velopment of tree fruits, and may have important applications in orchard practice in relation to problems of pollination and sterility.

In similar experiments with apples and pears, only limited success has so far been achieved. A severe frost occurred on April 30–May 1, 1945, by which time apple and pear fruits had set and commenced to swell. The frost killed the embryos and blackened the centres of the fruits. A number of trees of apple and pear bearing crops of these frosted fruits were sprayed on May 8 with a mixture of growth-promoting substances known to be effective on tomato. Conference pear and Miller's Seedling apple responded to the spray, and at the time of writing all treated fruits are still on the trees and some show appreciable swelling. Cox trees sprayed at the same time with the same mixture did not respond and all the fruits fell off, as was also the case with the untreated trees of Miller's Seedling. It is still doubtful whether the treated fruits of Miller's Seedling will develop to full size or maturity, but it is of interest that such severely damaged fruits have been prevented from falling, and it seems reasonable to expect that in further experiments suitable materials will be found which will be as effective on apples and pears in inducing parthenocarpy as *beta* naphthoxyacetic acid is on tomato.

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Neutron-Proton Scattering at 8·8 and 13 MeV.

THE experimental work of Champion and Powell[1] on neutron-proton scattering at 8·8 and 13 MeV. gives, essentially, two new results: (1) the angular distribution, as given by the best smooth curve, is not exactly isotropic as is generally expected for particles of wave-lengths long compared with the dimensions of the system; (2) there is some evidence for a high-order fluctuation in the intensity.

Champion and Powell suggest (*op. cit.*, p. 84) that the general trend of the distribution can be due to a small p-component in the scattered wave. However, the intervention of forces deriving from potentials of the type

$$S_{12} = ({}^1\vec{\sigma}\vec{r}_{12})\,({}^2\vec{\sigma}\vec{r}_{12})\,.\,f(r_{12}), \quad . \quad . \quad (1)$$

suggested by the existence of the quadrupole electric moment of the ground-state of the deuteron[2], gives rise, already in the lowest-order scattering wave, to a mixture of S and D states, therefore leading—even in the first approximation—to an anisotropic scattering.

Rodrigues Martins[3] has investigated the influence of the coupling (1) on the angular distribution of the triplet $({}^3S + {}^3D)$ scattering. Following the general lines of his paper, it can be shown that the angular distribution of the lowest scattering is given by

$$I(\theta) = 1 - 1{\cdot}19\ |C_2|\cos\delta\,.\,\tfrac{1}{2}(3\cos^2\theta - 1) + f(\theta).|C_2|^2 +, \quad . \quad . \quad (2)$$

where C_2 is the scattering coefficient of the d-wave (taking $C_0 = 1$), and δ is its phase-shift.

Neglecting the quadratic terms, we obtain the general trend of the distribution (referred to the centre of mass of the system); determining the factor $|C_2|\cos\delta$ so that the mean quadratic error with respect to the curves of Champion and Powell be a minimum, we obtain the values $-0{\cdot}11$ for the 8·8 MeV. neutrons group, and $+0{\cdot}14$ for the 13 MeV. group. Drawing the curve, it is seen that the intervention of potentials of the type (1) produces a remarkable anisotropy in the angular distribution. According to the formulæ given by Rodrigues Martins (due to eventual resonance with compound levels), the values of $|C_2|$ are of the order of 1/10 and are thus sufficiently in agreement with the values of $|C_2|\cos\delta$ as obtained above.

On the other hand, the fluctuations suggested by Champion and Powell cannot be explained by the intervention of forces of the type (1). As a matter of fact, the amplitude of these fluctuations exceeds considerably the value of the quadratic terms of (2); and their frequency would require the inclusion of spherical waves of very high order. Therefore, if these fluctuations should be found to be real, it would be hard to explain them by any physical picture.

Supposing, further, that all the forces acting are of the exchange type, the potential (1) would have to be replaced by[4]

$$R_{12} = \tfrac{1}{2}(1 - {}^1\beta\,{}^2\beta)\,({}^1\vec{\alpha}\vec{r}_{12})\,({}^2\vec{\alpha}\vec{r}_{12})\,.\,f(r_{12}) \quad (3)$$

The amplitudes of the scattered waves remain, then, essentially the same as in the foregoing case, at least in Born's approximation.

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Time Dependence of Interfacial Tension and Density in Solutions

DR. A. F. H. Ward and L. Tordai[1] have described experiments showing changes of interfacial tension with time in solutions. There is no mention made whether in these experiments density changes also could be observed.

I have investigated a number of systems in which the interfacial tension changes in time. The most remarkable featur of these experiments was the time dependence of some other properties, and densities in particular. Densities can be easily measured to six decimal places. I observed changes in the third decimal as a rule. Changes in densities were observed irrespective of whether the experiments were con-