elements mentioned, the difference $\Delta\lambda$ from the middle of the lines contrary to our previous measurements of the edges of the emission bands. Therefore we can determine quite surely the energy frequency difference $\Delta\nu/R$ of the K-β_1 and K-β'. This difference of frequency resulting from our measurements $\Delta\lambda$ does not coincide with the values calculated from the frequency difference of the M_{II} and M_{III}-levels, and consequently these two lines cannot both be due to transition $K \rightarrow M_{II}$, $K \rightarrow M_{III}$, in agreement with the opinion of G. Ortner (*l.c.*) and D. Coster and M. F. Druyvesteyn, (*Zeit. f. Phys.*, **40**, 735 ; 1927).

Further, from our measurements we can see, by following the course of the $\Delta\lambda$ of these lines, their dependence on the atomic number (Fig. 2), that there is no peculiar change in the region of the iron family.

In conclusion, we consider that the K-β' is a complex line, and it is impossible to arrange the line in the scheme of Bohr and Coster. The origin of this line is as yet unknown.

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Dicœcism in *Ranunculus acris*.

DURING the course of a cytological investigation of the reproductive organs of dicœcious and intergrade forms of *Ranunculus acris* L., in connexion with the genetical work of Mr. E. M. Marsden-Jones and Dr. W. B. Turrill, a matter of some general interest has arisen, which it is thought advisable to put on record forthwith.

Examination of a hermaphrodite flower showed that there are two distinct and successive phases in the development of the flower: first, a male or anther phase, marked by the commencement of physiological activity in the tapetum, and continuing until the formation of mature pollen grains; and secondly, a female or ovule phase, commencing with the growth of the ovules and continuing until the formation of mature embryo sacs. This development of male and female tissues in successive phases is the normal arrangement in hermaphrodite flowers, the interval between the two reduction divisions being constant for any given species, the variations between different species being correlated with the amount of ovular development therein.

In the flowers of a 'female' plant of *R. acris* the male and female phases coincide completely, the reduction divisions in anthers and ovules commencing at the same time. The two processes are not able, apparently, to proceed concurrently, and complete failure of the tapetum in the anthers is probably due to lack of sufficient food supplies reaching them from the main axis.

Several of the forms of *R. acris* intermediate between 'normal hermaphrodite' and 'female' were also examined, and there was found to be a direct correlation between the extent of overlap of male and female phases on one hand, and the amount of good pollen produced on the other. In each case the commencement of growth in the ovules was associated with the sudden failure of the tapetum in the anthers of the same flower, with cessation of pollen development as a sequel.

It is conceivable that this time factor will explain the occurrence of complete and partial dicœcism in many species; in those plants where all grades from staminate to pistillate flowers are found, there are indications that the appearance of partial or complete 'male' forms, with a corresponding sterility of the ovules, may be explained by variations in the vascular structure of the flowers under consideration.

A detailed account of the influence of this time factor in *R. acris* and some other species is being prepared for publication.

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Floating Mercury on Water.

WHILE trying, recently, a process for cleaning mercury, I obtained some small globules floating on water, in the same way that a waxed needle floats. The mercury had been shaken with sulphuric and chromic acids, and was finely subdivided; on pouring carefully into water, a few globules floated. Some of these ran together and coalesced, in deep depressions in the surface; the largest floating globule was about 0·5 millimetre diameter. The flotation was quite

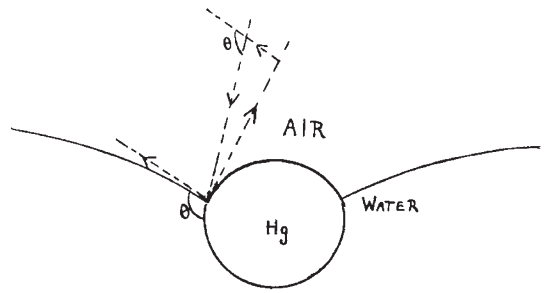

FIG. 1.

stable, and was not destroyed even by contaminating the surface with a drop of oleic acid, which spreads to a film reducing the surface tension to about 46 dynes per centimetre. The accompanying rough sketch (Fig. 1) shows the directions of the relevant surface tensions dotted in.

The tensions of clean mercury against air (475 dynes per centimetre) and against water (375) differ by more than the surface tension of clean water, so that it would be impossible for clean mercury to float on water; the water would spread over the whole drop with zero contact angle. It is, however, well known not to be easy to get mercury clean enough for water to spread on it. The condition of flotation is that the contact angle, θ, should be definite, and for stable flotation it should be large. The mercury-air tension must be reduced to well within 46 dynes per centimetre of the mercury-water tension, for flotation on the surface contaminated by oleic acid. Since the mercury had been emulsified in the mixed acids, probably even the mercury-water tension had been a good deal reduced; therefore the mercury-air tension seems to have been reduced by an amount of the order one or two hundred dynes per centimetre.

I have never seen a description of the floating of mercury, and should be interested to hear if there is any record of it, or if anyone else has observed it.

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The Electric Moment of Primary Alcohols.

OF late the question of the permanent dipole moment of polyatomic molecules has been considered of great importance in order to elucidate the nature of forces that interact between the constituent atoms of the molecules.

The electric moments of a number of primary and secondary alcohols have been determined in this