that with the diethyl-sulphide the electronic excitation is in the S–C link.

Details of the above work and a discussion of it will shortly be published elsewhere, when the data for other compounds will also be given.

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Radioactivity of Rubidium

KLEMPERER[1] has recently shown that $_{19}K^{40}$ is very probably the source of the natural β-radioactivity of potassium. This supports the suggestion put forward by the authors[2] based on Fermi's failure to observe induced β-radioactivity when calcium is bombarded with neutrons. Klemperer also suggested that $_{37}Rb^{86}$ is similarly the source of the natural β-radioactivity of rubidium. The effects observed when rubidium, yttrium and strontium are bombarded with neutrons support this suggestion as follows.

Hevesy and Høffer Jensen[3] have shown that $_{19}K^{42}$ formed from scandium has the same period as the radioactive isotope produced when potassium is bombarded with neutrons and it is, therefore, apparent that $_{19}K^{42}$ is formed by $_{19}K^{41}$ capturing a neutron. In a similar manner, the short-lived and weak β-radioactivity induced in rubidium when it is bombarded with neutrons is probably due to $_{37}Rb^{88}$ formed by $_{37}Rb^{87}$ capturing a neutron. If $_{37}Rb^{86}$ is also formed by $_{37}Rb^{85}$ capturing a neutron, then if this nucleus is the source of the natural β-radioactivity of rubidium, so few new nuclei are produced, that the long period will effectively prevent the observation of the corresponding disintegration electrons. It is noteworthy, as Hevesy[3] points out, that the disintegration electrons from the $_{19}K^{40}$ nuclei newly formed when $_{19}K^{39}$ captures a neutron cannot be observed experimentally for the same reason. It is also significant that Fermi and his co-workers[4] have observed no induced β-radioactivity when yttrium and strontium were bombarded with neutrons. Moreover, Szilard and Chalmers[5] have shown that heavy particles are probably ejected from indium ($Z = 49$) and v. Grosse and Agruss[6] have suggested that protons are probably ejected from uranium bombarded by neutrons. It seems, therefore, that under the conditions existing in Fermi's experiments, the emission of heavy particles may have followed neutron capture, and that this phenomenon prevails more generally than is to be expected. As, moreover, Chadwick and Feather[7] have shown that the five examples of neutron capture followed by α-particle emission are elements of odd atomic number, it appears that yttrium $_{39}Y^{89}$ is disintegrated under neutron bombardment thus:

$$_{39}Y^{89} + n \rightarrow {}_{37}Rb^{86} + \alpha \uparrow .$$

Hence the failure to observe induced β-radioactivity with yttrium may be evidence in favour of Klemperer's suggestion, since the β-rays due to the newly formed $_{37}Rb^{86}$ would be too few to be observed experimentally.

In addition, of eight elements of even atomic number, six emit protons following neutron capture. Accordingly when strontium is bombarded with neutrons the action :—

$$_{38}Sr^{86} + n \rightarrow {}_{37}Rb^{86} + \rho \uparrow$$

may occur and, therefore, the failure to observe disintegration electrons from strontium bombarded with neutrons may be additional evidence in favour of Klemperer's hypothesis.

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A New Band System of NH

A NEW band has been observed in the spectrum of a hollow cathode discharge through streaming ammonia. The band is degraded to the red and is of simple structure, consisting of single *P*, *Q* and *R* branches. Heads are formed at λ4502 and λ4523 by the *R* and *Q* branches respectively.

Preliminary analysis has shown that the upper level of the band is identical with that of the λ3240 band[1] of the $^1\Pi \rightarrow {}^1\Delta$ system of NH. The simple structure of the band shows that the transition involved is of the type $^1\Pi \rightarrow {}^1\Sigma$, so that the final level may be identified with the lower $^1\Sigma^+$ level predicted by Mulliken[2] for NH, but previously unobserved. Full details will be published shortly.

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Action of Alternating Magnetic Fields upon Ferromagnetic Particles

WILL you allow me to demur to the statement on p. 349 of the issue of NATURE of March 2 that "No satisfactory interpretation of the phenomena was given" of certain experiments of mine on magnetism. The Physical Society invited me in 1928 to give an address on the subject of a 'discourse' which, at the request of the late Sir James Dewar, I had given in 1923 at the Royal Institution. My address at the Physical Society, published in abstract in the *Proceedings* of that Society (vol. 40, part 5, August 15, 1928) ended as follows:

"In his Royal Institution paper the Lecturer gave his reasons for attributing the repulsion to hysteresis. He sees no reason for changing that view. In that Paper fuller explanations of some of the effects for which there is not space here are attempted."

Readers of NATURE will, I think, find that the attribution of the effects to hysteristic repulsion was not made by me without very careful consideration.