laboratory. The method for the latter was based on a modification of the cuprous-mercaptide precipitation described by Rossouw and Wilken-Jorden in the *Biochemical Journal*. All material was dried at 103° C.

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Interaction of Radio Waves

PRIOR to the observation of the interaction of radio waves[1], the study of the propagation of such waves through the atmosphere was concerned only with the effect of the ionosphere on them. The converse effect, namely, the influence of electric waves on the ionosphere, has already been considered by us in a theory of radio interaction[2].

One of the stated consequences of our theory is that the modulation M, impressed by the interfering wave on the wanted wave, is proportional to $1/\sqrt{(f^2+780^2)}$, where $f/2\pi$ is the modulation frequency of the interfering wave; that is, the impressed modulation should be distorted in favour of the lower frequencies.

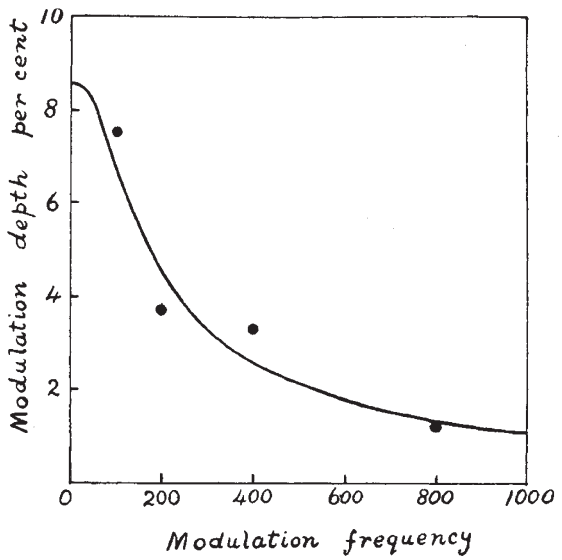

FIG. 1.

There were in Australia no stations sufficiently powerful to allow us to verify this prediction, but its truth has been since confirmed by many observers in Europe, notably Drs. B. van der Pol and J. van der Mark[3] and several members of the World Radio Research League.

The quantitative observations of Drs. van der Pol and van der Mark give strong support to our theory, as may be seen in the accompanying diagram (Fig. 1) where the black dots represent the observed values of the 'depth of modulation' with different modulation frequencies, and the smooth curve represents the formula $y=670/\sqrt{(f^2+780^2)}$.

The number 780 which occurs in the denominator is the product of two factors, G and ν, the values of which were derived by us respectively from the investigations of Townsend and Tizard on the motions of electrons in air and from the estimates made by Appleton and Chapman of the collision frequency ν in the Heaviside layer. Thus the observations of van der Pol and van der Mark are consistent with the conclusions of the above-mentioned investigators.

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[1] A. G. Butt, *World Radio*, April 28, 1933. B. D. H. Tellegen, NATURE, **131**, 840; 1933.
[2] NATURE, **133**, 218; 1934. *Phil. Mag.*, Aug. 1934.
[3] In a report presented to the Union Radio Scientifique Internationale and dated September 10, 1934.

Frequency of Collision of Electrons in the Ionosphere

WE were much interested in a recent communication[1] in which Mr. T. L. Eckersley described the way in which he had measured the collisional frequency of electrons in the F_1 region of the ionosphere by comparing the absorption coefficients and group retardations of returned echoes. It is a well-known fact that the effects of the F_1 region are only evident during the hours of daylight, and this presumably accounts for the fact that Mr. Eckersley's observations were made between 1550 and 1630 hr., that is, about one hour before sunset.

Recent experiments have led us to the conclusion that waves reflected from the F region are appreciably absorbed in the E region during the day, and that this E region absorption decreases rapidly near sunset. This view is not in agreement with that of Mr. Eckersley, who considers[2] that F region echoes are not appreciably absorbed in the E region. In accordance with our view, therefore, we do not consider that Mr. Eckersley is justified in neglecting the decrease of E region absorption during the course of his experiment, and it is our opinion that experiments of this kind should only be done at times when either (i) there is no absorption in the E region, that is, at night, or (ii) when the E region absorption is not changing with time, that is, about 1400 hr., the time of maximum E region absorption.

Working with these points in mind, we have been using a method of the same kind as that described by Mr. Eckersley to investigate the F_2 region, but we have restricted our observations to the two times mentioned above (for the F_2 region observations are possible at all times of day or night). In October of last year we found the average value of the collisional frequency to be $1{\cdot}6 \times 10^3$ per electron per second.

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[1] NATURE, **135**, 435, March 16, 1935.
[2] *Proc. Roy. Soc.*, **141**, 710; 1933.

Linkage of Chemical Changes in Muscle

WE should like to report some experiments which form an extension of those recently described by Parnas[1], and his colleagues. These workers, using muscle *brei* poisoned with iodoacetic acid, found that synthesis of creatine phosphate could go on, provided that phosphoglyceric acid was added to the *brei*. Breakdown of phosphoglyceric acid can only