With $b^+(\mathbf{k})$ constructed analogously, the required Bose commutation rules are verified immediately for $b(\mathbf{k})$ and $b^+(\mathbf{k})$ if the amplitudes of neutrinos and antineutrinos obey the Fermi statistics, and if all the states above a certain one are unoccupied.

Regarding ε as the 'charge' of neutrino, we see that the coherence condition is fulfilled, both 'charge' and mass of the neutrino particles tending to zero, but their relation remaining finite and equal to $\sqrt{\frac{c^3}{4\pi h}}$ (neutrino) and $-\sqrt{\frac{c^3}{4\pi h}}$ (antineutrino).

In the same way, it is possible to take into account the spin of neutrino particles and to obtain a formula[4] correspondingly generalized.

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Sept. 13.

[1] Jordan, P., *Z. Phys.*, **93**, 464 (1935).
[2] cf. Jordan, P., and Kronig, R. de L., *Z. Phys.*, **100**, 569 (1936).
[3] Sokolow, A., NATURE, **139**, 1071 (1937).
[4] cf. Sokolow, A., "On the Neutrino Theory of Light (three dimensional case)", *Phys. Z. Sovjetunion*, in the press.

Dry Crossing of the Nile

READERS who have followed the correspondence under this head[1,2] may be interested to learn that the dry crossing, which is situated at a point some 10½ miles downstream of Nimule, is definitely reported by Mr. N. B. Watney, district commissioner, West Nile, to be breaking up[3].

My original informant, a native, told me that the crossing formed in 1917, disappeared in 1921, and reformed about 1930—it was certainly well in evidence when I first saw it from the air in the following year. Tradition has it, I learnt, that the dry crossing forms in times of famine and disappears in times of plenty. Recorded famine years are 1898, 1908, 1918–19 and 1928. Thus if these figures are any guide, we should be on the verge of another famine ; but administrative precautions in this regard have been well in hand for some time.

Dr. Hurst suggests[1] that he saw the beginnings of this dry crossing in 1924, but it seems that this is not so, for the sudd he refers to was "at a point where the river narrowed suddenly". This it does not do at the dry crossing, and a satisfactory explanation of its repeated formation at that particular spot has yet to be found.

There is a mistake in my original letter[1] ; "1930" should read "1931".

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Geological Survey Office,
Entebbe, Uganda.
Oct. 14.

[1] NATURE, **139**, 961 (June 5, 1937).
[2] NATURE, **139**, 994 (June 12, 1937).
[3] *Uganda Journal*, **4**, No. 4, 350 (May 1937).

Points from Foregoing Letters

PHOTOGRAPHS taken with a rotating camera by Dr. T. E. Allibone and J. M. Meek show that, in laboratory spark discharges as in lightning, a pre-discharge or 'leader stroke' traverses the whole of the inter-electrode gap before the main discharge occurs. The leader stroke begins from one or both electrodes, travelling at a rate of 20–40 km. per second (faster at reduced pressures). Its direction may be deduced from the branching of the discharge.

The hæmocyanin molecule is split into halves and eighths by means of ultra-sonic waves with a frequency of 250,000 per sec. This is inferred by Sven Brohult from sedimentation experiments carried out with the ultra-centrifuge.

Dr. M. Dixon states that iodoacetate, in the concentration required to abolish yeast fermentation, completely inhibits the alcohol dehydrogenase but does not affect any other dehydrogenase tested. This may explain the inhibition of the fermentation. The action is on the enzyme itself and not on the coenzyme or an enzyme-coenzyme complex.

When egg albumen is precipitated with metaphosphoric acid, the ratio of 'bound' phosphorus to nitrogen corresponds to the free amino groups in the albumen, according to Dr. H. Herrmann and G. Perlmann. If clupein solution is used, the ratio corresponds to the number of positively charged amino groups in the clupein molecule.

The growth-promoting hormone, auxin, accelerates the streaming of protoplasm in cells of coleoptiles of young oats, according to Prof. K. V. Thimann and Miss B. M. Sweeney. The effect lasts about half an hour, longer if fructose is added ; oxygen supply also is a factor. The authors conclude that the respiration of the young oat coleoptiles comprises at least three processes : one, accelerated by auxin, controls protoplasmic streaming and growth ; another, also accelerated by auxin, oxidizes sugar and accelerates growth but does not affect streaming ; other oxidation reactions which do not affect streaming or growth and are not affected by auxin, are influenced by substances such as histidine and dinitrophenol.

Prof. R. H. Stoughton and D. R. Hole find that, as in the case of cereals and fodder, when the short-day ornamental Mexican plant *Tithonia speciosa* is exposed to short days during the early stage of growth and afterwards to long days, there is a notable acceleration of flowering, and a change in the entire habits of the plant.

Dr. H. J. S. Sand criticizes some of the recommendations made by the Joint Committee of the Chemical, Faraday and Physical Societies on Symbols for Thermodynamical and Physico-Chemical Quantities, namely, its ban on (1) the use of symbols with a bar drawn through them to indicate quantities leaving the system ; (2) the use of single symbols for familiar concepts such as the heat of reaction ; (3) the employment of simple thermochemical equations as hitherto used ; (4) the use of symbols such as U to express changes or differences in the magnitudes represented.

Mr. Donald Belcher finds that, in aqueous solutions of phenol at 25°, the ionic mobilities of hydrochloric acid are proportional to the fluidity to a high degree of accuracy up to 0·3 normal phenol. If this is true for other systems, it is of importance in the interpretation of dissociation constants as determined from conductance measurements.

A. Sokolow proposes a formula for the relation between the field of the photons and neutrino in the three-dimensional case.