by lattices with a constant smaller than the half of the wave-length of incident light. In the domain of X-rays such reflections are, as is well known, impossible. It may be that in the case of scattering of light, owing to the depolarisation, they become possible.

These experiments (with echelon grating) corroborate the view expressed in my previous communication [see NATURE, **126**, p. 400; Sept. 13, 1930] that the broadening (nebulosity) of original lines of the mercury arc after scattering in some liquids (of the order 40-50 A.), which can be observed with spectrographs of small resolving power, is probably connected with the existence of 'outer' components (with $n \gg 3$). The stronger the depolarisation of the light scattered by the liquid, the stronger must be the 'outer' components, and more pronounced broadening of original lines will result. This is in accordance with the observations of Raman and Krishnan (NATURE, **122**, p. 882; 1928), and my own unpublished experiments with a spectrograph of moderate dispersion, that this broadening of scattered lines is connected with the optical anisotropy of the molecules of the liquid.

If the above explanation is correct, the broadened lines must have a definite boundary the position of which corresponds to the greatest possible frequency ν_{max}. of the Debye 'acoustic spectrum', and therefore must depend for various liquids upon the velocity of sound and the distance between molecules. Experiments now in progress seem to support this view.

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Energies of the C – I and C – Br Bonds.

THE absorption spectra of methyl, ethyl, and isoamyl iodides consist, in the near ultra-violet, of broad continuous bands, with maxima at about 2550 A., and at high vapour pressures, a fairly well defined long wave-length limit at 3340 A. Undoubtedly this corresponds to dissociation into an excited iodine atom and an alkyl residue, and the process might be considered analogous to the disruption of hydriodic acid, HI. If we accept Mecke's figure (NATURE, April 5, 1930) for the energy of the C – H bond (115 kcal.) in hydrocarbons, there is very nice agreement between the thermochemical and spectroscopic data for the energy of the C – I bond. Using Berthelot's figures for the heats of combustion of the alkyl iodides, this energy is calculated to be 65 kcal. Allowing for the excitation energy of the I atom (21 kcal.), the spectroscopic figure is 64 kcal.

With ethyl bromide, assuming that the dissociation is of a similar nature, there is not such excellent agreement. The long wave-length absorption limit of C_2H_5Br appears to be 2800 A. Allowing for the excitation energy of the bromine atom (10 kcal.), the energy of the C – Br bond comes out to be 91 kcal., whereas the thermochemical value is 80 kcal. A discrepancy of the same order of magnitude has already been observed in the case of hydrobromic acid, HBr.

In the liquid state the absorption limits are found to alter, though they are no less well defined than in the gas state. If we allow for the molar heat of vaporisation and compare the minimum dissociation energies of the molecules as imagined free from each other's influences in the two states, these energies are 20 kcal. less in the liquid state for the iodides, and 10 kcal. less for ethyl bromide. It is possible that the molecule dissociates when its total energy increase (electronic, vibrational, etc.) is equal to the heat of dissociation. The absence of a rotational quantisation which is

apparent with certain liquids is probably a contributing factor to the instability of the molecule on excitation. The mode of dissociation must be different in the liquid and gas states.

In a paper shortly to be published we hope to describe the experimental work from which the above data were obtained.

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Zacyntha verrucosa Gärtner : Another Plant with Six Somatic Chromosomes.

AMONG many thousands of flowering plants which have been subjected to cytological investigation, there are known only two examples of a chromosome number so low as six in the diploid condition. One of them is the well-known case of *Crepis capillaris* (L.) Wall. (*C. virens* Vill.), first discovered in 1909.[1] The second reported case is *Callitriche autumnalis* L.[2]

After having studied a great many related genera and species I chanced to find an additional six-chromosome species—a distant relative of *Crepis capillaris*. This species is *Zacyntha verrucosa*. Together with *Crepis* it belongs to the chicory tribe of Compositæ—a group of plants which may now be said to be distinguished by the low chromosome numbers of its representatives.

FIG. 1. — Somatic chromosome group of *Zacyntha verrucosa* Gärtner. From a root tip taken from an adult plant. × 2250.

The somatic complement of *Zacyntha* is shown in Fig. 1. From this figure one can see the peculiarity of the largest pair of chromosomes, each of them bearing a large satellite on the proximal short arm. The remaining two pairs exhibit slight although distinct differences of size (especially of their smaller arms).

It is premature as yet to say whether *Zacyntha* will prove to be of genetic interest comparable to that of *Crepis*, for, being a monotypic genus, it may fail to cross with any other species. Investigation is in progress now, and additional data on this new object as well as a full account of its cytology will be published elsewhere in the near future.

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   Moscow.

[1] Rosenberg, O.: *Svensk Bot. Tidskrift*, **3**, 64-77 ; 1909.
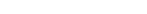[2] Jørgensen, C. A.: *Dansk Bot. Tidskrift*, **38**, 81-126 ; 1923.

English Equivalents of *Eigenfunktion* and *Eigenwert*.

IN publications dealing with wave mechanics there is a growing practice of rendering the words *Eigenfunktion* and *Eigenwert* into English by *eigen-function* and *eigen-value* respectively. The English expressions *proper function* and *proper value* are equally concise, correspond exactly in etymology to the originals, and have the sanction of Prof. Schrödinger himself in the English lectures which he gave at the Royal Institution. Is it not desirable, therefore, that we should discontinue the use of the mixed forms, which is a barbarism without sense or convenience, and equally repellent to German and to English ears ?

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Trinity College,
   Oxford, Sept. 28.