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NOTES

Towards a Perfect Periodic Table

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Present paper deals with the position of hydrogen in periodic table. The paper also explains the reason for diagonal relationship.

The periodic law was set forth by D.I. Mendeleev in 1869. The Periodic law is expressed by the periodic system of the elements. As is known, mathematical functions can be expressed by tables. In case of the periodic law, a table was the most appropriate way. Hundreds of periodic systems have been proposed but only those that closely resemble the table worked out by D.I. Mendeleev have been widely adopted.

Defects in the Mendeleev's Table

Although Mendeleev's table was a great advancement over all the previous attempts to arrange elements, yet it was not free from defects.

From 1869 onwards, several variants of periodic table have been proposed. The best known among these are the long form and short form.

Michael Laing[1] offered a new layout of periodic table that is a compromise, encompassing both the current long form and the older short form[1]. Von Marttens and Goldschmidt proposed electronic periodic chart[2].

After all these efforts still some questions need explanation.

1. Position of Hydrogen

Michael Laing allotted two positions for hydrogen, I and VII group respectively. Prof. A. Von Antropoff put hydrogen in IV group[3].

From all these observations one can understand that hydrogen can be placed in I group, IV group and VII group. But it is not justifiable to allot three places for a single element. To overcome this difficulty one can consider that hydrogen is in simple harmonic motion in the first period. Now hydrogen will get only one place at a particular time and hydrogen can be placed in I group, IV group and VII group periodically.

2. Diagonal Relationship

Elements of second short period show similarities with the corresponding elements of the next group of the third period.

TABLE 1

Group	I	II	III	IV
2nd Period	Li	Be	B	C
3rd Period	Na	Mg	Al	Si

This is known as diagonal relationship. Mendeleev could not assign any explanation for diagonal relationship.

By now it should not be difficult to understand why the diagonal relationship exists. It simply indicates the presence of a simple harmonic motion in first period. Due to the oscillation, hydrogen can represent every group and every element of second period can try to imitate its group leader, the Hydrogen. But the elements of second group have no space for oscillation. So the polarity of oscillation is reduced to diagonal relationship.

CONCLUSION

Some of the anomalies in the Mendeleev's periodic table will disappear if the periodic motion of hydrogen in first period is considered.

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