healthy plants"; this, of course, has been demonstrated experimentally. If a suspension of this particular virus is lightly sprayed into the air from an atomizer in the vicinity of tobacco plants growing *under controlled conditions*, a percentage of such plants is later found to contain the virus in the roots.

I take it that the main reason for Dr. Caldwell's strictures lies in his fear that my letter casts doubts on "the generally accepted view that the virus . . . is unable to enter an uninjured protoplast". If he will read my last paper[1] he will find this sentence on p. 90—"It appears therefore that some wounding must be necessary for infection, and this condition might be fulfilled by the breaking of root hairs as the root makes its way through the soil or sand". In this connexion I might perhaps mention that if a suspension of the virus is sprayed on to the leaves of French beans (*Phaseolus vulgaris*) by means of an atomizer, held at a distance of about 6 inches from the plants, numerous lesions develop on the leaves. One can of course explain this by saying that the virus is entering by broken hairs or minute wounds already existing, and this may be so, but it is a difficult point to prove or disprove.

Finally, I repeat what I said in my previous letter, namely, that the smallest quantity of virus which reaches the soil seems eventually to enter the roots of a plant growing therein, though the precise mechanism of its entry has not yet been demonstrated.

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[1] Smith, Kenneth M., *Parasitology*, 29 (1937).

Points from Foregoing Letters

THE solubility, in water, of various dusts (such as felspar, asbestos, calcined flint) known to produce silicosis, is found by Prof. H. V. A. Briscoe, P. F. Holt, J. W. Matthews and P. M. Sanderson to be a complex phenomenon depending upon tissue, particle size, quantity of dust submitted and presence of extraneous substances. Freshly fractured surfaces of silica and certain silicates appear to be in a highly reactive state, and yield alkalis and 'soluble' silica to water to a greater extent than in the normal state. The particles lose their reactivity after a certain time, and this may explain the failure to produce silicosis in animals in experiments with 'dead' dusts.

Prof. A. Brammall and J. G. C. Leech find that many rock-forming silicates, when finely powdered, yield alkali to cold water, and several micas yield an appreciable amount of alumina on treatment with weak solutions of sodium or potassium chloride. They direct attention to the possible importance of these observations in relation to the origin and composition of sedimentary rocks.

That the ability to absorb and concentrate salts out of very dilute solutions is widely present in animals as well as plants, is suggested by Prof. A. Krogh. The mechanism involved, as indicated by Lundegårdh's experiments on plants, appears to utilize energy derived from the oxidation of sugar, and to act by transferring negatively charged (acidic) ions.

In the production of pipe and cable sheath by the continuous extrusion machine, the splitting of the lead stream by a steel part before final amalgamation results in a modification of the structure which appears as a 'line' upon subsequent deep etching. A photomicrograph of such a 'line', possibly due to small quantities of oxide or other impurities, is submitted by Dr. P. P. Dunsheath. The 'line' passes continuously through several crystals and, unlike the well-known defects due to a mush of small non-crystalline particles, it does not reduce the bursting strength of the pipe.

A method of measuring the magnetic moment of free neutrons is proposed by Dr. O. R. Frisch, Dr. H. von Halban, jun. and Dr. Jørgen Koch. The method consists in studying the depolarizing effect of a magnetic field on a polarized beam of slow neutrons, which is obtained by passing the neutron beam through magnetized iron, as suggested by F. Bloch. Preliminary experiments have given evidence of the existence of the depolarizing effect. The proposed method can also be used to determine the sign of the magnetic moment of the neutron.

By bombarding sodium or magnesium with fast neutrons, a radioactive substance of 40 seconds half-life period is produced which is generally assumed to be neon of mass 23. To decide whether the active substance is really a gas, Dr. T. Bjerge has applied the method of transferring the radioactive substance produced by means of a current of air, and has obtained positive results.

Dr. S. Chandrasekhar directs attention to a combination of certain 'natural' constants (the velocity of light, the mass of the proton, the constant of gravitation and Planck's constant, h) which has the dimension of mass. A particular form of this combination occurs in the theory of stellar interiors. By substituting simple values for the arbitrary constant in the formula, the author shows that one can obtain numbers comparable with the mass of the Milky Way, and with the total number of protons and/or neutrons in the universe—such as were derived by Prof. Dirac from similar dimensional arguments.

Commenting on sources of inaccuracy in spectrographic research due to the influence of foreign materials in intensifying the spectrum of a given element, Dr. E. J. B. Willey points out that in so far as the spectra are due to direct collisional excitation, the ratio of the intensities might be taken as a fair measure of the relative concentrations. But when the radiating particle receives energy from another excited body, this simple relation no longer holds, as shown for example by the mercury-sensitized fluorescence of sodium.

The addition of a small amount of potassium permanganate to water containing oospores of the onion mildew *Peronospora schleideniana* stimulated their germination if other organic matter was present, according to experiments by R. McKay. The oospores used were five–six years old and weathered out of doors. Eighteen months old oospores gave no results.