoid ridge* takes its origin from the base of the zygoma. To this point a return is necessitated for the purpose of discussing the glenoid cavity. This is bounded in front by the anterior root of the zygoma, forming the *eminentia articularis*. It is clear that this, in the Boskop skull, was rather feebly developed. Its lateral extension, from the skull-wall outwards, was slight. The point occupied by the "tubercle of the zygoma" has been destroyed, but there is evidence that it could not have been strongly developed. The articular surface is inconspicuous, and shelves insensibly backwards into the shallow glenoid cavity. No more than a faint trace remains of the glenoid fissure; and the post-glenoid process, though damaged, was evidently never large. The *tympanic plate* has been

almost completely broken away. From what traces are left it would seem that the cavity for the parotid gland, which is lodged in this plate, was unusually deep.

In the development of the *supra-mastoid ridge*, the *eminentia articularis*, and the glenoid cavity, the Boskop skull approaches very closely to that of the Bushman.

The inferior surface has been extensively damaged and its landmarks obliterated. There is no sign of the *styloid process* or the *stylo-mastoid foramen*. The tympanic plate has been destroyed, and with it the inferior border of the meatus. Of the carotid foramen there is no trace, while of the jugular fossa no more remains than a slight notch at the bottom of the *sinus lateralis*. The thickness of the mastoid immediately behind this is unusually great.

Turning now to the cerebral surface of the temporal, it is to be noted that the squamous area—the periphery of which is mostly missing—occupied a rather larger area within the skull than is the case with the average modern skull, owing to its more forward extension in the direction of the alisphenoid border.

The impressions, normally present, corresponding to the convolutions and sulci of the temporal lobe, and the grooves for the lodgment of the meningeal vessels, are by no means strongly marked. In these particulars again the Boskop resembles the Bushman skull.

The *petrous portion*, as has already been mentioned, is much damaged. Its apex has been broken off immediately in front of the *meatus auditorius internus*, which seems to have been a conspicuously large aperture. The *aqueductus vestibuli* is obscured by the matrix, and is almost completely filled up. The *hiatus canalis facialis* has been completely obliterated.

The eminence of the superior semicircular canal is but feebly developed, and the mastoid portion of the lateral sinus is very shallow. The *foramen mastoideum* is well preserved. The *tegmen tympani*, it is worth noting, presents a tolerably large perforation, due to pathological conditions, though these do not seem to have affected the *antrum tympanicum*—at least so far as can be seen without further exploration. A similar imperfection of the wall of the *tegmen tympani* is occasionally met with in modern human crania. That this perforation is indeed pathological, and not due to *post-mortem* damage, is also the opinion of Sir Arthur Keith, to whom I submitted this bone.

THE RESTORATION OF THE SKULL AND THE DEDUCTIONS BASED THEREON.

The reconstruction of this skull, from the fragments just described, was accomplished by finding the position of the temporal in relation to the calvaria. After this the contour, shown in the restoration below, was plotted out. This having been done, it was possible to estimate, not only the probable form of the skull when entire, but also its cranial capacity. Dr. Haughton (9) believes this to have been as much as 1,832 c.c., but this, I venture to think, is too high; about 1,700 c.c.

would seem to be nearer the mark. Professor C. Elliot Smith and Dr. Broom, however, go so far as to contend that this skull had a capacity of as much as 1,900 c.c. To these figures, however, a return must be made presently.

Its probable contour, in *norma lateralis*, is shown in Fig. 1.

It will be noticed that this is orientated on the nasio-auricular base-line which I proposed in 1916, in place of the "Frankfort line," the only merit of which appears to be, according to its champions, that the skull thus surveyed places the face in the position in which it is held during life! No account is taken of the fact that by this usage half the face is above and half below the line, nor of the still more cogent objection that the facial angle measured by such a line is absolutely useless.

Placed, then, on the nasio-auricular base-line, practically the whole cranium lies above it and the whole face below it, so that the facial angle taken therefrom

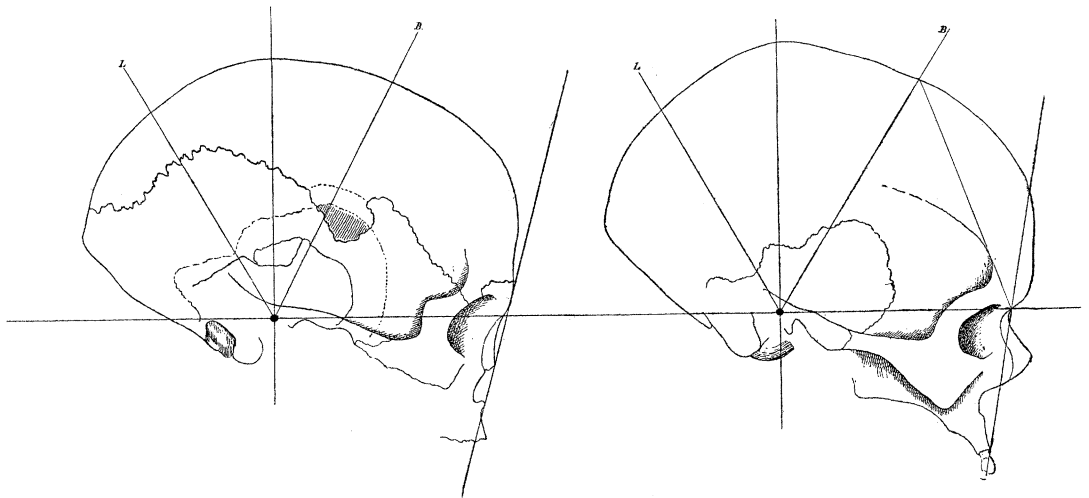


FIG. 1.—BOSKOP (RESTORATION).

FIG. 2.—CROMAGNON (THE "OLD MAN").

affords an accurate measure of the rotation of the facial upon the cranial portion of the skull, following on the reduction in the size of the jaws. But this matter I have already discussed in detail elsewhere.

A certain amount of error in my restoration may well have to be allowed for, yet, I venture to think, it may be taken as approximately correct, since there are a number of relatively fixed points which can be safely relied upon for guidance, and which can be used as checks by all my critics.

One of these was furnished by the parietal fragment bearing a portion of the squamous suture for the temporal. Estimating the probable height, maximum and minimum, of the superior border of the temporal above the meatus, one gets the first test as to the probable meatal, or auricular, height of the skull. If the meato-nasion length is unduly shortened, then the supra-occipital would have to be excessively lengthened, in order to obtain a normal *foramen magnum*; on the other hand,

too long a meato-nasion line would entail the reduction of the supra-occipital beyond possible limits. Again, too long a meato-nasion line would demand a quite abnormally wide alisphenoid to close the gap in front of the temporal.

Bearing these crucial points in mind, we arrive at the following measurements :—L., 205 ; B., 150. Auricular height, 125 mm. ; basi-bregma height, 137 mm. The basi-bregma height can only be approximately determined. But this is a relatively unimportant point, because, in the first place, it can be calculated in the case of skulls where the basi-occipital is missing with tolerable accuracy by adding, say, 15 mm. to the auricular height.

It is at present the almost universal practice to regard the basion as a fixed point whereby much otherwise valuable craniometrical work is vitiated. In the report already referred to (16), I was able to show that the basion, so far from being "fixed," is really an extremely variable point, the distance between this and the meatal centre varying between 5 mm. on the one hand, and 20 mm. on the other. Hence the discrepancies to which I drew attention in calculating the alveolar index by Flower's method. The average meato-basion distance appears to be 15 mm., but the Bushman and Strandlooper skulls seem to have a rather shallower base, the average being 12 mm.

The difference between Dr. Haughton's calculations and my own in regard to the length, breadth, and height are negligible, and they do not effect what, after all, is one of the most important considerations in regard to this skull—to wit, the place among the Hominidæ which is to be assigned to the Boskop Man.

The cranial capacity of this restoration, as derived from a formula given me by Dr. W. L. H. Duckworth, " $\text{Capacity} = L. \times W. \times \text{Bb. Ht.} \times 000385 + 96$," is 1,717 c.c.

As a test of the reliability of this formula, I calculated thereby the cranial capacity of a number of skulls whose measurements are given in the "Catalogue of Osteological Specimens of the Royal College of Surgeons, Part I, Man": comparing the results with the cranial capacity as given in the catalogue determined by measurement with shot. The differences between the c.c. yielded by the formula and those yielded by measurement with shot were negligible.

I made several attempts at the restoration of this skull, varying the length of the nasio-meatal line as well as the meatal or auricular height. Where this last amounted to as much as 130 mm., with an estimated basi-bregma height of 142 mm., the cranial capacity rose to as much as 1,777 c.c. Having regard to all the circumstances the lesser auricular height—125 mm., with a basi-bregma height of 137 mm.—seems the more reasonable, and the more probable, and it was for this reason adopted. My maximum height, it will be noticed, makes a close approximation in the matter of cranial capacity—1,777 c.c.—to that given by Dr. Haughton, the difference being no more than 55 c.c. It seems to me, however, that my lower figure, 1,717c.c., is the more probable.

Satisfied, after many experiments, that this restoration was at least approximately correct, there remained the task of discovery as to which of the African races, or species, this calvaria belonged, or whether, indeed, its affinities were African.

Its likeness to the Bushman skull, in all its salient features could not be gainsaid: but it soon became apparent that it must further be studied in relation to the "Strandloopers" on the one hand, and the Cromagnards on the other. These likenesses, and the conclusions based thereon, will now be enlarged upon.

Before entering on this theme, however, it would be well to dispose of the many references which have been made by other writers on this subject to the "negroid" characters of these remains.

Little more than vague and nebulous suggestions have been advanced in support of this "negroid" element. The "evidence" offered is discounted by the fact

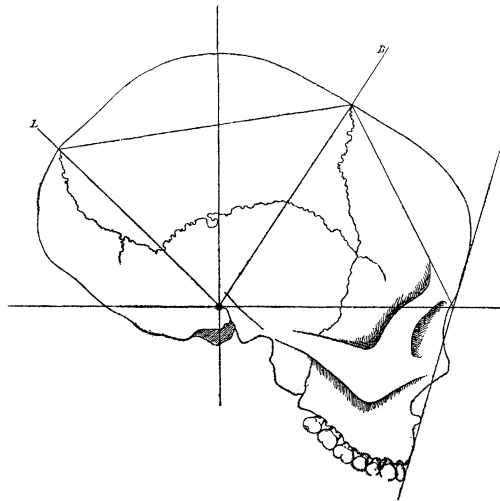


FIG. 3.—STRANDLOOPER (AFTER SHRUBSALL).

that we are still very much "at sea" as to what, precisely, are the cranial characters which can be regarded as positively "negroid."

Certain it is that, all too commonly, what are regarded as "negro" skulls are, as often as not, the skulls of Bantu, masked by an infusion of Bushman blood.

In what relation the Bushman stands to the negro is a matter calling for investigation, but it would seem that they should be regarded as divergent branches of a common stem, a relationship expressed in the accompanying "Phylogenetic Tree" (Fig. 12). If this surmise be correct, the suggested "negroid" characters are sufficiently explained.

The importance of the part the Bushman has played as a modifying factor in the physical features of the various races of Africa, living and extinct, is by no means generally realized. That in remote times he ranged as far north as Egypt there is

scarcely room for doubt. Any large series of skulls of ancient Egyptians will contain a number which bear indubitable evidence of an infusion of Bushman blood. In the Anthropological collection of the British Museum of Natural History is a mandible, embedded in tufa, taken from “the tomb of Cleopatra,” which is an undoubted Bushman jaw. And quite recently a cave containing characteristic Bushman paintings was discovered by Mr. F. J. Bagshawe at Kisana, Tanganyika Territory, the work of the Kangeju Bushmen.

The evidence of this Bushman element, in skulls of Ancient Egyptians—but not apparently present in Predynastic skulls—is found in the conspicuous parietal “bosses,” the well-marked median furrow in the parietal above the lambda, and often in the face—features which are to be seen also in the Guanches.

It may be urged that this agreement between certain Egyptian, and Bushman skulls, or between Bantu-Bushman skulls, is a matter of coincidence rather than

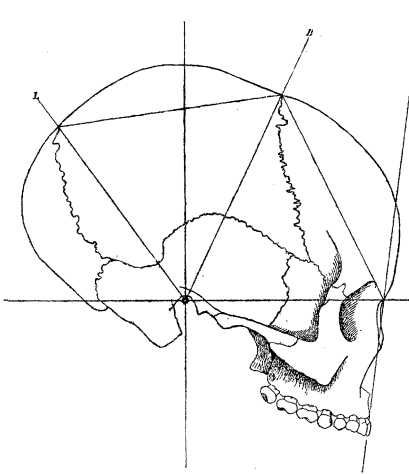


FIG. 4.—TYPICAL BUSHMAN.

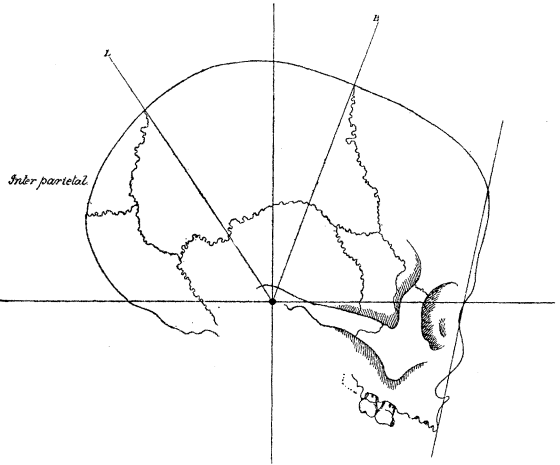


FIG. 5.—BUSHMAN FROM CAVES OF TSITZIKAMA.

evidence of racial intermixture. It would not, indeed, be easy to prove this blending. But I was able, some years ago, in a Report on a collection of skulls from New Guinea (16), to show that there was evidence, amounting to proof, that though invading, and invaded, races might eventually settle down together, the invading race, if sufficiently distinct, left indelible traces of its sojourn in the changes wrought in the skull-characters of the willing or unwilling hosts.

The Tasmanians, referred to in the Report just mentioned, will furnish a case in point; for they have left unmistakable evidence of their slow progress through New Guinea, and many of the Pacific Islands, and across Australia, from north to south, to their final resting-place in Tasmania. The evidence as to this migration is to be found in the impress of their skull-characters which are, to the anthropologist, unmistakable.

The Polynesians, no less certainly, I ventured to contend in that Report, left witness of their passage through New Guinea into Polynesia, and beyond, as far west as Oregon, as is shown in the skulls of the ancient and the skulls of La Tigua and Arkansas.¹ There can be no mistaking the evidence, for the Polynesian skull displays very definite and peculiar characters, which occur nowhere else, though this fact is by no means generally recognized. They were first described in my Report alluded to above.

But in the course of this migration, the Polynesians, in turn, paid tribute in a loss of racial purity. For the Maori, commonly regarded as typical and pure-blooded Polynesians, display a no less unmistakable record of what we may call "cranial deformation," as a result of their residence among, and interbreeding with, alien peoples. I need not, however, labour this point; the facts, as I have stated them, are easily verifiable, and they are to be borne in mind by all who essay to unravel not only the many puzzling aspects of this fragment of a skull of the Boskop man, but all skulls. We are too apt to assume that we are dealing always with "pure-bred" races.

From what has just been said the inference is obvious, that the skull of the Bushman, upon which such stress is laid, is also "an impure dominant." It is to be borne in mind that, for countless generations, this one of the aboriginal races of Africa has lived under conditions which can only be expressed by some harsher term than "adverse." As a consequence, he has degenerated mentally and physically. There is no evidence to show that he ever attained to a high stature, and it is clear that force of circumstances, willingly or unwillingly undergone, occasioned an intermixture of alien blood which would inevitably affect stature. This intermixture may be gathered from an examination of the series of skulls which have been secured, owing to the zeal and prescience of Mr. FitzSimons, from the Caves of Tsitikama. Six of these he sent me for examination, though only three were adults. But while these are all of undoubted Bushman, they vary widely in their characteristics, even allowing for sexual differences. All are small. In one of these, with a cranial index of 78, the conspicuous interparietal width is marked by the relatively great inter-stephanic width. The face is remarkably "flat," the nasals of extreme breadth, while the orbits are microsemic. It is essentially a Bushman skull, but contains a large strain of an alien element, possibly derived from Angola. But these differences are precisely similar to those already described by Shruballs (17-19), Poch (14), Duckworth (5), and others.

Between the Bushman and the Strandlooper, no sharply-defined line can be drawn. Moreover, even among the Strandloopers, in regard to the skull, there was a wide diversity as well as a common agreement.

¹ It is somewhat remarkable that the singular character of the "Polynesian" type of skull, and its remarkable range, should so far have eluded the attention of Anthropologists, but there can be no escape from the evidence which I have produced.

The accompanying contour (Fig. 3) was made from what seems to me one of the most typical Strandlooper skulls yet figured. It is an enlargement made from Shruballs's photograph (18) by means of proportional compasses, set to give an auricular height of 116 mm. This gives a skull length of 203 mm. which is practically the same as that of the Boskop skull.

On comparing the contours of these two—Strandlooper and Boskop—an extraordinarily close likeness will be found between them, which can hardly be ascribed to coincidence (Fig. 7). The contours are almost identical, save only in the greater auricular height of the Boskop skull. On the assumption made here, that the Strandlooper holds an intermediate, and degenerating, stage between the Boskop man and the Bushman, this result is what we should expect.

I would lay particular stress on the fact that my restoration was made many months before I made the enlarged contour of the Shruballs skull, so that there was no sub-conscious attempt to make the one fit the other. When the Shruballs skull was enlarged on the basis of a skull-length of 181 mm.—the actual length of this skull—the auricular height was no more than 100 mm., so that it would seem that the auricular height does not rise in exact sympathy with the increase in length. But this by the way. Shruballs does not give the auricular height of this skull, but from his table of average measurements it probably did not exceed 116 mm. The superimposed contours of the Boskop skull, and the Bushman, again bear out the Bushman affinities of this skull, and, moreover, when the superimposed contours of the Shruballs Strandlooper, and the Bushman, are compared, a close likeness between the two is manifest.

It is contended in these pages that the Boskop man is genetically related to the Cromagnards. This relationship will be discussed presently. As a preliminary, the superimposed contours of the typical "Cromagnon" and the Boskop skull may profitably be compared.

Before proceeding further it would be expedient to take account of some "Boskop Remains" described in *Nature* (3) by Professor Raymond Dart. He lays particular emphasis on the fragments of a skull which bears a very close likeness to that which forms the subject of this Report. These fragments, he insists, are, in all essentials, in agreement with those of the original Boskop skull. The supra-occipital is almost complete, in so far as the right side is concerned, and it happily shows, very clearly, the lambdoid suture, of which no trace is to be found in the original Boskop skull. What is even more important is the fact that the left side of the skull affords us the opportunity of seeing the posterior portion of the temporal in relation to the parietal, and the greater part of the upper region of the face.

Professor Dart gives a "rough preliminary reconstruction of this skull, built up on a cast of the endocranial cavity." The result of this preliminary work yields a skull having a maximal length of 210 mm. and a "maximal breadth of 150 mm." "If this length be correctly determined," he remarks, "we are in the presence of

the longest-headed human skull yet discovered." With no more than a photograph of this restoration before me it is difficult to criticize this result. Yet I venture to suggest that when Professor Dart comes to revise his work he will agree that his original computation, as to the length of this skull, must be reduced, probably by as much as 5 mm. If the frontal region of the skull, as shown in this reconstruction, were rotated so as to give the face an angle of, say, 77° , the whole contour would be changed, and this change, be it noted, would bring the restoration into complete harmony with the Boskop, Cromagnon, Strandlooper, and Bushman skulls. This is a significant fact. The accompanying outlines will demonstrate my contention. Additional testimony as to the harmony between the original Boskop skull and that described by Professor Dart, is shown by the fact that he finds the same conspicuous parietal

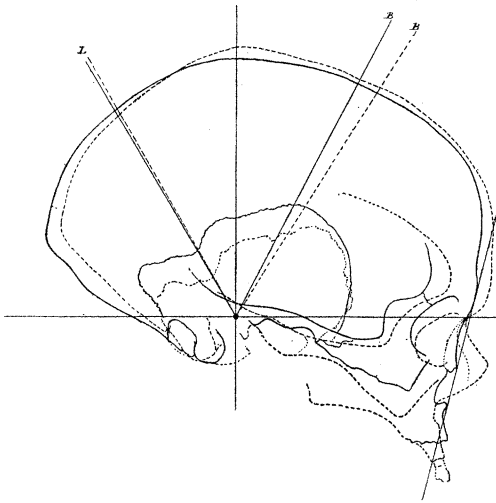


FIG. 6.—CONTINUOUS LINE—BOSKOP.
DOTTED LINE—CROMAGNON.

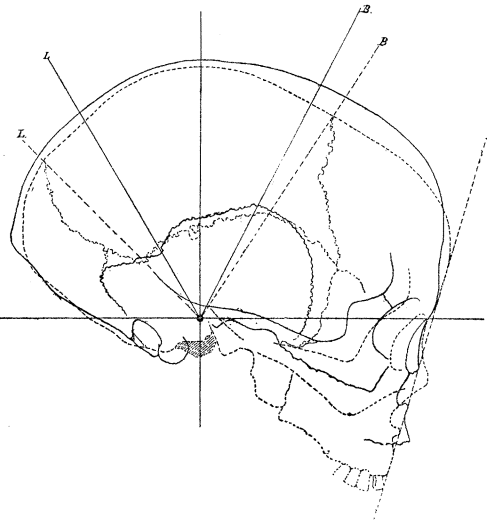


FIG. 7.—CONTINUOUS LINE—BOSKOP.
DOTTED LINE—STRANDLOOPER.

“bosses,” the same interparietal sulcus on the roof of the skull, and the same conspicuously small mastoids.

And now as touching the likeness between the Boskop skull and that of the “typical” Cromagnon. A comparison between the superimposed contours of these two reveals a most striking and significant agreement (Fig. 6). Using nasio-meatal base line, and using the nasion, for the moment, as the point of superposition, the forehead of the Boskop skull shows a slight hollowing at the vertex—determined by the nasio-meatal base-line—and is perhaps 5 mm. less in auricular height, while the inferior portion of the occipital region projects further, and is deeper.

The two skulls differ, however, in a very striking manner when the *meatus auditorius* is used as a fixed point for comparison. The superimposed contours then show that the meato-nasion length of the Cromagnon exceeds that of the Boskop

skull by somewhere about 10 mm., while it shows a loss of a similar amount in the post-auricular region, lying between the obelion and the inion. The auricular height of the Boskop skull, it is contended, was probably about 125 mm. as against 130 mm. in the Cromagnard. But though the Cromagnon skull displays distinct parietal

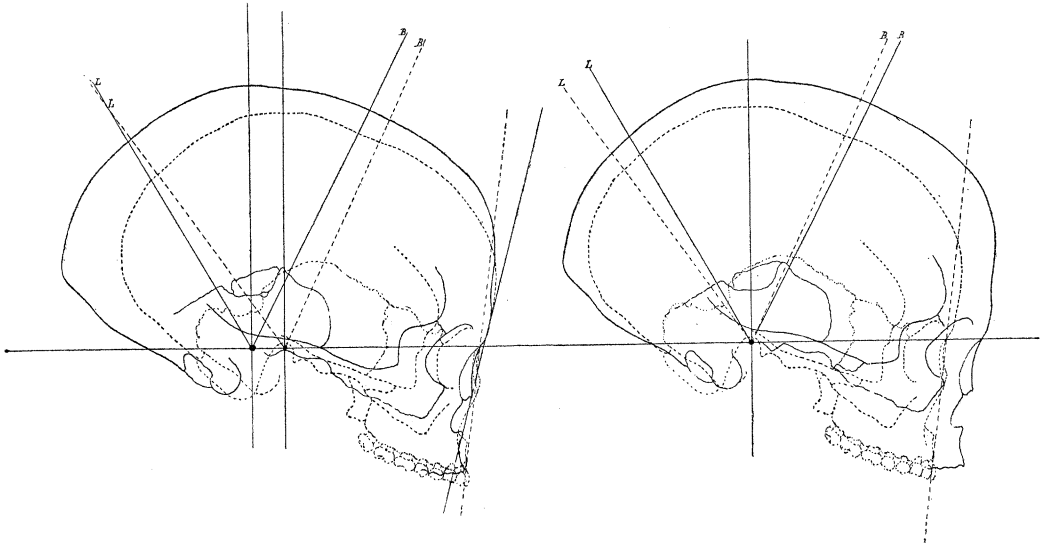


FIG. 8.

FIG. 9.

CONTINUOUS LINE BOSKOP. DOTTED LINE—BUSHMAN (TYPICAL).

IN FIG. 8, THE FIXED POINT IS THE *meatus auditorius*; IN FIG. 9, THE *nasion*.

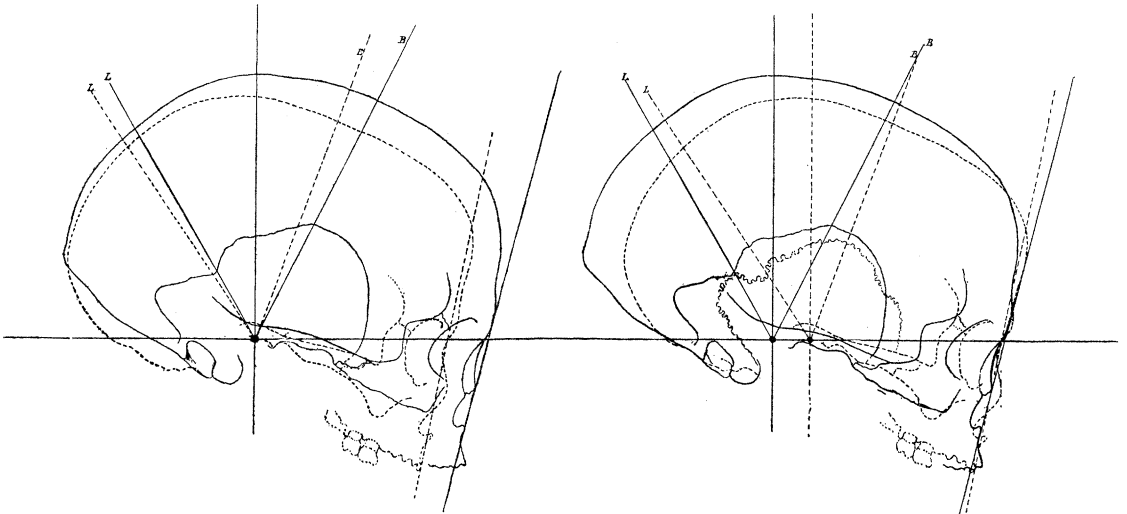


FIG. 10.

FIG. 11.

CONTINUOUS LINE—BOSKOP. DOTTED LINE—NO. 4 BUSHMAN (TSITZIKAMA).

IN FIG. 10, THE FIXED POINT IS THE *meatus auditorius*; IN FIG. 11, THE *nasion*.

“bosses,” it did not display the median parietal sulcus. The mastoid differed conspicuously from that of the Boskop skull, but we have no evidence as to the size of the *crista frontalis*, so largely developed in the Boskop skull.

Professor Elliot Smith, on the evidence furnished by the endocranial cast, considers that the “flatness of the cast, and certain of its features suggest affinities of the Boskop man with the Neanderthal race. But the larger size, and especially the form, of the pre-frontal bulging indicates an even closer kinship with the peoples found in Europe in Aurignacian and later times.

“But it would be incorrect to regard the Boskop man as a member of either the Neanderthal or the Cromagnon races. For he represents a variety of mankind that never intruded into Europe—probably a divergent branch of the species *sapiens*, which sprang from the parent stock soon after its separation from the so-called species *neanderthalensis*. In confirmation of this suggestion is the fact that, though the pre-frontal area is larger than that of Neanderthal man, and has assumed the form distinctive of the modern type of man, it is smaller, both actually and relatively, than that of the Cromagnon race.”

CONCLUSION.

A careful study of all the essential features of the skull of the Boskop man seems to show, very certainly, that he was a derivative of Cromagnon man, and the progenitor of the Bushman.

But before these relationships, and the sequel thereto, can be profitably considered, it is essential to define what is meant by the term “Cromagnon”: for this, at present, is used in a very loose and confusing sense.

Too commonly, in short, it is employed on the one hand as a label for a Race, and on the other as a Time-scale, or a “Culture.” Hence some more precise definition has become imperative. The need for such a definition has, indeed, been hinted at by others, and it has accordingly been proposed to substitute the term “Neanthropic.” This, however, is inadmissible, since it was coined to serve another purpose, to wit, as a substitute for the time-worn “Neolithic.”

When Lord Avebury coined the terms “Palæolithic,” and “Neolithic,” he shared the belief of his time, that the advent of Neolithic implements marked the coming of a new Race, and the demise of the old Mousterian man, who fashioned the “Palæoliths.”

But it is now clear that this was not the case. Evidence has accumulated to show that three stages of the Palæolithic Period must be recognized—Lower, Middle and Upper. The Middle Palæolithic Period seems to mark the demise, or at least the decline, of Mousterian man. For it is now evident that the Upper Palæolithic ushers in the new era of human development, and the emergence of more than one new species.

The four distinct phases of culture in short—Aurignacian, Solutrean, Magdalenian, and Azilian—which are shown to have marked this Upper Palæolithic period, probably, or possibly, mark the earliest stages in the differentiation of the main trunks represented by modern man.

As a way out of the inevitable confusion of thought which a continuation of the use of the old nomenclature entails, Professor Elliot Smith (21) suggests the terms “Palæanthropic” and “Neanthropic.” The first-named includes Mousterian man and his predecessors; the last, the new Adam and his descendants. Only by the acceptance of his proposal can we avoid ambiguity.

Clearly, then, we cannot substitute the term “Neanthropic” for “Cromagnon.” Those who would have it so would but make confusion worse confounded. The Grimaldi people, for example, are regarded by some as aberrant Cromagnards.

Henceforth, there can be no question but that we must use the term “Cromagnon” in a strictly Zoological sense—as indicative of a Race, the type of which is “the Old Man of Cromagnon”; that is to say, the skull found in 1868, in a rock-shelter in the valley of the Vézère, at Cromagnon, a little above the village of Les Eyzies. He was the first of the Aurignacians known to us. Other skulls of this type were brought to light later, but, as is the rule with human skulls, no two are quite alike, which implies, that then, as now, no race was absolutely “pure-bred.”

This particular skull, then, I designate as the type of the Cromagnon race. It may be distinguished by the following measurement:—Length, 205 mm.; breadth, 151 mm.; auricular height, 130 mm.; nasal height, 52 mm.; orbital height, 27 mm.; orbital width, 42 mm.; nasi-prosthion length, 70 mm.; bi-zygomatic width, 133 mm. The teeth are missing. Cranial capacity, 1,777 c.c.

So much, then, for the definition of the term “Cromagnon.” A return may now be made to our main theme—the Neanthropic peoples. That the slowly differentiating races of this new era of human evolution occupied the same territory, or were near neighbours, of Neander-man, seems an inevitable conclusion; nor would there seem to be any escape from the further conclusion that a certain amount of interbreeding took place between them, thus providing the material for the development of new species, wherever isolation, from whatever cause, gave the new potentialities an opportunity to develop.

This much is indicated in the accompanying Phylogenetic tree (Fig. 12). Herein the Proto-Bushman—the Boskop man—is supposed to have arisen out of the Neanthropic “flux” which was to give rise, at about the same time, to the Grimaldi people, and the Cromagnards, the Australo-Dravidians, and Rhodesian man. The common stock from which these have all been derived was, it is here suggested, formed out of the smooth, and “beetle-browed” Palæanthropic peoples.

On this assumption the negroid and Cromagnard strains of the Proto-Bushman are intelligibly accounted for, the negroid element being derived from the nascent Grimaldi race.

From the typical Cromagnard are derived the Nordic, Alpine, Mediterranean, and Hindi "Races," which, it is here suggested, should be designated "Eu-Cromagnards," to afford an escape from the singularly inappropriate term "Caucasian."

The Polynesians and the Mongols are to be regarded as offshoots of the Cromagnard stem, but as older than the Eu-Cromagnards.

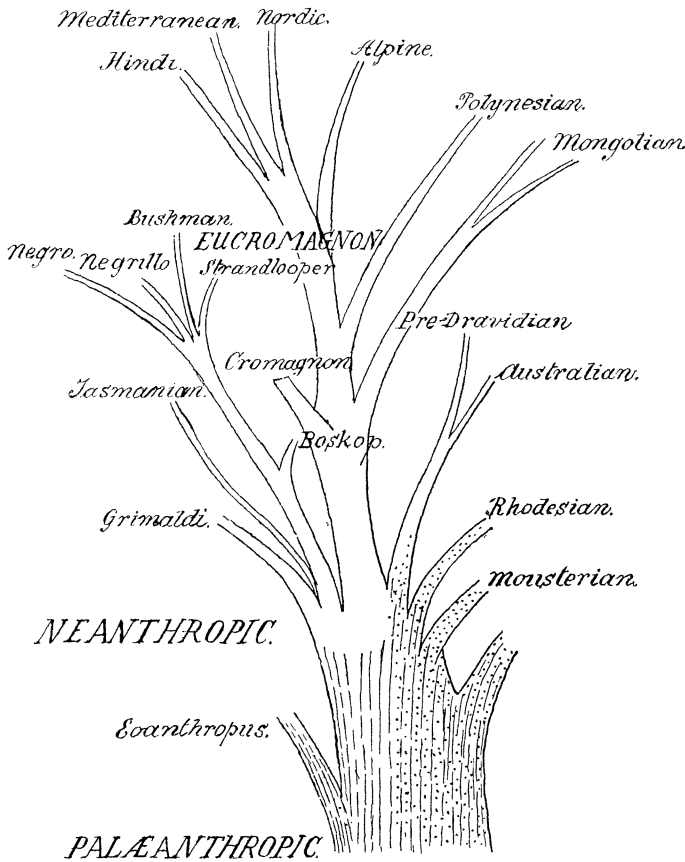


FIG. 12.—PHYLOGENETIC TREE SHOWING THE MAIN LINES OF DESCENT OF MODERN MAN.

The Australo-Dravidians and the Rhodesian man are apparently to be derived from this same Cromagnard stock, but they seem to show a conspicuous strain of Moustertian blood.

It would seem, in short, that we may fairly postulate the divergence of the human race, at a very early stage of its development, into two branches, one with relatively feeble, and the other with strongly developed brow-ridges: *Eoanthropus* stands for the one, *Pithecanthropus* and Neander-man for the other.

That the "beetle-browed" people were the dominant race—or races—for long ages, seems to be shown by the fact that all the skulls of the Lower and Middle

Palæanthropic Periods are of the Neander type. But the fact that they were preceded, in Europe, at any rate, by the smooth-browed people represented by Eoanthropus, suggests that these two types may have been living in close proximity throughout the whole of this long period, and furthermore, that interbreeding took place between them. In other words, the apparently somewhat sudden appearance of the Neanthropic peoples is probably fictitious, but what factors led to the rise and decline and final disappearance of the Mousterians yet remain to be discovered. The Australo-Dravidians and Rhodesian man, as has just been remarked, seem to be witnesses of a certain amount of interbreeding between the two, before the final extinction of the inferior type.

Finally, something must be said anent the interpretation which has been placed upon the significance of the excessive development of the brow-ridges of Neander man. It has been contended, in short, that these were to be attributed to the size and weight of the massive jaws, which in turn were necessitated by the nature of the food they had to disintegrate. The face, indeed, was supposed to have followed the model of that of the great apes. But the fact that the jaws of Eoanthropus were even more ape-like than those of Mousterian man, destroys the cogency of this argument. Moreover, the jaws of the Tasmanian were quite as large as those of Neander man, yet the cranium does not show conspicuous brow-ridges.

Mr. Hewett has suggested that the Boskop man should be regarded as a distinct species—*Homo capensis*. This is a perfectly legitimate proposal. But, if adopted, it will be necessary to designate the Strandlooper-Bushman type as a sub-species—*Homo capensis maritimus*. Similar distinctions must be made in the case of the Negro and Negrillo, which must become *Homo africanus* and *H. a. parvus*, and of the Tasmanian for whom I would propose the name *Homo tasmanensis*. Some authorities, indeed, contend that the living races of mankind are but “varieties” of one species—*Homo sapiens*. But this view is untenable, unless we brush aside the ordinary standards of classification which are of necessity applied to the lower orders of the mammalia, including the great apes.

But, be this as it may, the status of the Boskop-man seems now to have been established. The curiously evasive character of this skull, the difficulty which besets any attempt to determine its precise affinities, bear witness to its “generalized” character, which is a consequence of its derivation from an undifferentiated stock standing at the parting of the ways between two or three nascent stocks.

APPENDIX.

Some standard of racial characters, at least of the main types, must be formulated and adopted by anthropologists if we are to have any useful measure of comparison between them. On the whole such a standard would be of most value if based on the skull alone, since commonly this is the only material available. It is imperative, in short, if we are to make any progress, that we should adopt the method of the zoologist in our endeavours to define the various species and sub-species of Man.

At the present time anthropologists, by an overwhelming majority, recognize but one species—*Homo sapiens*—and several “Races,” of Neanthropic man. But the more closely this convention is examined the more evident does it become that we must “go the whole hog,” and form some precise definition of the “somatological units” of Denniker, and others, based on the cranial characters, as displayed in some selected and typical skull in the case of each of these “units.”

The Cromagnon skull has already been described in these pages (p. 192). There remain, for the immediate purposes of this Report, the following to be described:—Bushman, Strandlooper, Negro, Tasmanian, Australian, and Polynesian.

BUSHMAN (*Homo capensis steatopyga*).

The characteristic features of the Bushman's skull are the great parietal width, the median groove on the roof of the parietal region, and the brachyodont and markedly bullate form of the molars.

Type skull: Coll. Mus. Brit. (Nat. Hist.); Reg. No. 98.4.29.1., “S. Africa.”—L., 179; B., 136 (I. 75); Bb., 121 (H.I., 67); Bp., 100; Bn., 100 (A.I., 103). Mesaticephalic; Tapeinocephalic; Prognathous; Platyrrhine; Chamæprosopic; Phænozygous; Microsemic.

STRANDLOOPER (*Homo capensis maritimus*).

Closely resembles Bushman, but markedly larger.

NEGRO (*Homo æthiopicus*).

Skull with parietal eminences well marked; a slight median parietal sulcus; frontal eminences moderate; megadont.

Type skull: Coll. Mus. Brit. (Nat. Hist.); Reg. No. 64.6.7.40; Du Chaillu Coll., “W. Africa.”—B., 141; L., 186 (I., 75); Bb., 139 (I., 74); Bp., 103; Bn., 98 (I., 105); Nw., 27; Nh., 44 (I., 60); Np., 67; Bz., 120 (I., 55). Mesaticephalic; Metriocephalic; Prognathous; Platyrrhine; Letroprosopic; Phenozygous; Mesosemic.

NEGRILLO (*Homo æthiopicus parvus*).

Skull with parietal eminences; frontal eminences well developed; a marked median frontal ridge, extending from the forehead nearly to the coronal suture; palate long; mastoid small.

Type skull: Coll. Brit. Mus. (Nat. Hist.); Reg. No. 1.8.9.1.; Bambute, Congo Forest—B., 139; L., 178 (I., 78); Bb., 124 (I., 69); Bp., 99; Bn., 93 (I., 106; Fa., 81); Nw., 27; Nh., 46 (I., 58); P., 67; Bz., 124 (I., 54). Mesaticephalic; Tapeinocephalic; Prognathous; Platyrrhine; Leptoprosopic; Phenozygous; Microsemic.

TASMANIAN (*Homo tasmanensis*).

Skull with a marked torus supra-orbitalis; parietal eminences conspicuous; parietals on either side of the middle line markedly concave; palate of great size; nasals short and wide.

Type skull: Coll. Mus. Brit. (Nat. Hist.); Reg., No. 1917.10.29.1.—B., 141; L., 191. (I., 73); Bb., 136 (I., 71); Bn., 100; Bp., 108 (I., 108); Nh., 47; Nw., 27 (I., 56). Dolichocephalic: Tapeinocephalic; Prognathous; Platyrrhine; Chamæprosopic; Phenozygous; Microsemic.

AUSTRALIAN (*Homo sapiens antiquus*).

Torus supra-orbitalis conspicuously developed; parietal region markedly scaphoid; parietal eminences fairly conspicuous; palate large, long, wide and deep; megadont.

Type skull: Coll. Mus. Brit. (Nat. Hist.); Reg. No. 83.9.29.1.—B., 134; L., 197 (I., 68); Bb., 139 (I., 70); Bp., 108; Bn., 198 (I., 100; Fa., 80); Nw., 24; Nh., 49 (I., 50).

POLYNESIAN (*Homo sapiens sandvicensis*).

Well developed; roof of skull rising steeply from forehead to mid-parietal line and falling thence in a marked curve when seen in *norma lateralis*, on the auriculo-nasion base-line; the curve ending in a conspicuous supra-occipital protuberance; glabella well developed; parietal eminences well developed; orbits quadrangular.

Type skull: Coll. Mus. Brit. (Nat. Hist.); Reg. No. 89.4.4.1; Oahu.—B., 148; L., 187 (I., 79); Bb., 135 (I., 72); Bp., 100; Bn., 101 (I., 72); Nw., 25; Nh., 59 (I., 42); Np., 79; Bz., 137 (I., 57). Mesaticephalic; Metriocephalic; Mesognathous; Leptorrhine; Leptoprosopic; Phenozygous; Megasemic.

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- Fig. 12.—Phylogenetic tree showing the main lines of descent of modern man.
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BIBLIOGRAPHY.

1. Broom, R.—“A Contribution to the Craniology of the Yellow-Skinned Races of South Africa.” *Jour. Roy. Anthro. Inst.*, vol. liii, 1923, p. 132.
2. ——— “The Boskop Skull.” *Amer. Mus. Nat. Hist. (Anthropological Papers)*, 1920, vol. xii.
3. Dart, R.—“Boskop Remains from the South African Coast.” *Nature*, Oct., 1923, p. 623.
4. Deniker, J.—*The Races of Man*, 1900.
5. Duckworth, W. L. H.—*Morphology and Anthropology*, 1904.
6. FitzSimons, F. W.—“Palæolithic Man in South Africa.” *Nature*, 1915, p. 615.
7. ——— “The Cliff-dwellers of Tsitzikama.” *Illustrated London News*, Dec., 1921.
8. ——— “Bushman of the Zuurberg.” *S. Africa Jour. Sci.*, 1923.
9. Houghton, S. H.—“Preliminary Note on the Ancient Human Skull Remains from the Transvaal.” *Trans. Roy. Soc. South Africa*, vol. vi, 1917–18.
10. Hewett, J.—“Notes Relating to the Aboriginal Tribes of the Eastern Provinces.” *S. Africa Jour. Sci.*, vol. xvii, 1921.
11. Johnson, Sir H.—*Tribes of the Congo*.
12. Keith, Sir A.—*Antiquity of Man*, 1925.
13. ——— “The Discovery of Fossil Remains of Man in Java, Australia, and South Africa.” *Nature*, 1921, p. 603.
14. Poch, R.—“Untersuch. von Buschman-Schädeln aus Transvaal Mus.” *Ann. Transvaal Mus.*, 1909.
15. Pycraft, W. P.—“A Plea for a Substitute for the Frankfort Base-line.” *Man*, vol. xv, 1915.
16. ——— “Report on Human Crania Collected by the British Ornithologists’ Union in New Guinea.” (London: Edwards & Co.), 1916.
17. Shruballsall, F. C.—*Crania of African Bush Races*, 1897.
18. ——— “Note on Craniology of S.A. Bushmen.” *Ann. S.A. Mus.*, vol. viii, 1911.
19. ——— “Notes on some Bushmen Crania and Bones from the South African Museum, Cape Town.” *Ann. S.A. Mus.*, vol. v, 1907.
20. ——— “The Pygmy and Negro Races of Africa.” *Hunterian Lectures*, 1908.
21. Smith, Elliot.—“The Endocranial Cast of the Boskop Skull.” *Proc. Manchester Lit. and Phil. Soc.*, 1916–17, vol. lxi.
- 21A. ——— “Note upon the Endocranial Cast obtained from the Ancient Calvaria found at Boskop, Transvaal.” *Trans. Roy. Soc. South Africa*, vol. vi, 1917–18.
22. Smith, H. D.—“A Study of Pygmy Crania, based on Skulls found in Egypt.” *Biometrika*, vol. viii, 1912.
23. Smith, S. A.—“The Fossil Skull found at Talgai, Queensland.” *Trans. Roy. Soc. of London*, vol. 208, Series B, 1918.
24. Sollas, W. J.—“On the Cranial and Facial Characters of the Neanderthal Race.” *Trans. Roy. Soc. of London*, vol. 199, Series B, 1908.
25. ——— *Ancient Hunters*, 1924.
26. Stow.—*Native Races of South Africa*, 1910.
27. Theal, G. McCall.—*Ethnology and Conditions of South Africa before 1505*, 1919.
28. Woodward, Sir A.—“Guide to the Fossil Remains of Man.” *Dept. Geol. Brit. Mus.*, 1922.