The Florisbad Skull

SINCE its discovery by Prof. T. F. Dreyer[1] in 1932, the Florisbad skull has been discussed by the leading anthropologists[2] of South Africa. No one in Europe, so far as I know, has had an opportunity of examining a cast of the specimen. Thanks to Prof. Raymond Dart, of Johannesburg, I have been given this opportunity, and as a result I wish to confirm the importance of the discovery to all students of human evolution.

The primitive Rhodesian skull found in the mine at Broken Hill in 1921 is no longer an isolated antique. The Florisbad skull reproduces the massive and peculiar features of the Rhodesian forehead. But behind the forehead, the Florisbad skull assumes the characters of the Boskop skull. Indeed it may be regarded, as Dr. Alex. Galloway has maintained, as a transition from the Rhodesian to the Boskop type, the latter heralding the modern races of South Africa—Bushman and Hottentot. In its cheek bones and its upper face, the Florisbad fossil reproduces features seen in modern Bushmen and Hottentots. This new skull is a mosaic of Rhodesian, Boskop and Bush characters.

The geological ages of the Rhodesian and Boskop fossils are not known, but from the very primitive features of the Rhodesian skull and brain, one is tempted to ascribe it to a mid-pleistocene date. The large-brained Boskop skull one supposes to be much later in date—perhaps upper pleistocene. The Florisbad skull was found in a stratified deposit at a depth of 20 ft. The stone implements and fossil fauna found with the skull has led Prof. Dreyer to assign it to an early phase of the Middle Stone industry of South Africa. We may presume, therefore, that Florisbad man may have been contemporary with the Neanderthal race of Europe.

The brain of Rhodesian man measured about 1,300 c.c.; that of the Boskop man about 1,600 c.c.; that of the Florisbad man about 1,450 c.c.

The discovery of the Florisbad skull supplies evidence I have been in need of. The discoveries of fossil types already made leaves little doubt that South Africa, like Java, has been a centre where evolutionary change pursued its own independent course, ending in the Bushman and Hottentot types of to-day. It seemed hazardous to presume that the Rhodesian type, with its great supraorbital ridges and small brain, could be transformed into the Boskop type, with voluminous brain and smooth forehead, but that such a transmutation has really occurred seems to be assured by Prof. Dreyer's discovery.

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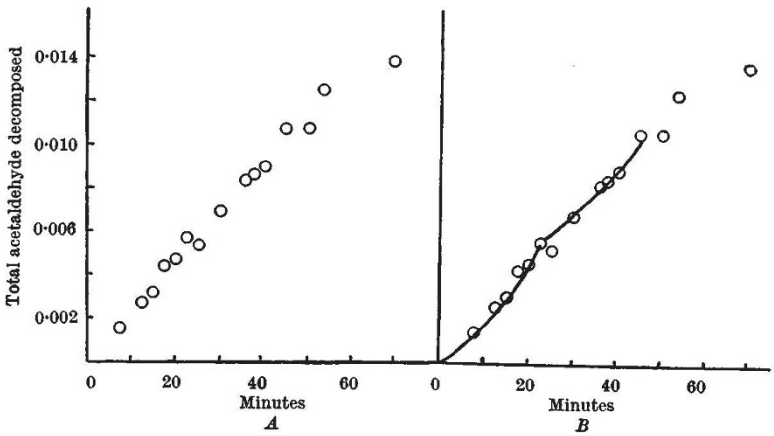
May 25.

[1] Dreyer, T. F., *Proc. Kon. Akad. v. Wetensch. te Amsterdam*, **38**, 119 (1935). A description of the skull with an account of the endocranial cast by Dr. C. U. Ariens Kappers. The endocranial cast has has also been described by A. J. Meiring (*S. Afr. J. Sci.*, **33**, 960; 1937). An account of the cultural and faunistic evidence is given by Prof. Dreyer in *Argeologiese Navorsing van die Nasionale Museum* (Bloemfontein), **1**, 65 (1938).

[2] Drennan, M. R., *S. Afr. J. Sci.*, **33**, 64 (1937); Dart, R., *Report of XVI International Geological Congress* (1936); Galloway, Alexander, *Amer. J. Physical Anthrop.*, **23**, 1 (1937); *S. Afr. J. Sci.*, **34**, 89 (1937).

Decomposition Reactions of Organic Compounds in the Gaseous State

IN NATURE and elsewhere, Prof. M. W. Travers and his collaborators have published the results of experiments on gaseous decomposition reactions, and have claimed that in a number of respects their results invalidate work published from this laboratory in the course of the past twelve years. So long as these views have appeared as the expression of the personal point of view of Prof. Travers, I have not wished to intervene, but since I have seen statements from which I differ strongly repeated at second-hand, I ask leave to make two comments.



(1) Some of the statements made in the papers of Prof. Travers convey the impression that we have relied uncritically on pressure changes as indications of reaction rates. This is not correct. In some cases the reaction has been followed by analytical methods over its whole course[1], and in others a mathematical method has been used to show that the pressure changes employed were in fact proportional to the initial transformation rate over the whole range used[2].

(2) I am not competent to summarize the views of Prof. Travers, since I am far from understanding them, but the major difference of opinion relates to the degree of complexity of certain processes. According to Prof. Travers, in the thermal decomposition of, for example, acetaldehyde "the initial stages of thermal decomposition show strong self-acceleration, followed by a sudden slowing down. This slowing down is always accompanied by the speeding up of another process, but it generally happens that the secondary process begins to speed up before the break point, and slows down again after the break point is passed".

In the accompanying graphs, I have plotted in *A* the results given by Seddon and Travers[3] for the decomposition of acetaldehyde at 400°. It seems to me quite obvious that these points are grouped within the experimental error about a single curve somewhat concave to the time axis, an interpretation which would have tallied with our results and with those of Letort. (Seddon and Travers admit the possibility of a slight error in the initial timing.) In *B* is reproduced the curve which Seddon and Travers draw through the *same points*.

This summarizes and typifies the main matter at issue between the two schools of thought. Prof. Travers has given his evidence and stated his beliefs as he has every right to do, but since the conclusions