

The major technological change in the detergent industry, no longer based exclusively on soap, has brought new products and created new difficulties. The continuous soap-making process and continuous soap drying are revolutionizing the industry, causing thereby an immense saving in labour and steam. Changes such as these should have found mention in the relevant section.

Appendixes 1 and 2 and the two indexes appear to have been well done. The book is well produced and generally free from typographical errors.

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## A NEW PERIODIC TABLE

A New Periodic Table of the Elements Based on the Structure of the Atom

By Dr. S. I. Tomkeieff. Pp. 30+2 charts. (London: Chapman and Hall, Ltd., 1954.) 10s. net.

TO demonstrate the periodicity in the properties of the chemical elements, Lothar Meyer chose the most direct representation: he plotted the elements in the order of their atomic weights on the abscissa, and the values of the property in question on the ordinate. At the same time, Mendeléeff published the Periodic Law in the form of tables; he had to decide whether the short or the long period were to be chosen for the length of the rows; but this was the only arbitrariness.

During the following decades innumerable attempts were made to improve on Meyer and Mendeléeff. All sorts of representations, trees with branches, concentric circles, spirals, figure-eights, and various three-dimensional curves—mostly drawn on the surface of cylinders and cones—were tried; behind all this was the hope to get nearer to the mystery of the periodic system if a more perfect arrangement could be found. But the scientific result of all these attempts was nil; an understanding of the periodic system could only be achieved on the basis of quantum mechanics.

It is somewhat astonishing to see that quite recently "A New Periodic Table of the Elements" has been published which is a revival of the old discarded attempts. The curves, for example, which represent the specific gravity of the elements, are based on one of the well-tried spirals and can, naturally, not avoid the old drawbacks: such elaborate curves are tedious to draw, provide no help to the memory, and do not contain any information which could not be included in simpler representations. How much more clearly does the periodicity of the specific gravity show up if plotted according to Lothar Meyer's straightforward method! The author recommends even a cone-shaped periodic chart, another repetition of previous suggestions; whoever takes the trouble to follow the advice to cut the drawing out and to gum it together as a cone, will scarcely get any insight into the sequence of chemical elements which the usual tables do not give.

It is not very obvious why the author calls his table "based on the Structure of the Atom". It is true that the introductory pages contain an elementary description of the shell structure of the atoms, but this text has no connexion with the graphic part of the publication. It is also doubtful if the "Table of Elements"—extending over fourteen lavishly printed pages—will be of great help to the

readers. One of the columns describes the colour of the elements, necessarily with the frequent monotonous repetition of the descriptions "silvery white" or "iron-grey"; this column should make it clear that the main value of the periodic system is not based on the properties of the elements as 'simple bodies', but on the periodicity which they show in their compounds. It is also questionable if the information provided in the column "normal state of the element" is very instructive without giving more details; we are, for example, told that normally iodine is a metal.

Being a geologist, the author may have reason to suppose that some of his colleagues will find such a periodic table useful; but it is not certain that chemists or physicists or, for that matter, geologists who have sufficient knowledge of chemical and physical publications on the periodic system, will obtain much help from his book.

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## THE STABILITY OF THE SUN

Dialogue Concerning the Two Chief World Systems—Ptolemaic and Copernican

By Galileo Galilei. Translated by Stillman Drake; foreword by Albert Einstein. Pp. xxvii+496. (Berkeley and Los Angeles: University of California Press; London: Cambridge University Press, 1953.) 75s. net.

THOMAS SALUSBURY, in the address to the reader which prefaced his translation of the book now in question, wrote in 1661, "... that singular and unimitable Piece of Reason and Demonstration the Systeme of Galileo. The subject of it is a new and Noble part of Astronomy, to wit the Doctrine and Hypothesis of the Mobility of the Earth and the Stability of the Sun". This is a very just epitome of the famous *Dialogue*, in which the Ptolemaic system is held up to ridicule and the Copernican system abundantly justified. It is, perhaps, strange that nothing should be said of the Tychonic system, which had been elaborated by the greatest astronomical observer of the time, but there it is. Galileo was concerned with the Copernican system alone and did not even mention the fundamental discovery of the elliptic form of the planetary orbits, familiar as he was with Kepler's work and highly as he thought of it in general. Strange!

The dialogue is between three characters, Salviati and Sagredo, friends of Galileo distinguished by noble birth and keen intellect, and a third character denoted by the name Simplicio. Both Salviati and Sagredo were dead at the time when the book was written: into Salviati's mouth are put the words of Galileo himself, while Sagredo represents a witty and astute man versed in the general learning of his time. To him are given the most biting comments on the arguments of Simplicio, the peripatetic philosopher, while Salviati-Galileo, with his tongue in his cheek, remarks, for instance, "Sagredo, you are too caustic and sarcastic. Let us put all joking aside, for we are dealing with serious matters". It has been surmised that Simplicio was meant to represent Pope Urban VIII, but this is unlikely on several grounds. The Pope, Maffeo Barberini before his elevation, had been a friend and patron of Galileo and was certainly no extreme Aristotelian, and Galileo, although no