

allow an extension of the northern boundary of certain animals, and it is perhaps natural to suppose that, following this extension, the centres of distribution may also have shifted more to the north. Such an extension might thus bring turtles into a region in which westerly winds would tend to drift them up the English Channel, without necessarily a passage of any considerable body of water in the same direction.

F. S. RUSSELL.

Marine Biological Association,  
Plymouth.  
Jan. 21.

<sup>1</sup> Parker, H. W., *NATURE*, 143, 121 (Jan. 21, 1939).

<sup>2</sup> Stephen, A. C., *J. Animal Ecol.*, 7, 125 (1938).

<sup>3</sup> Bruun, A. Fr., *Nytt Mag. Naturv.*, Oslo, 78, 295 (1938).

#### Formation of Native Lead under Laboratory Conditions

THE conditions which may have governed the formation of native metals in non-igneous rocks are not always readily reproducible in the laboratory owing to the difficulty of performing experiments

requiring many years for completion. An observation made during the reconstruction of the Plymouth Laboratory may be regarded as an experiment of fifty years duration.

The slate back, sides and bottom of the aquarium tanks in the main laboratory, built in 1888 and dismantled recently, were cemented with a lute composed of white lead with some red lead and linseed oil. During fifty years, pockets and seepage channels have formed into which sea-water, rich in organic matter, has crept. The oxides and carbonates of lead have been reduced, in some places to black lead sulphide. More remarkable has been the further reduction, in other pockets, giving rise to inclusions of metallic lead answering to the usual analytical tests. When first exposed these had rough but bright metallic surfaces, similar in appearance, both to the unaided eye and under the microscope, to commercial lead which had been etched with dilute acetic acid.

L. H. N. COOPER.

D. P. WILSON.

Marine Biological Laboratory,  
Plymouth.  
Jan. 10.

#### Points from Foregoing Letters

INFRA-RED absorption in the region of  $3\mu$  of *o*- and *p*-methoxybenzoic acids in carbon tetrachloride has been investigated by Dr. J. J. Fox and Dr. A. E. Martin. These compounds show a small band attributable to OH vibrations in the monomer, and a broad band at  $3.4\mu$  due to OH vibrations in the dimer. In addition, the *ortho*-compound has an intense band at  $2.974\mu$  ascribed to intramolecular association of the OH group.

Prof. H. A. Bethe, F. Hoyle and Prof. R. Peierls state that the experimental evidence on  $\beta$ -disintegrations, except for the shape of the energy spectrum, supports Fermi's original theory rather than its modification by Konopinski and Uhlenbeck, and that one can account for the shape of the spectrum by postulating the emission, in some disintegrations, of  $\gamma$ -rays of suitable energy and intensity. The existence of such  $\gamma$ -rays is in some cases confirmed, in others not ruled out, by the experimental evidence.

In the same way as vectors are generalized to tensors, Dirac wave-functions may be generalized to 'undors' and a consistent undor-calculus may be developed, according to F. J. Belinfante, who presents the equation for heavy quanta (baryterons) in a concise form closely analogous to the Dirac equation of the electron.

Referring to the variations observed by J. Evershed in the radiation periods on the solar disk, Sir Joseph Larmor states that they support the view that the forces of mutual atomic collision which float up the radiating atoms in the sun's atmosphere must provide a compensating factor that annuls any influence on the period of radiation which would otherwise be produced by the free fall. If the gravitational spectroscopic displacement is not solely of the Einsteinian type but is influenced by other forces, as indicated, it may be necessary to reconsider the enormous densities which have been calculated for certain stars such as the dark companion of Sirius.

Dr. W. Edwards Deming takes the view that there are circumstances in which prior probabilities have a frequency interpretation, and describes an experiment in which the frequency interpretations of the prior and posterior probabilities are contrasted: the former, he states, are probabilities associated with the circumstances in which all the experiments are performed, and might be termed *unselected*. The posterior probabilities also refer to the circumstances of the experiment but not to all experiments; they refer to the selected class, namely, those that had a particular result, all others being excluded, and might be designated as *selected* rather than posterior.

Prof. H. Lundegårdh develops an electrochemical theory of salt absorption according to which cations pass without difficulty into the protoplasm owing to the negative charge of the protoplasmic plant membrane, whereas the uptake of anions requires a supply of energy, which is provided by oxidation processes. The author remarks that this applies to the plant cells so far investigated and that other cells may behave differently.

Dr. H. Gaffron states that by prolonged anaerobic treatment in an atmosphere of hydrogen green algae acquire the capacity to reduce carbon dioxide with hydrogen when illuminated. No oxygen is developed. This new light reaction may go on for a long time at low light intensities but stops immediately at higher intensities, the absorption of hydrogen then changing into the normal production of oxygen.

The work of Prof. W. McDougall and Miss Dorothy Sladden is quoted by Prof. E. W. MacBride as affording conclusive evidence that acquired habits of one generation may be passed on to the next. Prof. MacBride reiterates his view that this is the main mechanism of evolutionary change, and maintains that 'mutants' are physiologically weaklings which tend to return to the ancestral type.