The "Daily Telegraph" Victory Atlas of the World. Part i. (London: "Geographia," Ltd., 1919.) Price 1s. 3d. net.

THIS is the first part of a new atlas to be completed in about forty-eight parts. Each part is to consist of three double-page maps, 20½ in. by 26 in. A gazetteer is to complete the work. The first part contains maps of Australia (physical), South-West Spain (political), and Germany (historical), besides several inset maps. The colour printing is good and the lettering particularly legible. The orographical map of Australia is layer coloured, and although it shows some small discrepancies from the recently published official orographical map of the Commonwealth it is an effective and useful sheet. The map of Spain, which we take to be the type of political map of the atlas, would be improved by the omission of the "caterpillar" relief, which is merely misleading and of no value. In this respect the map of Germany is better, for no attempt is made to show relief on it. The changes due to the Peace Treaty are incorporated, but a mistake is made in the area of the Slesvig plebiscite. The atlas promises to be a useful one for general reference purposes. Its low price is much in its favour.

R. N. R. B.

The Mica Miner's and Prospector's Guide. By Archibald A. C. Dickson. Pp. viii+50. (London: E. and F. N. Spon, Ltd., 1919.) Price 4s. 6d. net.

THE mica industry is indebted to the author of this "Guide" for the current system of mining in Kodarma, the most prolific mica field in the world. His memoirs on that field are well known. Any contribution of his to the literature of the subject is therefore sure of careful consideration. The present booklet, which is high-priced—fifty pages for 4s. 6d.—was prepared to help the increased output of mica necessary during the war. It contains much valuable information, but does not cover all the ground that might be expected from the title. It consists mainly of descriptions of eight of the secondary mines of the Kodarma field and of notes on the mining methods there. It contains little information as to costs and values, and would not explain to a miner who had no previous experience of mica-mining how to estimate the probable profit or loss of a newly discovered deposit. The author's main thesis is that mica-mining must be guided by careful geological study, and he insists that all the facts observable during the working of a deposit should be systematically entered on a mine plan. This warning is especially useful with a branch of mining in which so much of the output is from small mines worked by parties of local labourers. Mr. Dickson points out that the mica lenses on the margin of a deposit are apt to be inclined to the shoot, and a miner who was guided only by the facts seen would be diverted from the main body of mica.

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LETTERS TO THE EDITOR.

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Scattering of Light by Resonating Molecules.

PROF. R. W. WOOD (*Phil. Mag.*, vol. xxiii., p. 689, 1912) found that mercury vapour, even at the small density corresponding to atmospheric temperature, when illuminated by the ultra-violet mercury radiation $\lambda 2536$, re-emits this radiation laterally in considerable intensity.

Further, Wood and Kimura found after repeated examination that this radiation is *completely free from polarisation* (*Phil. Mag.*, vol. xxxii., p. 329, 1916).

I have been very much impressed with the contrast between this case, where there is resonance, and the behaviour of gases in general when illuminated by light which is not in resonance with the free period of the atoms. In the latter case the laterally emitted light usually approximates to complete polarisation (*Proc. Roy. Soc., A*, vol. xcv., p. 155, 1918). What happens as we gradually depart from exact resonance?

Prof. Wood's experiments were made with the exciting light polarised, and he observed the resonance radiation through the same window by which the exciting light entered. In this way the light examined comes chiefly from the very first stratum of vapour entered by the beam. This stratum gives by far the most intense emission.

As, however, the beam advances into the mercury vapour the light in exact resonance is absorbed, being, in part at least, re-emitted. The lateral emission further on is much fainter, and corresponds presumably to a less exact resonance.

It appeared to be of interest to examine this lateral emission from the deeper strata for polarisation. This I have done, and I give here a brief statement of results, leaving the experimental details for later publication.

After the unpolarised primary beam has traversed 0.4 cm. of mercury vapour at ordinary temperature, the lateral emission shows very perceptible polarisation, the component intensity vibrating parallel to the exciting beam having 90 per cent. of the intensity of the perpendicular component.

After passing through 2.5 cm., this ratio fell to 82 per cent.

After 27.4 cm., the value found was 60 per cent.

Thus it appears that the scattered light is unpolarised only when resonance is very exact. The breadth of the absorption band (reversal) produced by a few millimetres of mercury at atmospheric temperature and *in vacuo* must be extremely small, and probably beyond the range of any but the most powerful spectroscopes. Yet it is only within this narrow spectral range of the exciting light that the scattered light is sensibly unpolarised. When this component is filtered out, and such excitation as remains is by light nearer the edges of the exciting line, polarisation becomes conspicuous.

It need scarcely be said that there is very much more to be done in this direction. Further experiments are in progress.

RAYLEIGH.

Imperial College, South Kensington,
November 1.

Vertical-pipe Irrigation for Orchards and Market-gardens in Arid Climates.

IN the issue of NATURE for September 11, 1919 (p. 44), abstracting from the *Comptes rendus* of the Paris Academy (August 25, 1919, p. 391), mention is made of a new method, proposed by M. Paul Par-