

appears to be quite different from that of Cl_2O . A full report will be given elsewhere.

R. K. ASUNDI.
R. SAMUEL.

Department of Physics,
Muslim University,
Aligarh.

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The Distances of the Closest Approach of Atoms of Rubidium, Caesium and Barium.

It is known that rubidium and caesium react with water at the ordinary temperature and so also barium.* Therefore according to the author's rule† for the reactivity of metals with water which states that only those metals would react with water at the ordinary temperature which have the distances of the closest approach of their atoms above 3.00 Å, it seems that all these three metals would have values, which

are not available, for the distances of the closest approach of their atoms above 3.00 Å.

This view, it may be noted, is confirmed by the calculation of the distances of the closest approach of atoms of these elements with the help of the author's formula‡ which has proved helpful in rendering some explanation of the formation of amalgams with mercury§ and has given atomic approach values agreeing closely with the experimental ones in nearly a dozen (eleven) elements.

The formula may be represented by

$$D = \frac{P}{V_i \times d \cdot K/V}$$

where D is the distance of the closest approach of atoms of the elements in question, P its parachor; d , its atomic diameter; V_i , its ionisation potential and K, a constant having the value 1.58. The calculated atomic approach values which this formula has given is indicated below:

Element	Parachor	Atomic Diameter	Ionisation Potential	Valency	K/V	Closest approach of atoms	
						D _{calc.}	D _{found}
Rubidium	130	3.38¶	4.16††	1	1.58	4.56	—
Caesium	150	3.36¶	3.88††	1	1.58	5.7	—
Barium	160	4.20**	5.19††	2	0.79	6.57	—

It will be evident from the above table that in the case of all the three elements the calculated values for the distances of the closest approach of their atoms are above 3.00 Å which confirms their ability to react with water at the ordinary temperature. Further, it may be pointed out, since the formula has given values which agree well with experimental ones in a good number of cases and since the values obtained in the present cases are in conformity with the behaviour of these elements with respect to water, the calculated values may

seem to represent the experimental ones for which no distinctive data appears to be available.

BINAYENDRA NATH SEN.

Chemical Laboratory,
Presidency College, Calcutta.

On the Development of the dorsal-arcualia, zygosphere and zygantrum in the Vertebral Column of Snakes.

PREVIOUS investigators^{1 and 3} on the development of the vertebral column of snakes,

¹ Brünauer, V. E., *Arb. Zool. Inst. Wien.*, XVIII, pp. 1-24, 1908-10.

² Mookerjee, H. K., *Phil. Trans. Roy. Soc.*, B. 218, pp. 415-446, 1930.

³ Schauinsland, H., *Handbuch der vergl. u. experim. Entwicklungslehre der Wirbeltiere. von Oskar Hertwig*, 3, pp. 339-572, 1906.

(In this paper the list of all the previous papers could be found.)

* Mathiessen, *Journ. Chem. Soc.*, 8, 294, 1856; Davy, *Phil. Trans.*, 98, 1, 333, 1808.

† Sen, *Nature*, 129, 585, 1932.

‡ Sen, *Zeit. Anorg. Chem.*, 212, 410, 1933.

§ Sen, *Chemical News*, 145, 93, 1932.

¶ Sugden's *Parachor & Valency*, p. 181.

†† Lorenz, *Zeit. Phys. Chem.*, 73, 253, 1910.

** Bragg, *Phil. Mag.*, 6, 40, 169, 1920.

††† Taylor, *A Treatise on Physical Chemistry*. (New Ed.), II, 1203.