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A Study of Phosphorescent Zinc Sulphide Screens and Radioactivity Under Extremely High Pressure

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The same discrepancy has been found between the spectrophotometric readings for the meat and the Color Chart which matched it as was previously observed between the readings of the meat and the Munsell Color Disc. But with the Charts the total amount of light diffusely reflected was greater than that from the meat, whereas that from the Disc was less.

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A STUDY OF PHOSPHORESCENT ZINC SULPHIDE SCREENS AND RADIOACTIVITY UNDER EXTREMELY HIGH PRESSURE

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For a study of the effect of pressure on fluorescent zinc sulphide screens, an arrangement very similar to that used in the preceeding paper was employed. In this case the fluorescent zinc sulphide was mounted on the inner surface of the pressure window with a transparent cement.

The pressure was applied to the oil surrounding the screen and the screen illuminated with a 100 watt bulb placed 30 cm. from the screen.

The light was turned out and the phosphorescent glow of the screen observed with a spectroscope.

This procedure was repeated for pressures ranging from one to twenty thousand atmospheres and very little if any effect was observed except that the intensity of the phosphorescence was less at the higher pressures.

However, in all cases where the pressure was rapidly decreased, a very marked increase in the intensity (perhaps two to five fold change) was observed. The intensity immediately dropped to its normal value as soon as the pressure was brought to a constant value.

A similar arrangement was then used in which case the window was coated over one half the field on the inner surface and exposed to the oil pressure while the other half of the window was coated on the outer surface.

In this case the decrease in intensity at higher pressures was made very apparent as was the sudden increase in intensity as the pressure was rapidly lowered.

Since florescent screens are effected so little by pressures up to

20,000 atmospheres and this offered such a convenient method for observing radioactivity, a spinthariscope arrangement was set up by using a florescent zinc sulphide screen containing a small amount of radium. This was mounted on the inner surface of the pressure window and a microscope focused on this screen, so that the scintillations could be observed.

Observations were made as the pressure was changed from one to twenty thousand atmospheres. For observations of this kind no attempts have been made as yet to make an actual count of scintillations at various pressures but so far as we could tell, the number of scintillations was unaffected as the pressure was changed.

Conclusions

1. The intensity of the phosphorescence of zinc sulphide screen is decidedly less (perhaps one-half) under extremely high pressures.
2. Aside from the intensity, the florescent and phosphorescent properties of zinc sulphide are very little affected by extremely high pressures.
3. Radioactivity is affected very slightly if at all by pressures as high as 20,000 atmospheres.

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APPARATUS FOR DETERMINATION OF RESISTIVITY AT LOW TEMPERATURES

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An apparatus has been designed following the method of Cioffi and Taylor (J. O. S. A. and R. S. T. *6*, 906 (1922)), by which the resistance of 2 single crystal specimens can be determined simultaneously at temperatures ranging from liquid air to room temperature. The method is being used to investigate crystals of "spectroscopically pure" zinc.

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MAGNETIZATION OF ELECTROLYTIC NICKEL FILMS

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The magnetic properties of nickle films electrolytically deposited on brass tubes are determined by the method previously described