

(15) The prominences must be fed from the outer parts of the solar atmosphere, since their spectra show lines which are absent from the spectrum of the chromosphere.

(16) The absence of the Fraunhofer lines from the integrated spectra of the solar surroundings and uneclipsed photosphere shortly after totality need not necessarily imply the existence of a reversing layer.

(17) The spectrum of the base of the sun's atmosphere, as recorded by the prismatic camera, contains only a small number of lines as compared with the Fraunhofer spectrum. Some of the strongest bright lines in the spectrum of the chromosphere are not represented by dark lines in the Fraunhofer spectrum, and some of the most intense Fraunhofer lines were not seen bright in the spectrum of the chromosphere. The so-called "reversing layer" is therefore incompetent to produce the Fraunhofer spectrum by its absorption.

(18) Some of the Fraunhofer lines are produced by absorption taking place in the chromosphere, while others are produced by absorption at higher levels.

(19) The eclipse work strengthens the view that chemical substances are dissociated at solar temperatures.

"On some Palæolithic Implements found in Somaliland by Mr. H. W. Seton-Karr." By Sir JOHN EVANS, K.C.B., D.C.L., Treas. and V.P.R.S. Received April 27,—Read April 30, 1896.

Although some account of his recent discoveries in Somaliland (tropical Africa) has already been given to the Anthropological Institute by Mr. Seton-Karr, and has been published in their Journal,* these discoveries seem to me to have so wide an interest, and such an important bearing on the question of the original home of the human race, that I venture to call the attention of this Society to them.

In the course of more than one visit to Somaliland for sporting purposes, Mr. Seton-Karr noticed, and brought home for examination, a number of worked flints, mostly of no great size, which he laid before the Anthropological Section of the British Association, at the meeting last year at Ipswich.† Although many of these specimens were broad flat flakes trimmed along the edges so as to be of the "le Moustier type" of M. Gabriel de Mortillet, and although the general *facies* of the collection was suggestive of the implements being of palæolithic age, they did not afford sufficient evidence to enable a satisfactory judgment to be formed whether they undoubtedly belonged to the palæolithic period.

* Vol. 25, p. 271.

† Report, 1895, p. 824.

Before returning to Somaliland, Mr. Seton-Karr visited my collections, and studied the various forms of implements found in the river-gravels and Pleistocene deposits in different parts of the world, so as to become familiar with their leading features; and on revisiting Somaliland during the past winter, he was fortunate enough to meet with a large number of specimens in form absolutely identical with some from the valley of the Somme and other places which he had seen in my collection.

Of this identity in form there can be no doubt, and though at present no fossil mammalian or other remains have been found with the implements, we need not hesitate in claiming them as palæolithic. They seem to be scattered all over the country, and to have been washed out of sandy or loamy deposits by the action of rain, or, in some instances, to have been laid bare by the wind. They appear also to occur most frequently in the neighbourhood of existing water-courses, which is at all events suggestive of the beds in which they occur having been in some manner the result of river-action. It is, however, at present premature to enlarge on the circumstances of their discovery. Their great interest consists in the identity of their forms with those of the implements found in the Pleistocene deposits of North Western Europe and elsewhere. Any one comparing the implements from such widely separated localities, the one with the other, must feel that if they have not been actually made by the same race of men, there must have been some contact of the closest kind between the races who manufactured implements of such identical forms. Those from Somaliland occur in both flint (much whitened and decomposed by exposure) and in quartzite, but the implements made from the two materials are almost indistinguishable in form. Those of lanceolate shape are most abundant, but the usual ovate and other forms are present in considerable numbers.

Turning westward from Somaliland we meet with flint implements of the same character found by Professor Flinders Petrie at a height of many hundred feet above the valley of the Nile. A few have been discovered in Northern Africa, they recur in the valley of the Manzanares in Spain, in some districts in Central Italy, and abound in the river-valleys of France and England. Turning eastward we encounter implements of analogous forms, one found by M. Chantre in the valley of the Euphrates, and many made of quartzite in the laterite deposits of India; while in Southern Africa almost similar types occur, though their age is somewhat uncertain.

That the cradle of the human family must have been situated in some part of the world where the climate was genial, and the means of subsistence readily obtained, seems almost self-evident; and that these discoveries in Somaliland may serve to elucidate the course by which human civilisation, such as it was, if not indeed the human

race, proceeded westward from its early home in the east is a fair subject for speculation. But, under any circumstances, this discovery aids in bridging over the interval between palæolithic man in Britain and in India, and adds another link to the chain of evidence by which the original cradle of the human family may eventually be identified, and tends to prove the unity of race between the inhabitants of Asia, Africa, and Europe, in Palæolithic times.

“On the Liqutation of certain Alloys of Gold.” By EDWARD MATTHEY, F.S.A., F.C.S., Assoc. R.S.M. Communicated by Sir G. G. STOKES, Bart., F.R.S. Received April 14,—
Read May 7, 1896.

The molecular distribution of the metals in alloys of gold and of metals of the platinum group has been described by me at some length, in a series of papers which have already been published by the Royal Society.* New interest in the subject has, however, arisen in connexion with the extraordinary development in various parts of the world especially in South Africa, of certain processes which are now employed for extracting gold from its ores. Their use has been attended with the introduction into this country of a series of alloys of gold and the base metals which have hitherto rarely been met with in metallurgical industry. The base metals associated with the gold in these cases are usually the very ordinary ones lead and zinc, but their presence in the gold has given rise to unexpected difficulties, as the distribution of the precious metal in the ingots which reach this country is so peculiar, that it is not possible to estimate the value of the ingots by taking the pieces of metal required for the assay, by any of the well-known methods now in use.

The grouping of the metal in these ingots presents much scientific as well as industrial interest, and the following is a brief statement of the facts which have been observed.

A. An ingot of gold weighing 3·545 kilograms was assayed with a view to subjecting it to the ordinary operation of refining. A piece of metal was, therefore, cut from the base of the ingot at the point marked A, and the following are the results of four assays made on this piece of metal :—

Gold 1	665·8
2	663·6
3	662·4
4	658·0
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Average	662·45

* ‘Phil. Trans.,’ A, vol. 183, p. 629, 1892. ‘Roy. Soc. Proc.,’ vol. 47, p. 180, 1890.