restore this to the plastic state in which the density was found to be normal and as much as 4 percent greater than in the (pea plus liquid) state. This complete segregation is regarded as the extreme attainable in thixotropic setting.

EQUILIBRIA

Two explanations are suggested. 1. That pressure causes Murphy's peritectic reaction at 127°C to go leftward $\beta+Hg\rightleftarrows\gamma$ or very nearly

$$3AgHg+Hg\rightleftarrows Ag_3Hg_4.$$

2. That the réseau consists of a new intermetallic species, formed on standing and restored under pressure to the Ag_3Hg_4 originally present. This might be either the same phase (27.7 percent silver) in a new space-lattice with different physical properties, or a new intermetallic compound, possibly richer in mercury.

DENTAL AMALGAMS

The unexpectedly low density of the structure (spongy réseau plus liquid mercury) accounts very happily for the paradoxical expansion of dental stoppings too rich in silver—a sharp change in setting characteristics occurs at 25.5–26 percent silver. This phenomenon has long been known but has hitherto been a bugbear in any theory of setting. *Faute de mieux*, Troiano and Gayler have both accepted the void formation theory formulated by Gray. However, in the 15 percent amalgam described, in which thixotropy had proceeded to the extreme, the measured 4 percent difference in density would require an unoccupied volume of as much as one-eighth in the peas. In view of their hardness and jagged characteristics this is absurd.

Sullivan's copper amalgam formerly used in dentistry was plastic when excess mercury had been squeezed out, but in a few hours set hard and could then be rolled or hammered. On kneading or heating the mass recovered its plasticity.

THIXOTROPY AND OTHER ANOMALOUS PROPERTIES OF AMALGAMS

It is formally suggested that other anomalous properties of amalgams of the alkalies and other metals which have been reported (*e.g.*, viscosity, surface tension, electrical conductance) may also be attributable to thixotropy.

It is hoped to publish a detailed account of the experimental work shortly in *Metallurgia*.

Erratum: Influence of Pressure on Intermetallic Diffusion

[Phys. Rev. 65, 62A (1944)]

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IN accord with the contents of the presented paper, the last sentence of the abstract should read: "Also at 7000 kg/cm² no definite change was found although at lower concentrations, the depth of penetration was slightly decreased."

Magnetic-Dipole Transitions in the Configurations 5p⁵, 5p⁴, and 6p⁵ of Xenon and Radon*

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March 20, 1944

IN the course of a recent examination[1] of existing data on rare-gas spectra, it was found (as shown in Table I) that three unidentified lines in the tables[2] for Xe I and Xe II correspond to transitions between the series limits of these spectra. The perfect wave-number agreement with the ground-level separations of Xe II and Xe III as obtained from the extreme ultraviolet spectrum[3] leaves no doubt as to the reality of the coincidences. Because of the low energy of the levels involved, it is natural that these Xe II and Xe III transitions have been experimentally referred to Xe I and Xe II, respectively. The lines are due to magnetic-dipole transitions, the theoretical probability[4] of which is shown in the last column of Table I.

TABLE I.

Configuration	Transition	Int. and wave number	Trans. prob.
Xe II $5p^5$	$^2P_{1\frac{1}{2}}-{}^2P_{\frac{1}{2}}$	(4) 10537.01	21 sec.$^{-1}$
Xe III $5p^4$	$^3P_2-{}^3P_1$	(1) 9794.6	19 sec.$^{-1}$
	$^3P_2-{}^1D_2$	(6) 17098.97	21 sec.$^{-1}$
Rn II $6p^5$	$^2P_{1\frac{1}{2}}-{}^2P_2$	(5) 30895.1	531 sec.$^{-1}$

The transitions $^3P_1-{}^1S_0$ of $5p^4$ cannot be found in the Xe II table,[2] which is surprising, since its calculated transition probability is considerably higher than that of the two actually observed lines and the analogous transition in $4p^4$ has been observed by Ruedy and Gibbs[5] as a rather strong line in selenium. The line might have been referred to Xe III, however, for which no complete line table has been published. Another possible explanation for its absence might be an incorrect locating of the ^1S level.

Radon is the only rare gas besides xenon where the p^5 transition falls within the observable spectral range. In this case the level separation is not accurately known since Rn II is still unanalyzed. However, an approximate value around 31,000 cm^{-1} was indirectly deduced[1] from a certain perturbation in the observed md_6 series of Rn I. As the transition probability is proportional to ν^3 one would expect a relatively intense line in radon. These arguments immediately suggest an identification (Table I) with the radon arc line observed by Rasmussen[6] at ν30895, the only unidentified line of that spectrum. This identification might become of importance as the clue to the analysis of Rn II.

* Dr. P. Swings has asked that the following remark be published: "A faint unidentified emission line has been observed by A. B. Wyse [Astrophys. J. 95, 356 (1942)] at λ5847 in the Orion nebula. It is very probably the forbidden transition $^3P_2-{}^1D_2$ of Xe III."

[1] Some results of this examination have already been published in Arkiv f. Mat. Astron. Fysik, A29, Nos. 21 and 32 (1943).
[2] C. J. Humphreys and W. F. Meggers, Bur. Stand. J. Research 10, 139 (1933); C. J. Humphreys, Bur. Stand. J. Research 22, 19 (1939).
[3] J. C. Boyce, Phys. Rev. 49, 730 (1936).
[4] Cf. G. H. Shortley, L. H. Aller, J. G. Baker, and D. H. Menzel, Astrophys. J. 93, 178 (1941), and references there; cf. also discussion of coronal lines by B. Edlén, Zeits. f. Astrophys. 22, 30 (1942).
[5] J. E. Ruedy and R. C. Gibbs, Phys. Rev. 46, 880 (1934).
[6] E. Rasmussen, Zeits. f. Physik 62, 494 (1930); 80, 726 (1933).