corresponding to transitions between even numbered rotational levels to be the strong ones in N_2, while the opposite is true for H_2.

In a recent letter to *Die Naturwissenschaften* (**34**, 673; 1929), Heitler and Herzberg pointed out that the result obtained on N_2 is rather surprising, as the symmetry of the electronic wave function in the normal state $^1\Sigma$ is the same in nitrogen as in hydrogen. This leads to the conclusion that the nitrogen nuclei satisfy the Bose-Einstein statistics, which appears in contrast with their structure consisting of seven electrons and fourteen protons.

In view of the importance of the problem, I have thought it worth while to check the experimental result with new measurements. The frequencies of the Raman lines had been determined by comparison with the spectrum of the iron arc. If a relative displacement between the Raman spectrum and the comparison spectrum had occurred (although every care had been taken to avoid this source of error) it would have been possible to mistake the even numbered rotational lines for the odd ones.

I have therefore made new measurements, taking only mercury lines in the spectrum of the scattered light for reference. In two plates, the exciting line $\lambda 2536$ is not too over-exposed, and a fairly accurate reading of its position is possible. This enables one to distinguish the even and odd numbered lines without further reference. Moreover, the sharp mercury line $\lambda 2534{\cdot}77$, $\nu 39439{\cdot}8$, provides a good standard, and appears to coincide very accurately with a strong line of the Raman spectrum. This affords another independent method of deciding the question.

Accurate measurements made with the two different methods and by independent observers have confirmed the former result. The measured frequencies of the strong lines usually agree with those calculated on the assumption of even quantum numbers within one frequency unit, whilst a systematic error of eight frequency units would be necessary to cause a misinterpretation.

I may remark here that, in the case of oxygen, the electronic wave function of the normal $^3\Sigma$ state is antisymmetrical, because, according to Mulliken (*Phys. Rev.*, **32**, 186; 1929), the structure consists, in addition to closed shells, of two electrons in $3p\pi$ states, which have parallel spins and can be shown to give an antisymmetrical contribution. As only the odd-numbered rotational levels are present, it follows that the oxygen nuclei satisfy the Bose-Einstein statistics. This is what we should expect of a structure of sixteen protons and eight electrons.

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Monœcious Oysters.

IN NATURE of June 8, Ikusaku Amemiya gives a list of five species of oysters recorded as being monœcious, and later, July 6, Paul Pelseneer adds two additional species, making a total of seven altogether. The only monœcious species in this list recorded from Australasian waters is *Ostrea angasi* (the correct name has now been determined as *O. sinuata* Lamarck). After a careful examination of large numbers of oysters from the South Island of New Zealand, and also of the oysters which have been introduced from there into the Derwent River in Tasmania, I have come to the conclusion that the New Zealand oyster is specifically distinct from *O. angasi*. Hutton's name, *O. lutaria*, will therefore stand, and this species is larviparous and hermaphrodite.

Then, too, during a recent investigation of the oyster resources of Queensland I chanced across an unidentified species carrying larvæ in the mantle cavity. *O. lutaria* and this unidentified species must be added to the list of recorded hermaphrodite oysters.

Every species in this list appears to be of the larviparous type, but the commercial oyster of New South Wales and Queensland (*O. cucullata*), although oviparous, was shown by me to undergo a sex-change (NATURE, Sept. 29, 1928).

The list of monœcious oysters will therefore now embrace *O. edulis*, *O. sinuata* (=*angasi*), *O. lurida*, *O. denselamellosa*, *O. plicata*, *O. equestris*, an undeterminable species from Saleh Bay (Sumbawa), and *O. lutaria*, *O. cucullata*, and an undetermined species from the Queensland coast, making ten in all.

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Vibrating Air Column of High Frequency.

IN the course of some experiments recently carried out in these laboratories, a curious series of annular markings was observed in a glass tube through which air, carrying water-vapour and powered charcoal, was passing under diminished pressure. The accompanying photograph (Fig. 1) shows the regularity of

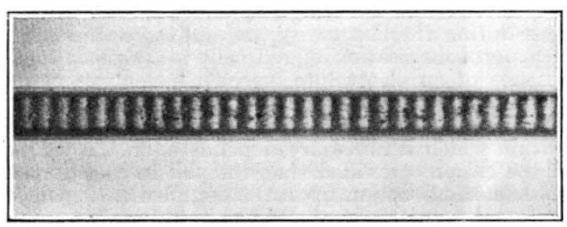

FIG. 1.

the distribution of the rings, of which 48 occupied a length of one decimetre. The diameter of the tube was 4·5 mm., and the pressure at the time of the experiment was approximately 600 mm. of mercury.

It is tentatively suggested that the phenomenon is due to supersonic vibration possibly originating at the narrow inlet and thence communicated to the air column. On this assumption a frequency of about 150,000 vibrations per second would be indicated. So far as we are aware, this figure is the highest yet recorded.

S. K. CREWS.
F. C. HYMAS.

The British Drug Houses, Ltd.,
Graham St., City Rd., N.1,
Nov. 5.

Balloons for Upper Air Work.

SINCE 1926, balloons made of 'Vulpro' rubber tissue, manufactured by the Vultex Products, Ltd., London, have been made use of in the India Meteorological Department with gradually increasing success. These balloons are made at the Upper Air Observatory, Agra, more or less after the method described by Mr. J. H. Field in the *Memoirs of the India Meteorological Department*, vol. 24, pt. 5. Considerable difficulty was at first experienced in joining the tissue, but after extensive trials it was found that satisfactory joints