(basaltic) magma, entered considerably into the basal structure of the continents, the radio-thermal effects would seem to be reduced some fifty per cent. and the density be only slightly affected. If diorites shared in the deeper continental structure (as Holmes has suggested) the same effects would arise, but in lesser degree.

It would seem that upon the thermal aspects of the question all we can say is that our estimates point clearly and unmistakably to basal temperatures adequate to annul or greatly reduce escape of heat from the underlying sima or, even, possibly to give rise locally to some downward flux: and that as regards surface gradients the data are so uncertain that beyond their testimony to the continued ascent of heat from beneath in amount sufficient to support and confirm our views as to its radioactive origin throughout continental materials of relatively high radioactivity—we cannot go. J. JOLY.

Trinity College,
Dublin, Oct. 3.

Dug-out Canoe in Algoa Bay.

MR. F. W. FITZSIMONS has sent me a fragment of wood from the dug-out canoe washed ashore in Algoa Bay, described by him in NATURE of May 21, and since referred to by other correspondents in these columns. I am naturally far from desirous of entering into the discussion on the exact origin of the canoe, but the results of my examination of the wood show, I think conclusively, that the canoe had its origin somewhere in the Bay of Bengal off the coast of Burma or the Malay Peninsula, and that the Nicobar Islands cannot have furnished the particular timber from which it was made.

Examination of the fragment received from Mr. FitzSimons shows that the wood is derived from an Indo-Malayan tree of the family Anacardiaceæ. The anatomical structure, which is quite distinctive, identifies the specimen with one of two closely related genera, Gluta and Melanorrhœa. Species of both these genera are distributed throughout Indo-Malaya and are represented in the Mergui Archipelago by *Gluta tavoyana* Wall. and *Melanorrhœa glabra* Wall., but so far neither genus has been recorded from the Nicobar Islands. A study of specimens or descriptions of all the genera of the Anacardiaceæ represented in the Nicobar Islands has not revealed any indigenous wood which bears more than a family resemblance to the timber of the canoe. B. J. RENDLE.

Imperial Forestry Institute,
University of Oxford.

An Aspect of the Biochemistry of Sugars.

THE issue of NATURE of July 9, p. 44, contains a communication by Prof. R. Robinson, in which, on purely speculative grounds, far-reaching conclusions are drawn (1) regarding the origin in Nature of galactose, and (2) regarding the configuration of the pentose of the plant nucleic acid. The second conclusion met with the approval of Haworth.

The views of Prof. Robinson are contradicted by recorded facts.

(1) Glucose-3-phosphoric acid ferments at the same rate as glucose. Should glucose-3-phosphoric acid on hydrolysis pass into allose, then the rate of fermentation would be lower than that of glucose. Glucose-6-phosphoric acid (very stable ester) ferments at a lower rate than glucose.

(2) In the pentosephosphoric acid of the yeast nucleic acid, the phosphoric acid is attached to carbon atom (5) which is symmetric.

Furthermore, Dr. A. L. Raymond and the writer have found that on hydrolysis of glucose-3-phosphoric acid, only one sugar, namely, glucose, is obtained.

A more detailed analysis of Prof. Robinson's communication will be published in the *Journal of Biological Chemistry* in connexion with the report on the hydrolysis of glucose-3-phosphoric acid.

P. A. LEVENE.

The Rockefeller Institute for
Medical Research,
New York, Sept. 16.

The Isolation of Protoactinium (Element 91).

THE exact relation of the actinium to the uranium-radium disintegration series has been a matter for discussion since the discovery of actinium. A. S. Russell (NATURE, Sept. 17, p. 402) has recently discussed the problem and made a new attempt to predict the atomic weight of the longest-lived member of the series, protoactinium. He mentioned that experimental verification of the suggested values was difficult owing to the great difficulty of separating protoactinium from tantalum.

Recently it has been shown in this laboratory that the separation of protoactinium from other elements is not so difficult as has been thought, and about 2 mg. of almost pure oxide of protoactinium has been isolated. An account of this will shortly be published. The half-value period of this product has been redetermined by O. Hahn and E. Walling as 20,000 years. For each gram of radium, therefore, in a mineral there is approximately 0·4 gram of protoactinium.

It is hoped that the difficulties, both financial and technical, of preparing a sufficient quantity of the element for an atomic weight determination will soon be overcome so that this outstanding problem of radioactivity may be settled.

ARISTID GROSSE.

Abteilung Hahn-Meitner,
Kaiser Wilhelm-Institut für Chemie,
Berlin, Sept. 27.

Formation of Anthraquinone by Vapour-phase Oxidation of Toluene, and Toluene-containing Petroleum Distillates.

THE recent paper of C. R. Downs (*Jour. Soc. Chem. Ind.*, **46**, 383T; 1927), stating some facts and also speculations concerning catalytic oxidations, is of much interest, and we wish to confirm the interesting oxidation and condensation of toluene to anthraquinone. Experimental details of most of these vapour-phase reactions are almost entirely lacking, the processes being covered by numerous patents.

We have obtained small amounts of anthraquinone with benzoic acid and benzaldehyde by passing air mixed with toluene vapour, or the vapour of a toluene-containing petroleum distillate, over a catalyst consisting of aluminium grains coated with vanadium pentoxide. The gas rate used was about 12 litres per hour, and the catalyst maintained at 400° C. The gas mixture was obtained by bubbling air through the toluene held at 50° C. The greater portion of the anthraquinone and benzoic acid formed under these conditions crystallised out in the cooler parts of the exit end of the catalyst tube.

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A. W. NASH.

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