The Occurrence of Dwi-manganese (At. No. 75) in Manganese Salts.

IN a letter to NATURE of November 28 bearing the above title, the authors, Messrs. Dolejšek and Heyrovský, deduce the existence of element 75 from measurements of the potential of a cathode immersed in saturated manganese sulphate solution. Their conclusion is supported by an examination of the X-ray spectrum, with which I have nothing to do. I do not think, however, that their deductions from the potential-current curves are necessarily valid. They find for the deposition potential of manganese −1·34 volt (abs.), a figure in substantial agreement with my own (*Trans. Faraday Soc.* (1924), 19, 559 and 20, 1). Below that potential they find two humps in what should normally be a very flat curve. The first and smaller hump they show to be due to some common impurity removable by hydrogen sulphide. The second, commencing at a voltage of −1·00 volt, they attribute to the discharge of the new element, dwi-manganese. I see no reason why this potential should not represent the potential of incipient hydrogen discharge: the actual deposition of manganese at −1·3 volt is accompanied by violent hydrogen discharge. Assuming their manganese sulphate solution to be neutral, the equilibrium potential of hydrogen should be about −0·13 volt, which requires an overvoltage of 0·87 volt, a readily realisable figure if the cathode were smooth platinum. The oscillatory nature of the potential curve in the neighbourhood of the manganese deposition potential may be due to the simultaneous discharge of hydrogen and manganese.

It would be interesting to know the form of the current-potential curve at the same cathode in an electrolyte containing no manganese, such as sodium sulphate. The effect of superposing an alternating current on the direct might also be tried. In this case, if the inflexion is due to hydrogen discharge it would be greatly displaced by the superposition; if to dwi-manganese, probably but little.

The authors then proceed to isolate a product presumably rich in dwi-manganese, which they dissolve in hydrochloric acid. They give no experimental details, but it is worthy of note that in the electrolysis of manganous chloride solutions, manganese tetrachloride is undoubtedly produced (*Trans. Chem. Soc.*, 1923, 123, 892), which hydrolyses with great readiness in the neighbourhood of the cathode, and might conceivably produce potential relationships of considerable complexity.

It is not my intention to impugn the substantial results of Messrs. Dolejšek and Heyrovský, except in so far as I think their interpretation of the inflexions of their curves is not necessarily correct.

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Microseisms and the Indian Monsoon.

WITH reference to the note on the above subject in the report of the seismological committee of the British Association, Southampton, 1925, and my letter to NATURE, October 18, 1924, p. 576, it is perhaps worth while to place on record that the observations made during the current year fully confirmed the views regarding the appearance of microseisms of a certain type as a precursor of the monsoon.

This year the microseisms of the monsoon type could be detected in the seismograms on May 13. On May 15 very pronounced microseisms developed, and these lasted for the next two days. They were apparently associated with a severe storm, which formed in the Bay of Bengal on May 12 and crossed the coast near Masulipatam on May 16. The storm caused strong winds in the south-east Arabian Sea and fairly widespread and locally heavy rain in the south of the Peninsula. With the dissipation of the storm the microseisms weakened, but they did not altogether disappear from the seismograms. During the last week of May, as the monsoon was being gradually established, they became more and more marked, and from the beginning of June onwards, so long as the monsoon conditions continued, their characteristic appearance day after day formed the most noticeable features in the seismograms. One could thus get very important indications regarding the advance of the monsoon in the south-east Arabian Sea long before it arrived on the west coast.

Following the discussion of Darwin on the variations in the vertical due to the elasticity of the earth's surface (Brit. Assoc. Report, 1882), a theory of the microseismic movements of the monsoon type has been worked out. This suggests that they are due to Rayleigh waves set up at the bottom of the sea by the train of water waves maintained by the monsoon currents. The periods of the movements, which vary from 5 to 9 seconds according to the strength of the wind, are correctly indicated by the theory. The complete paper on the subject will be published in due course.

S. K. BANERJI.

The Observatory, Bombay,
October 30.

Vitality of an Earwig.

AN earwig was found inside a high vacuum pumping set recently. How it managed to get there is not known, but it was possibly in the glass-blower's rubber tubing and was blown in when the apparatus was being modified a few hours previously.

The earwig was not observed until the pumps had been running a quarter of an hour, when it was seen crawling along the glass tubing. The pressure was about 0·001 mm.

In our efforts to extract the earwig it was rather roughly treated, as it fell into the mercury vapour pump (cold) and was eventually poured into a beaker with the mercury, being entirely submerged for a few seconds. It survived all this and actively crawled about on being released.

It is possibly well known that the skin and legs of this creature can withstand such knocking about, but it seems very remarkable that it could be active in a vacuum!

PHYSICIST

The Course of Instability of Elements.

URANIUM and thorium being the two amongst the old elements which are unstable, and being nearly at the end of the Periodic Table, is there any more reason to regard these as the last to remain unstable, than to regard them as the first to become unstable? If they represent the last to become unstable, we might suppose that all the other elements had passed through an unstable stage and in the course of ages to have become stable, thus throwing the greater part of the earth's history into the past, with less to come in the future. If, however, we suppose that only two elements have reached the unstable stage, all the remainder will have to come to this stage in turn, thus giving to the earth a tremendously long future as compared with that which is past.

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