tion of this solution. Belling's Aceto-carmine gave only indifferent results as a medium for chromosome counts on this species.

The conclusions drawn are entirely based on the examination of permanent slides of the root-tips and of the anthers. The number in *Dactylis glomerata* is clearly established as being twenty-eight in the diploid somatic nucleus of the root-tip and fourteen in the haploid nucleus. The count in the root-tip cells was made when the chromosomes were arranged equatorially on the spindle, and before the separation of the daughter chromosomes. In the case of the heterotype division it was much easier to count the univalents when in mid- and late-anaphase. Fourteen univalent chromosomes were readily distinguished. This number was again to be seen in the homotype division immediately following, the best stage for counting being the equatorial plate stage, just previous to the commencement of anaphase.

It is thus established that the chromosome number in *Dactylis glomerata* is fourteen in the haploid and twenty-eight in the diploid generation.

The investigation of the chromosome number in *Arrhenatherum avenaceum* and *Phleum pratense* is now proceeding. It is as yet too early to state definitely the number obtaining in these two species, but an examination of the root-tip of *Arrhenatherum avenaceum* (the indigenous form with swollen basal internodes is the one hitherto examined) enables me to state that the diploid number in this species is in the neighbourhood of forty.

It is hoped in the near future to state definitely the chromosome number of both these species.

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Hyperfine Structure in the Neon Spectrum.

IN an investigation of the neon spectrum I have found that all lines, which arise from an s-term, have a component of shorter wave-length. The intensity of the satellite ranges from one-fourth to one-tenth that of the main line (according to a rough estimation). The separation of the components varies with the s-term concerned; for a $2s_2$ term it is 0·076 cm.$^{-1}$; for a $2s_3$ term, 0·054 cm.$^{-1}$; for a $2s_4$ term, 0·056 cm.$^{-1}$; and for a $2s_5$ term, 0·058 cm.$^{-1}$. The structure is apparently due to a multiplicity in the s-levels. There are also evidences of a fine structure in the pd series lines, but complete resolution has not yet been attained.

The fine structure of the neon-lines has a certain importance for their use as wave-length standards. In an inhomogeneous discharge the intensity of the main line will be weakened by self-reversal more than that of the satellite; thus with incomplete resolution of the structure the maximum intensity will be displaced towards shorter wave-lengths by increasing self-reversal. The fine structure must also be considered in absorption and intensity measurements. The question whether the neon isotope of atomic weight 22 emits the component of the neon lines is to be decided by an investigation of the Zeeman effect for the fine structure.

Structure of the Mercury Line λ4916.—This line has hitherto been found simple by all observers: it consists, however, of five components separated from the strongest members by the following intervals:

$$+0{\cdot}098 \text{ cm.}^{-1} (2),\ +0{\cdot}056\ (4),\ \pm 0\ (10),\ -0{\cdot}066\ (3),\ -0{\cdot}121\ (5).$$

Structure of the D_3-Line of Helium.—At the suggestion of Prof. Paschen the structure of the lines of orthohelium has been investigated. The intensity measurements for the line λ5876 ($2^3P_i - 3^3D$), which is usually regarded as consisting of two components with intensities 1 and 8, made it seem probable that this line was really a triplet with relative intensities 5 : 3 : 1, of which the two strongest components had not been resolved (MacNair and McCurdy, NATURE, 117, p. 159, 1926). The theory of Heisenberg (*Zs. f. Phys.*, 39, p. 499, 1926) requires a separation of the components ($^3P_2 - {}^3P_1$) of about 1/10 ($^3P_1 - {}^3P_0$). With the aid of the Fabry-Perot interferometer and a direct current discharge at the lowest possible pressure, the apparatus being cooled with liquid air, I have succeeded in resolving the components $^3P_2$ and $^3P_1$. The resolution was improved when the discharge tube was immersed in liquid hydrogen. The frequency differences are: $^3P_2 - {}^3P_1$, 0·075 cm.$^{-1}$; $^3P_1 - {}^3P_0$, 0·98 cm.$^{-1}$. The relative intensities have not been measured, but they apparently agree with expectation.

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(Translated by R. A. Sawyer.)

Spinning Electrons and Protons.

THE remarkable results obtained within the past fifteen months by employing the spinning electron in Bohr's atomic model suggest the question whether it may not be necessary to suppose that the proton also is capable of a quantised spin. Although the analytical difficulties in applying the new quantum mechanics to this problem may be considerable, they may not be too great to be overcome by mathematicians. There seem to be several rguments in favour of such a hypothesis. If, as is generally assumed, the proton is the positive electron, it seems natural to suppose that if the negative electron can spin with unit angular momentum the positive electron may do the same. Again, it may be easier to understand the structure of a complex nucleus if the units of which it is composed can act as elementary magnets. Prof. Duane has attempted to explain corpuscular emission from a radioactive nucleus on these lines. Finally, recent experiments on the deflection of protons and alpha particles in collision with an atomic nucleus seem to lend support to the idea of a magnetic field in the vicinity of a nucleus.

A spinning electron is one example of a *magneton.* My main object in this letter is to remind readers of NATURE that a quantised magneton was first described in these columns (vol. 92, p. 165, Oct. 9, 1913) by Prof. G. B. McLaren, a victim of the War. "The natural unit of angular momentum," postulated by Nicholson and employed by Bohr, "actually exists. It is the angular momentum of the magneton." It is true that McLaren's magneton is in one sense not spinning, for he rejected entirely the idea of magnetic or electric substance, and the angular momentum is located in the electromagnetic field. It is true also that he assumed his magneton to represent a *positive* electron, but this choice was, as he himself pointed out, an arbitrary one (*Phil. Mag.*, vol. 26, pp. 667-8, 1913). The essential fact remains that the idea of a magneton having angular momentum determined by the quantum condition was clearly stated, and was thereafter employed without question by other writers. It may be found, for example, in my paper on an atomic model with a magnetic core (*Phil. Mag.*, vol. 29, p. 719 footnote, 1915), in connexion with a positive electron, and in the discussion of the 'ring electron' (or Parson magneton) at the Physical Society of London on Oct. 25, 1918 (*Proceedings*, vol. 31, p. 61, 1919).