polonium is radium D (radio-lead), which grows polonium and has a period of half-transformation of about twenty years. Since polonium breaks up about 5000 times faster than radium, its activity, weight for weight, should be about 5000 times greater than that of radium. There is nothing surprising in this, for the radium emanation has an activity about 200,000 times that of radium, while radium A (period three minutes) must have an activity 400 million times that of radium itself. Since the radiation from polonium is entirely in the form of α rays, it is to be expected that the radiation from it would show chemical and physical effects identical with those observed for pure emanation, the only difference being that the products of the latter emit β and γ rays as well.

Apart from the interest of obtaining a weighable quantity of polonium in a pure state, the real importance of the present investigations of Mme. Curie lies in the probable solution of the question of the nature of the substance into which the polonium is transformed. This problem has been much discussed in recent years. Since polonium emits α particles, one of its products of decomposition, as for all the other α-ray products, should be helium. The production of helium from a preparation of polonium has been observed by Rutherford and Boltwood (Manchester Lit. and Phil. Society, November 30, 1909), and also by Mme. Curie and Debierne in their present experiments. Boltwood several years ago suggested that the end product of the radium series was lead, and has collected strong evidence in support of this view by comparing the amount of helium and lead in old radioactive minerals. Since polonium is the last of the active products observed in the radium series, it is to be expected that polonium should be transformed into helium and lead, one atom of polonium producing one atom of helium and one atom of lead. This point of view receives additional weight from consideration of the atomic weight to be expected for the end product of radium. Since in the uranium-radium series, seven α particles, each of which is an atom of helium of atomic weight four, are successively expelled before radium F is reached, the atomic weight of polonium should be $7 \times 4 = 28$ units less than uranium (atomic weight 238·5). This gives an atomic weight of polonium of 210·5, and after the loss of an α particle, a final product of atomic weight 206·5—a value very close to the atomic weight of lead.

It is a matter of very great interest and importance to settle definitely whether polonium changes into lead. The evidence as a whole has long been in favour of that supposition. The outlook is very promising that the experiments of Mme. Curie and Debierne will settle this question conclusively. No doubt, an interval must elapse to allow the polonium to decay before the final examination of the residual substance can be made. E. RUTHERFORD.

THE DISCOVERY OF A SKELETON OF PALÆOLITHIC MAN.

DR. CAPITAN and M. Peyrony are to be congratulated on another important discovery of the remains of Palæolithic man on September 17, at Ferrassie, in Dordogne, a locality which has been made famous by the investigations of M. Peyrony during the past decade. Here he has discovered and studied five distinct layers, each containing the artifacts and animal remains of as many well-defined epochs. In ascending order these are:—(1) Acheulian, (2) Mousterian, (3) Lower Aurignacian, (4) Middle Aurignacian, and (5) Upper Aurignacian. The skeleton, which is described by Dr. Capitan in *La Nature* for December 25, 1909, was found between the layers 1 and 2, and as these and the three upper layers were absolutely intact, it is certain that the remains belong to the Mousterian epoch. The first bones seen were the ends of a tibia and femur, and before excavating further an invitation was sent to a number of French archæologists to witness the exhumation. With infinite care and precautions, an entire skeleton was revealed. It lay on its back, with the trunk turned slightly to the left; the legs were strongly flexed, the knees being turned to the right; the left arm was extended along the side, with the hand at the hip; the right arm was flexed, the hand being near the shoulder, and the head was turned to the left, the mouth being open.

The skeleton was photographed *in situ*. Around, above, and beneath were a large number of bones which had served as food for and had been broken by the Mousterians, as well as teeth of bisons, deer, goats and reindeer; the artifacts included points, knife-scrapers, disks, hammers, and bone-breakers of quartz of the Lower Mousterian type (that is, worked on one face only).

The long and small bones were carefully removed. The pelvis, thorax and skull were severally covered with tinfoil, and plaster was poured around each, so that when the plaster set they could be removed without injury. Thus protected, they were taken to Paris without further damage or loss. The restoration, mounting, and study of the skeleton are being undertaken by Dr. Capitan. As no anatomical details have as yet been given concerning the find, anthropologists will have to wait with what patience they can muster until the investigations are completed.

The attention of readers of NATURE has been directed at various times to the recent finds of Palæolithic man, but as this is the first whole skeleton which has been obtained of a Mousterian man, the discovery is one of prime importance.

There is no reason to doubt that the body was definitely placed where it was found; probably it was placed in a corner of a large rock shelter, and covered with earth, stones, and perhaps branches. The shelter was occupied later by generations of men of the Aurignacian epoch. Finally the overhanging chalk roof fell, and its débris subsequently became covered by a layer of stones and earth five feet in thickness. Thus protected, it has remained for 20,000 years. A. C. H.

TROPICAL AGRICULTURE.[1]

THIS work does not claim to be a handbook for the technical man, but to give information of value to students, administrators, and others on tropical crops, and at the same time to present the political and theoretical aspects of the subject.

Part i. (pp. 1–39) deals with the "Preliminaries to Agriculture." Such topics as soil, climate, labour, transport, capital, supply of water, tools, and plant acclimatisation are briefly discussed, frequently by drawing contrasts between the less known conditions of the tropics and the better known conditions of temperate regions.

Part ii. (pp. 40–141), approximately half the volume, is devoted to the "Principal Cultivations of the Tropics." This is, in our opinion, the least satisfactory portion of the book. The principal industries of Ceylon, with which the author is closely acquainted, are well done. The accounts of rice, coffee, tea, cocoanuts, and Para rubber, are admirable, although for a work dealing with the tropics as a whole Ceylon

[1] "Agriculture in the Tropics." An Elementary Treatise. By Dr. J. C Willis. Pp. xviii+222. (Cambridge: University Press, 1909.) Price 7s. 6d. net.