

Heavy Electrons in Cosmic Rays

A LETTER under this title appeared in *NATURE* of April 16. In the table on p. 685, the values of the momentum of the particles *a*, *b*, *c* and *d* (col. 4) should have been given as 69, 110, 95 and 73 respectively, instead of 65, 107, 86 and 67. The errors arose from an unnecessary alteration of the completed table, under the impression that some early preliminary data had been quoted. The masses in the last column correspond to the correct values of the momentum. We would also add that the results of Nishina and his collaborators, referred to in the above letter are in accord with ours for particulars *a*, *c* and *d* rather than *b*.

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Illusion of Convergent Beams of Light

'CONVERGENT' beams similar to those reported by J. J. Hopfield¹ and A. C. Klebs and others² can be observed near lighthouses.

The effect was frequently observed by me in

Scheveningen in Holland and corroborated by others, from a road running parallel to the shore between the lighthouse and the sea.

At evenings when in a slight haze the rotating beam of light from the lighthouse could be followed to the opposite horizon, the light beams seemed to converge towards the opposite horizon in such a way that a rotating beam of light appeared to be issuing from this horizon opposite the lighthouse, giving a strong impression that a second lighthouse, issuing a rotating beam of light, was out at sea beneath the opposite horizon.

The phenomenon is different from those observed with sunbeams in so far as the beams from the lighthouse are really diverging, practically from a nearby point, whilst the sunbeams are parallel. It is interesting that similar 'convergent' beams can be observed in both cases.

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¹ *NATURE*, **141**, 333 (1938).

² *NATURE*, **141**, 558 (1938).

Points from Foregoing Letters

THAT yeast cells, transported by wind, may be carriers of various viruses, including that responsible for foot-and-mouth disease, is suggested by Prof. R. C. McLean, who points out that methods of acquiring immune strains of animals might be the only way of preventing the disease.

The discovery of a complete right jaw-bone, with several teeth, attributed to *Australopithecus*, is reported by Dr. R. Broom. The reconstructed face agrees fairly closely with that of the chimpanzee but the teeth are human. The author suggests that man may have arisen from *Australopithecus* by a mutation resulting in a large brain.

A method of gilding copper by applying a melted gold-copper eutectic (80 per cent gold, 20 per cent copper) which was apparently used by the pre-Columbian Indians is described by P. Bergsøe. The alloying was used, apart from purposes of decoration, to increase the hardness of certain articles, such as fish-hooks.

A colorimetric method for the estimation of nicotinic acid—the probable pellagra preventive factor—has been developed by M. Swaminathan. The nicotinic acid content of twelve common foodstuffs, as determined by the method, is also given. Values ranged from 1.48 mgm. per cent for maize up to 62.50 mgm. per cent for dried brewer's yeast.

By heating alloys of copper or silver containing a small percentage of aluminium or beryllium in an atmosphere of hydrogen and water vapour, under controlled conditions which allow selective oxidation, G. J. Thomas and Laurence E. Price have obtained protective films of alumina and beryllia which render the metals almost immune from tarnishing and scaling. The authors explain how they were led to their experiments by theoretical considerations on the electrical conductivity of surface films.

Dr. F. J. Stare, E. S. Gordon and M. J. Musser have observed that succinic acid does not catalyse the aerobic respiration of skeletal muscle tissue obtained from patients with myasthenia gravis and progressive muscular dystrophy, and that it is

oxidized only to a slight extent. The usual catalytic effect was observed with normal human muscle. The results are of interest as they suggest that disturbances in the succinic acid cycle may be associated with these muscular diseases.

A graph showing the activating effect of synthetic vitamin B₁ upon the production of carbon dioxide through the action of cocarboxylase is given by Dr. S. Ochoa. The pyrimidine group of the vitamin appears to be responsible for activation, and previous views on cocarboxylase action may have to be revised.

Dr. E. Bergmann and Prof. R. Samuel advance a theory of photodecomposition of organic molecules according to which two bonds are fissured simultaneously, not by the splitting of two single bonds, but by a transition of the molecule to a repulsive state, which is produced by the repulsive character of the s² group of electrons of the central atom.

R. F. Barrow and Dr. W. Jevons announce the observation and vibrational analysis of the predicted ultra-violet band system of SiS, which corresponds to the "Fourth Positive" system of CO.

D. A. Bell states that the total noise output of a radio valve can be considered as made up of (a) the thermal noise in the measured resistance and (b) simple shot noise arising from the residual current, which is temperature-limited. This view has been applied to the case of diode valves.

X-ray studies of rubber constituents show, according to Dr. T. C. Roberts, that the highly elastic caoutchouc, when stretched, gives X-ray patterns similar to those of stretched raw rubber. The author considers that this minor constituent of rubber is responsible for its elastic properties, rather than the major constituent, caoutchene, which does not show such an X-ray pattern.

Prof. C. A. Berger reports a new method of insect metamorphosis found in seven species of mosquitos from four genera. Cytological peculiarities present throughout the group throw new light on chromosome pairing and the origin of polyploidy.