Letters to the Editor.

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The Crystal Structure of Krypton.

WE have made two Debye-Scherrer exposures of solid krypton at the temperature of liquid hydrogen boiling under normal pressure, one with copper $K\alpha$ radiation, the other one with unfiltered iron radiation. As was to be expected, we found a face-centred cubic lattice. The lattice constant is 5.59 Å. The calculated density is 3.13. The distance of the centres of neighbouring krypton atoms amounts to 3.96 Å, whereas from viscosity measurements the value 3.23 Å. is deduced for the diameter of the atoms. Ratio 1.22; the analogous ratios for neon, argon, and xenon are 1.35, 1.29, and 1.23 respectively.

We are indebted to G. Claude for the quantity of krypton we used.

A more detailed account of this work is being published in the *Proceedings of the Amsterdam Academy*.

W. H. KEESOM.

H. H. MOOY.

Leyden, May 31.

IN a previous letter to NATURE upon the crystal structure of xenon, we announced that we would next examine krypton. We have modified the camera used for the previous experiments by reducing to a great extent its internal volume and making it perfectly gas-tight, so as to be able to work in a krypton atmosphere, thus overcoming the difficulties previously encountered.

The gas has been brought to the solid state upon a quartz capillary (set in the axis of the Debye camera) internally cooled by liquid nitrogen. The photograms obtained, with iron anticathode, showed 14 lines, 4 of which belong to the $K\beta$ radiation, corresponding to a face-centred cubic structure. The lattice constant of the elementary cell of krypton, containing 4 atoms, is $a = 5.78$ Å. The following data have also been calculated: volume, 193×10^{-24} c.c.; density, 2.83 gm./c.c.; atomic radius, 2.04 Å. Experimental details and a discussion upon the present data will be published elsewhere.

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May 31.

Ethyl Alcohol: a Product of High Pressure Syntheses.

DURING a recent discussion at the Royal Society on catalytic reactions at high pressures, Mr. M. P. Applebey of the Imperial Chemical Industries, Limited, Billingham, remarked that "in our experience we have never succeeded in obtaining with any catalyst whatsoever, more than a mere trace of ethyl alcohol".

This statement, which expresses a matter of fact, has since been followed by allusions in the Press which appear to suggest that there is some fundamental reason why this alcohol, unlike other primary alcohols, may not be produced in the series of condensations occurring between carbon monoxide and hydrogen in presence of various catalysts.

Dr. E. K. Rideal, writing in NATURE of April 12, p. 584, refers to the production through the foregoing condensations of a whole sequence of higher aldehydes and alcohols, "with the possible exception of ethyl alcohol".

A paraphrase of this statement appears in a leading article of *Chemistry and Industry*, April 25, 1930.

On the other hand, there is the testimony of Franz Fischer and Hans Tropsch (*Brennstoff Chemie*, 4, 281; 1923), who found that in the presence of alkali iron under pressure, ethyl alcohol was present among the condensation products of carbon monoxide and hydrogen. Moreover, in a lecture to the German Chemical Society (*Ber.*, 59, 30; 1926), A. Mittasch included ethyl alcohol in a comprehensive list of the organic products of this condensation. It should, however, be recognised that these German memoirs indicate conditions such as favour the production of very complex mixtures, including alcohols, ketones, aldehydes, organic acids, esters, and hydrocarbons.

Working with various catalysts we have obtained evidence of the formation of ethyl alcohol in not inconsiderable quantities. Our specimens of alcohol boil at $78.2^\circ/760$ mm. and furnish ethyl 3:5-dinitrobenzoate melting at 92° and giving the same melting point when mixed with a 3:5-dinitrobenzoate prepared from an authentic specimen of ethyl alcohol.

It would accordingly be desirable to suspend judgment on this debated point until the appearance of more complete evidence. We propose to publish in the near future a detailed account of our production of ethyl alcohol from carbon monoxide and hydrogen.

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May 24.

The Acquired Characters of *Alytes*.

I AM glad that Prof. MacBride (NATURE, May 3) agrees that a reversion to the original environment would be likely to produce the result I suggest, but I am sorry he assumes that I accept Kammerer's work in the sense he does. What I said was, that even if all Kammerer's results with regard to *Alytes* were accepted, the experiment could not be held as complete until the effects of a reversion to the original environment had been demonstrated. Prof. MacBride now says that, unless there existed in the germ-plasm potentialities to respond in a definite manner to changes in the environment, there would be no possibility of evolution.

I entirely fail to see any reason for this assertion. Such potentialities are doubtless of great value to the individual, but what is their relation to evolution? That such potentialities have been produced and may be modified in the course of evolution like other characters, most biologists would, I imagine, be prepared to admit; but it seems reasonable to regard them as the product rather than as the cause. Let me state a hypothetical case. An animal during its development passes through a stage where it possesses gills. It has the potentiality to respond to the environment so that if the parents are kept from water the gill stage occurs in the egg, but if the parents are given free access to water, the animal hatches out earlier and the gill stage occurs in the free-swimming individual. I do not see, however often the change of environment may be made during consecutive generations, with its consequent temporary change in the character, that any new character or permanent