staining substance in the suprarenal from secondary causes must be kept in mind.

In preliminary experiments on suprarenals obtained from rats fed for prolonged periods on diets completely deficient in vitamin C, we have invariably observed positive silver nitrate reactions, even when through the simultaneous absence of vitamin A or the vitamin B complex the animals had reached a state of extreme emaciation. This finding is in good agreement with the current view that the rat is capable of synthesising vitamin C.

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Calculation of the Reflectivities of Sulphide Ore Minerals

THE practical difficulties of the direct determination of the indices of refraction and absorption of the opaque ore minerals have resulted in little work in this direction being accomplished. The progress of ore microscopy, however, has established the measurement of the reflectivity for (nominally) vertically incident light, whether by visual photometry as developed by Berek[1] and Schneiderhöhn, or by a photoelectric ocular as developed by Orcel[2], as a routine process in the determination of these minerals. The figures obtained present evidence of certain regular relationships. Thus, amongst the simple sulphides, selenides and tellurides a general increase of reflectivity with increasing atomic number can be traced in such series as ZnS–CdS–HgS or PbS–PbSe–PbTe.

Amongst the more complex sulphantimonites and sulpharsenites, such as the series xPbS.ySb$_2$S$_3$ or the Binn valley minerals xPbS.yAs$_2$S$_3$, the relationships are less simple. To a first approximation, however, many of these minerals can be treated as transparent in small thicknesses, still relatively great compared with the wave-length of the light employed[3]. With this assumption an approximate refractive index n may be calculated from Fresnel's relationship

$$n = \frac{1+\sqrt{R}}{1-\sqrt{R}}$$

The value of n thus obtained is used to derive from the Lorenz-Lorentz equation

$$MR = \frac{M}{d}\,\frac{n^2-1}{n^2+2}$$

the molecular refractivity MR (usually, unfortunately; denoted by the same symbol R as is now universally adopted to denote the reflectivity). For anisotropic crystals for which R_α, R_β and R_γ are known, the value $\overline{n} = \sqrt[3]{n_\alpha.n_\beta.n_\gamma}$ is used[4] in calculating MR. If this is done for the simple sulphides, selenides and tellurides, MR values are obtained which have the same additive relationships as the usual molecular refractivities calculated for transparent salts. Of forty-five complex opaque minerals chosen at random, the MR values calculated direct from the measured reflectivities (Schneiderhöhn-Ramdohr[5], and my own measurements with a photoelectric ocular), and those computed from the MR values of the constituent molecules showed a significant difference in only a single instance, that of klaprothite (klaprotholite), 3Cu$_2$S.2Bi$_2$S$_3$; it may be suggested with some confidence that the value for d quoted in the literature and based on an early determination by Petersen should read, not 4·6, but 6·4, the value obtained by calculating backwards from the MR value. (I have not yet been able to examine a pure specimen of the natural mineral, but the crystalline mass obtained by the Sommerlad method[6] from the fusion of the constituents gave a value for d of 6·3.) These calculations therefore appear to be of interest from several points of view.

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Electric Charges on Rain Drops

DURING the last year we have maintained in continuous action an apparatus for recording the electric charge on individual drops of rain. A drop of rain in order to have access into the insulated receiver has first to pass through a fixed but adjustable cylindrical opening of average diameter 1·4 cm. and then through a second opening of diameter 2·4 cm. at the periphery of a rotating disc. Both openings are provided with trap arrangements so that a drop striking the sides is caught and led away. The period of rotation of the disc is so adjusted that with moderate intensity of rain a second drop may not enter into the receiver until the charge of the first has been recorded and the system earthed by an automatic device. A glass manometer of very fine bore is attached to the receiver and keeps a record of the size and number of drops.

For recording the charge given to the receiver by a drop of rain, a Wilson tilt electroscope is used very nearly at its maximum sensitiveness, and the movement of the gold leaf is photographed by allowing light from a point source (a 'Pathé-Baby' projector lamp) to pass through a minute slit and a short focus lens and fall transversely as a narrow beam of about half the breadth of the leaf over a fine pin-hole made at its lower end, which is twisted at right angles to its plane. The transmitted light through the hole gives a magnified image of its displacement on a quickly moving photographic paper. All necessary precautions were taken to avoid the influence of the field of the earth and any artificial field on the drops.

This method of recording is of particular interest in view of the fact that the Wilson tilt electroscope has not to our knowledge been used in the past as a recording instrument. Simultaneously with the above apparatus, a Simpson apparatus giving the charge of rain collected every two minutes was kept in action.

An analysis of the records shows that both positively and negatively charged drops are present in the rain received from any part of the cloud. When the rain received during any interval is positively