band in the green region (peaks at 504 millimicrons for the first reaction and at 515 for the modification); the absorption curve was similar to that given by streptomycin in the Sakaguchi reaction.

The sensitivity of the modification was limited to about 50 micrograms of free base in a total of 15 ml. Specificity was of a low order since many guanidine derivatives interfered. The reaction is therefore not recommended in its present form for clinical determinations, since better ones are available, for example, that of Boxer and Jelinek[4]. It should prove suitable, however, for the chemical assay of relatively pure preparations, and for the detection of streptomycin on chromatograms.

Dihydrostreptomycin resembled the natural antibiotic in this reaction.

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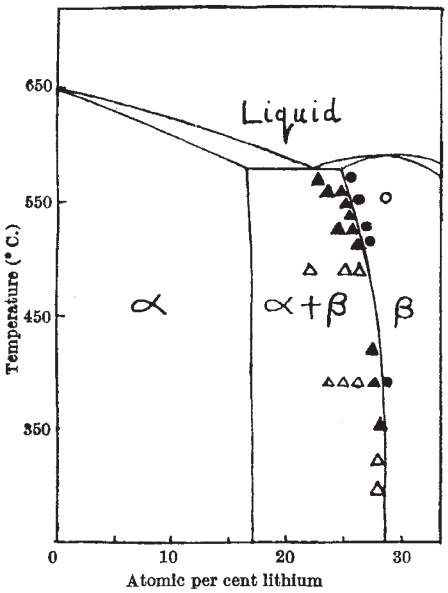
Solubility of Magnesium in Lithium

In view of the possible commercial application of alloys of magnesium and lithium, the equilibrium diagram of these two metals has assumed practical as well as theoretical importance. The diagram is, in general, well established except for the solid solubility of magnesium in lithium.

This boundary has been reported by Henry and Cordiano[1] as 29·3 atomic per cent lithium at room temperature and 27·8 atomic per cent at the eutectic. The corresponding figures of Saldau and Schamray[2] were 30·5 per cent and 29·0 per cent, respectively. Grube, von Zeppelin and Bumm[3] represented tentatively a vertical boundary at 28·6 per cent lithium. Some evidence of an increase in the solubility with temperature was shown by Hume-Rothery, Raynor and Butchers[4], although no values were given.



Single-phase alloys: ○, not analysed; ●, analysed
Two-phase alloys: △, „ „; ▲, „

I have now been able to fix this boundary from microscopical examination of alloys annealed and quenched from various temperatures, interpolation from a smooth curve giving the solid solubility limits as follows:

350° C.	28·3 atomic per cent lithium
450 „	27·8 „ „ „ „
550 „	26·7 „ „ „ „
575 „	25·3 „ „ „ „
588 „	24·1 „ „ „ „

Additional evidence for an increase in solubility (see diagram) was obtained by solution treating and quenching from 425° C. an alloy containing 28·3 per cent lithium. This alloy aged from 28 to 48 (Vickers pyramid numeral) during three weeks at room temperature. It was found impossible to retain the alpha phase in solution on quenching from the higher temperatures with lower lithium content; consequently alloys with about 26 per cent lithium failed to age-harden.

The alpha phase represents the close-packed-hexagonal structure of magnesium, and the beta phase the body-centred-cubic structure of lithium.

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Negative Electric Fields in the Atmosphere

Negative electric fields have been observed at Durham by Chalmers and Little[1] in mist, and by Chalmers and Hutchinson[2] in the presence of low stratus cloud. These results appeared to indicate a separation of charge in the atmosphere under conditions when precipitation played no part.

Investigation of the phenomena with transportable apparatus has shown that the effect is due to negative ions produced by discharges at pylons of overhead high-tension power lines and travelling in the wind; the effect is sometimes still noticeable at some miles from the source of the ions, particularly when the humidity is high. Calculations show that the effects observed can be accounted for by a current of negative ions of the order of 1 μamp. per pylon.

Since these negative fields are produced by a 'man-made' source, the conclusions quoted above in regard to separation of charge are no longer valid. A further consequence of the present observation is that care must be taken to allow for any possible similar effects before it can be legitimate to interpret observations of electric field in terms of charge production in clouds.

The effect is being investigated further, and detailed results will be published elsewhere.

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