water. The two portions of the shoot were removed and connected with water-filled rubber tubing in the usual way, the two cut surfaces being brought very close together. The whole shoot was then supported in air in a horizontal position, the basal end being immersed in water. After a resting period of two hours, to enable the shoot to recover its normal condition, it was stimulated by the application of a flame to a basal internode.

On the two occasions on which the experiment was tried, using the above-mentioned method, the stimulus affected, first of all, the leaves on the basal portion of the shoot, and then, after a pause of more than one minute, it traversed the water-gap and affected the leaves in the apical portion. For example, in one case, the two leaves in the basal part moved after 4 sec. and 8 sec. respectively, while beyond the discontinuity the times at which the leaves moved were 1 m. 16 s., 1 m. 49 s., 2 m. 21 s., and 2 m. 29 s.

If Sir J. C. Bose will repeat his experiments, using the precautions mentioned above, I am sure that he will be able to convince himself of the need of modifying his statements (NATURE, vol. 115, Jan. 10, 1925) "that the transpiration-current has nothing to do with the conduction of the excitatory impulse" and that "*the conduction is a phenomenon of propagation of protoplasmic excitation.*" There is no doubt that the stimulus can be carried across a discontinuity by means of the transpiration current, and that in this case, at any rate, the conduction has nothing to do with "the propagation of protoplasmic excitation."

It is somewhat surprising that Sir J. C. Bose (*Proc. R. S.*, Series B, 98) should have failed to obtain stimulation by applying extracts of the stem to the basal end of a cut shoot. This result, which was obtained originally by Prof. Ricca and amply confirmed by others, strongly favours the hormone theory. Personally, I have not found the least difficulty in obtaining stimulation in this way.

NIGEL G. BALL.

University College, Colombo,
August 18.

Electric Television.

INVENTION appears to be multiplying in regard to this interesting subject, and I hear that more than one inventor in Paris is employing, for receiving, the cathode ray arrangement that I believe I was the first to publish in a letter to NATURE of June 18, 1908. The ideas embodied in this arrangement had occurred to me several years prior to that date, indeed not long after the production of the Braun cathode ray oscillograph invented in 1897. I actually tried some not very successful experiments in the matter of getting an electrical effect from the combined action of light and cathode rays incident upon a selenium-coated surface, in which I was assisted by the late Prof. G. M. Minchin, himself a great authority on electric cells sensitive to light, and also by Mr. J. C. M. Stanton. The transmitting apparatus consisted of a home-made Braun oscillograph in which a metal plate coated with selenium was substituted for the usual fluorescent screen, the image to be transmitted being thrown by a lens upon the selenium surface, and the end of the cathode ray beam being caused electromagnetically to traverse the projected image. Experiments were also tried in receiving with a Braun tube which I purchased in Germany, but in its then 'hard' form it proved very intractable.

My ideas in regard to this cathode ray arrangement for the production of television were further detailed and illustrated in an address I gave to the Röntgen Society on November 7, 1911, and still further elaborated and brought up-to-date, with wireless methods applied, in a paper I read before the Radio Society of Great Britain on March 26, 1924.

My idea, which was to use cathode rays as employed in the Braun oscillograph, instead of moving material parts, both in the transmitting and in the receiving instruments, is, as I understand, only at present being applied for receiving, mechanical apparatus being still used for transmitting. I desire, however, to point out that when the cathode ray is also applied to transmitting it will be possible to dispense entirely with all moving material parts, as the alternating or intermittent electric currents employed for moving the two cathode ray beams synchronously at the transmitting and receiving stations respectively can be supplied by oscillating thermionic valves supplied by batteries.

In this way it should prove possible to have electric television of a satisfactory fine-grain description without the employment of any mechanical motion of material parts whatever, as cathode rays are practically without weight and inertia, and can be deflected with perfect accuracy and synchronism at almost incredible speeds, while the accuracy of oscillating valves properly tuned is also wonderful.

A. A. CAMPBELL SWINTON.

October 9.

Active Nitrogen.

IN the "Research Items" in NATURE for September 18, reference is made to the paper by Willey and Rideal in the *Journal of the Chemical Society* for July, in which the energy of active nitrogen is found to be 42,500 cal. per gm. mol. Now Strutt's photographs of the glow produced when active nitrogen acts upon iodine show that the iodine line 2061 Å.U. is produced, and this needs an amount of energy of at least 150,000 cal. It is unlikely that a series of successive impacts could give to the iodine a higher level of energy than that possessed by the nitrogen, or that simultaneous collisions of the iodine with more than one nitrogen molecule would suffice. The nitrogen glow is destroyed by iodine vapour in an exceedingly small fraction of a second, which indicates the probability of exchange of energy taking place directly between the active nitrogen molecule (if it *is* the molecule and not the atom) and the molecule of iodine.

E. B. LUDLAM.
L. H. EASSON.

University of Edinburgh,
October 5.

Copper at Low Temperatures.

IN the August issue of the *Proceedings of the Royal Society* (A 112 [1926], pp. 136-151) a paper by Messrs. Lambert and Hartley on "An Investigation of the Effects of Variations in the Radiation Factor on the Efficiency of Dewar Vessels" records some interesting experiments which suggest that copper has unique radiating properties at about the temperature of liquid oxygen. In this connexion a peculiar phenomenon came to my notice some months ago, and it is possible that the two sets of observations may be related.

When present at a public lecture on 'Liquid Air,' delivered at the beginning of this year, I made the following observation during one of the lecture experiments. A small solid copper cylinder was immersed in liquid air contained in an unsilvered glass Dewar vessel in order to cool it down prior to its immersion in water to demonstrate the formation of ice. During the cooling of the cylinder in the liquid air, the usual rapid evolution of gas occurred on immersion, which lasted for some time, after which the liquid air became quiescent and it appeared that temperature