Physiological Congress at Boston

Physiology

American physiologists will be the hosts of one of the most distinguished groups of European scientists who have ever come to this country, when the Thirteenth International Physiological Congress meets here from the nineteenth to the twenty-third of next month. Word has been received from England that 300 reservations are being held on the liner *Minnekahda,* which sails from London on August 9 and from Boulogne on August 10, reaching Boston the day before the opening of the Congress. In addition to the large block of foreign delegates who will come on this ship, there will undoubtedly be many others who will sail at an earlier date, and a considerable number of European physiologists already visiting in this country. The number of members expected from the United States, Canada and Mexico has not yet been estimated, but it is probable that the total attendance at the Congress will be well over the thousand mark.

The International Physiological Congresses have been important events in the scientific world for more than a generation. The first one was held at Basel, Switzerland, in 1889, and since then the meetings have taken place regularly at three-year intervals, with the exception of an interruption due to the war. The last one was held in Stockholm in 1926. Other meeting places have been Liege, Bern, Cambridge, Turin, Brussels, Heidelberg, Vienna, Groningen, Paris and Edinburgh.

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Prout's Hypothesis—*Continued*

weight of an atom of iron. The sp. gr. of a volume of this metal in a gaseous state will be 1·9444, or exactly 28 times that of hydrogen.

8. *Zinc.*—100 grs. of the same dilute acid dissolved, as before, 18·6 of carbonate of lime and 11·85 of zinc. Hence as 18·6 : 11·85 :: 62·5 : 39·82, the weight of the atom of zinc, considered from analogy to be 40. Hence the sp. gr. of a volume of it in a gaseous state will be 2·222, or exactly 32 times that of hydrogen.

9. *Potassium.*—100 grs. of the same dilute acid dissolved, as before, 18·6 carbonate of lime; but after the addition of 20 grs. of super-carbonate of potash, only 8·7 carbonate of lime. Hence 20 grs. of super-carbonate of potash are equivalent to 9·9 carbonate of lime; and as 9·9 : 20 :: 62·5 : 126·26, the weight of the atom of super-carbonate of potash. Now 126·26 — 55 + 11·25 = 60, the weight of the atom of potash, and 60 — 10 = 50, the weight of the atom of potassium. Hence a volume of it in a state of gas will weigh 2·7777, or exactly 40 times as much as hydrogen.

10. *Barytium.*—100 grs. of the same dilute acid dissolved exactly as much again of carbonate of barytes as of carbonate of lime. Hence the weight of the atom of carbonate of barytes is 125; and 125 — 27·5 = 97·5, the weight of the atom of barytes, and 97·5 — 10 = 87·5, the weight of the atom of barytium. The sp. gr. therefore, of a volume of its gas will be 4·8611, or exactly 70 times that of hydrogen.

With respect to the above experiments, I may add, that they were made with the greatest possible attention to accuracy, and most of them were many times repeated with almost precisely the same results.

The following tables exhibit a general view of the above results, and at the same time the proportions, both in volume and weight, in which they unite with oxygen and hydrogen: also the weights of other substances, which have not been rigidly examined, are here stated from analogy. . . .

On a general review of the tables, we may notice,

1. That all the elementary numbers, hydrogen being considered as 1, are divisible by 4, except carbon, azote, and barytium, and these are divisible by 2, appearing therefore to indicate that they are modified by a higher number than that of unity or hydrogen. Is the other number 16, or oxygen? And are all substances compounded of these two elements?

2. That oxygen does not appear to enter into a compound in the ratio of two volumes or four atoms.

3. That all the gases, after having been dried as much as possible, still contain water, the quantity of which, supposing the present views are correct, may be ascertained with the greatest accuracy.

Others might doubtless be mentioned; but I submit the matter for the present to the consideration of the chemical world.

Correction of a Mistake in the Essay on the Relation between the Specific Gravities of Bodies in their Gaseous State and the Weights of their Atoms.—Annals of Philosophy, February, 1816.

. . . There is an advantage in considering the volume of hydrogen equal to the atom, as in this case the specific gravities of most, or perhaps all, elementary substances (hydrogen being 1) will either exactly coincide with, or be some multiple of, the weights of their atoms; whereas if we made the volume of oxygen unity, the weights of the atoms of most elementary substances, except oxygen, will be double that of their specific gravities with respect to hydrogen. The assumption of the volume of hydrogen being equal to the atom will also enable us to find more readily the specific gravities of bodies in their gaseous state (either with respect to hydrogen or atmospheric air), by means of Dr. Wollaston's logometric scale.

If the views we have ventured to advance be correct, we may almost consider the *prote yle* of the ancients to be realised in hydrogen; an opinion, by the by, not altogether new. If we actually consider this to be the case, and further consider the specific gravities of bodies in their gaseous state to represent the number of volumes condensed into one; or, in other words, the number of the absolute weight of a single volume of the first matter *prote yle,* which they contain, which is extremely probable, multiples in weight must always indicate multiples in volume, and *vice versa;* and the specific gravities, or absolute weights of all bodies in a gaseous state, must be multiples of the specific gravity or absolute weight of the first matter (*prote yle*) because all bodies in a gaseous state which unite with one another unite with reference to their volume.

William Prout (1785-1850) was a physician who was especially interested in chemistry. He discovered hydrochloric acid in the gastric juice. His famous "Hypothesis" was published when its author was 30 years old. It has furnished the theme for much speculation for more than a century, and now seems to have found its place in the newer theories of the formation of matter.

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