form of the shoreline where they felt the undertow, and the strength and direction of the wind with respect to the shore; also, if they would discriminate as carefully as possible between the oscillatory movement of the whole depth of water in the wave-crests or troughs and the supposedly persistent creep of the bottom water that is implied by the term, undertow; and finally, if they would state whether this discrimination was made on their own volition at the time the undertow was felt, or whether it is introduced as a memory record of the phenomena under consideration.

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TRIPLOIDY IN THE TOMATO

IN the late summer of 1923 a single unfruitful seedling plant was observed among ninety plants of the tomato variety Dwarf Aristocrat at Riverside, California. While all other plants of this variety were producing a heavy crop this plant, although flowering freely, had not set a single fruit and maintained a more erect habit of growth than the other plants which were borne down by weight of fruit. Cytological examination of this plant showed 36 chromosomes in the cells of the root tip. The somatic number of chromosomes in the tomato is typically 24, a number which was found in root tip cells of typical Dwarf Aristocrat and correspondingly 12 dyads in the pollen mother cells. The exceptional plant is therefore triploid. The plant has the general character of the variety but is conspicuous for its darker green color and for the "gigantic" character of certain organs. The leaves are larger and thicker, the petioles and stems stouter, giving the general effect of a plant exceptionally well nourished especially with nitrogen. The corolla and stamens are larger, the style on the average thicker but not as a rule longer, so that the stigma is more retruded than in a diploid plant. The form of the floral organs appears to be normal. Both under field and greenhouse conditions at Riverside the plant is nearly male sterile. The amount of pollen is much less than in a diploid and from 50 to 75 per cent. of the grains appear to be empty or their contents in process of disintegration. No germination of this pollen has been obtained in artificial medium and attempts to effect crosses with it have failed. On the other hand pollen of a diploid plant appeared to contain only about 5 per cent. of empty grains and over 50 per cent. germinated. Measurement of one hundred pollen grains of the triploid and of the diploid showed little difference in the *mean* size, but in the triploid the amount and range of variation is greater. When cross-pollinated the triploid readily sets fruit; it has also produced four fruits without artificial cross-pollination, perhaps owing to insect or wind-borne pollen. The fruits are less than half the normal size and contain extremely few, usually about 5 or 6 viable seeds as compared with over 100 for a diploid plant. In 1924 a second triploid plant has appeared among a hundred plants of the same variety from the same lot of seed, rather suggesting a common origin for the two triploid seedling plants. Progeny have been raised from the first found triploid, some of which contain extra chromosomes. A cytological and genetic study of these plants is now being made.

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MOSELEYUM

A RECENT paper by Bosanquet and Keeley in the July number of the *Philosophical Magazine* shows that the search for the missing element of atomic number 43 is scientifically under way. Though their results were negative in this attempt, it is quite probable that we shall soon have definite evidence of its existence.

It would be an advantage to the cause of true science if we could avoid all possibility of a conflict of claims over names such as occurred in connection with the name "Hafnium" for element No. 72.

My suggestion is to call this missing element of atomic number 43 Moseleyum (symbol Ms), in honor of the young British physicist Moseley who did so much to establish the important facts concerning these missing elements, their location in the periodic scheme, with all that this means, and the limited number of the same. In fact no one who has studied modern physics can fail to appreciate the all-important significance for us of the original plate made up by Moseley from the little separate X-ray photograph which he pasted together in step-like fashion one above the other, showing the wonderful scheme of atomic steps. In every land to-day copies of this plate are to be found, and it is not too much to say that such will be the case for many years to come.

There are still five missing elements, those of atomic numbers 43, 61, 75, 85 and 87. The one indicated by Moseley himself on the original plate of atomic number 21 was discovered and named Scandium. It would have been very suitably termed Moseleyum, in honor of the one who presented the first undeniable evidence of its existence. Let us remedy this situation while it can still be done. Of the five, 85 and 87 are among the radioactive substances, 75 lies between Tungsten 74 and Osmium 76, while 61 is one of the rare earths. It would seem that either 43 or 75 would be located soonest of the five. Number 43

has sometimes been termed temporarily eka-manganese on account of its being considered to be a metal with properties similar to those of manganese.

Surely the best name and one most appropriate under the circumstances is Moseleyum. The actual discoverer, whoever he is, will lose little in yielding to such a suggestion which will certainly meet with general approval. Moreover, it is a name better and more international in character like true science itself than a latinized name of the discoverer's own kingdom or republic.

Whether we say that cruel war or that destiny decreed that young Moseley should be denied the great and happy privilege of pushing on to greater completion his wonderful and far-reaching experimental results, we know that his research has helped us in our search after truth. His step-like photographs have simplified our steps and we now roam on ahead.

There is little that we can do that will more fittingly show our appreciation of the best of his life's labor. Wherever the Periodic Table will be shown after this, let the outstanding name in the center of it be "Moseleyum," as an inspiration to the teacher and the earnest student and as a monument to man's own intelligence and the value of research.

To all I say: "Element 43 no longer but 'Moseleyum.' Make it unanimous."

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MUSCLE SHOALS VS. MUSSEL SHOALS

DR. A. E. ORTMANN'S suggestion on pp. 565 and 566 of the December 19th issue of SCIENCE to change the official spelling of Muscle Shoals to read Mussel Shoals, because of the fact that the Shoals are named after the well-known bivalves that abound in that locality, brings to mind a similar agitation in the south a few years ago when the Shoals were beginning to attract the attention of the investing public. A leading newspaper then advocated making the change for the same reasons advanced by Dr. Ortmann. The writer, who at that time was engaged on a waterpower investigation of the Tennessee River for the War Department, and happened to be familiar with the early history of the geographic name, was able to set at rest the minds and as a result the old spelling has since prevailed. The story is briefly this:

The writings of early settlers and explorers in that part of the United States give the spelling uniformly as Muscle Shoals, often followed by a note that the name was derived from the *muscle shells* for which the place had always been famous with the Indian tribes. The earliest map of the Shoals made by the government was that of 1832, prepared by officers of what was then known as the Corps of Topographical Engineers, U. S. Army. This map, which also shows the spelling Muscle Shoals, was for the purpose of locating a canal with nine locks around the Shoals to enable navigators to pass the latter. This canal is still in existence, though obsolete. All indications were to the effect that the name of the bivalve in those days was *muscle shell*. This was substantiated by referring to dictionaries and encyclopedias, both old and new editions. One standard dictionary, edition of 1875, showed a wood cut of the shell and gave "muscle shell" as the only form of spelling. Later editions give both forms of spelling. About 1895 the form "mussel" is given the preference. The most recent editions of Funk & Wagnalls' Standard Dictionary and Webster's International still mention under "muscle" the name of the shell as an old form.

In the earlier writings mention is made of the fact that the "muscle shell' is so named because of the powerful muscles that close the two valves. Any one who has worn out his jack knife pearl hunting on the Tennessee and tributaries can testify as to these muscles and wonders why "mussel shell" is not spelled "muscle shell."

The writer urges adherence to the old form of spelling the name of the Shoals for two reasons: It has been established through long usage, extending over more than a century; the new form of spelling *mussel* is no improvement over the old form *muscle*.

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SCIENTIFIC BOOKS

The Life, Letters and Labours of Francis Galton. By KARL PEARSON. Vol. I. Birth 1822 to Marriage 1853. Cambridge (University Press), 1914. Pp. xxiii + 246. 56 plates and 5 pedigree charts. Vol. II. Researches of Middle Life. Cambridge (University Press) 1924. Pp. xi + 425. 54 plates.

HAVING as its subject one who will probably be written down in the history of science bracketed with Darwin as one of the most important figures in nineteenth century biology, and for its author the pioneer explorer of a new field of biological thought and methodology, Pearson's "Life of Galton" is bound to be a work in the very first rank of significance. And it is. Such a biography as this stands alone. Biographies as monumental in point of size as this will be when finished are not rare. In contradistinction to all such, however, the thing which makes this unique is that it is a thorough piece of *scientific* research on the life of a great *scientist*. It is less entertaining than Galton's autobiographical "Memories," but immeasurably more valuable. For