

is an earth, which is most like the earth of zircon, and which, strangely enough, possesses most of the properties and earmarks which I found for thorium earth in my former description of it. This circumstance at first made me think that thorium earth might possibly not be merely basic yttrium phosphate, as my later researches seem to prove, but a mixture of this and thorium earth. By this I was moved in the beginning of this analysis to let the new earth have the name Thorium earth, and since by a repeated analysis of the remainder of the mineral in which I thought I had found the former thorium earth,<sup>1</sup> I could not discover the slightest trace of the new, so I have, and with so much greater right, thought I might retain for the latter the same name, since the former description for the most part fits the new earth, and the name Thorium earth is once more introduced to science. This offers at the same time an opportunity for naming the new mineral; I name it *Thorite*.

#### Hafnium

ON THE MISSING ELEMENT OF ATOMIC NUMBER 72. Letter from Universitets Institut for teoretisk Fysik, Copenhagen, January 2, by D. Coster and G. Hevesy. In *Nature*, London, January 20, 1923.

Since Moseley's discovery of the fundamental laws of the X-ray emission, it has become quite clear that the most simple and conclusive characteristic of a chemical element is given by its X-ray spectrum. In addition, Moseley's laws allow us to calculate very accurately the wave-lengths of the X-ray spectral lines for any element in the periodic table, if those of the elements in its neighborhood are known. Taking into account that the presence of a very small pro-

<sup>1</sup>It seems to me probable that the Eudialite from Greenland might contain thorium earth, particularly since the properties of zirconium at the time of Stromeyer's analysis of Eudialite were not as well known as now, consequently the new earth might possibly have been taken for zirconium earth; I found however, according to the method specified by Stromeyer, only zircon earth present.

portion of a definite element in any chemical substance suffices to give a good X-ray spectrum of this element, it is quite evident that for the eventual discovery of any unknown element X-ray spectroscopy, especially as it has been developed by Siegbahn, represents the most effective method.

In the *Comptes rendus* of the Paris Academy of Sciences for May 22, 1922, Dauvillier announced the detection by means of X-ray spectroscopy of the element 72 in a mixture of rare-earth metals. This element was identified by Urbain with a rare-earth element, which he called celtium, the presence of which he had previously suspected in the same sample. For different reasons, however, we think that Dauvillier's and Urbain's conclusions are not justified. It appears from Dauvillier's paper that at any rate the quantity of the element 72 in the sample, if present, must have been so small that it seems very improbable that the element 72 should be identical with the element which in former papers Urbain claims to have detected in the same sample by investigation of the optical spectrum and of the magnetic properties. The only lines which Dauvillier claims to have detected are the lines L

*alpha* 1 and L *beta* 2, both of which he finds to be extremely faint (*extrêmement faible*). The wave-lengths he gives, however, for these lines are about 4 X.u (1X.u.=10<sup>-11</sup> cm.) smaller than those which are obtained by a rational interpolation in the wave-lengths tables of Hjalmar and Coster, for the elements in the neighborhood of 72.

From a theoretical point of view it appears very doubtful that the element 72 should be a rare-earth. It was announced in 1895 by Julius Thomsen from Copenhagen that from general consideration of the laws of the periodic system we must expect between tantalum, which in many compounds possesses five valencies, and the trivalent rare-earths, a tetravalent element homologous to zirconium. The same view has also recently been put forward by Bury on the basis of chemical considerations, and by Bohr on the basis of his theory of atomic structure. It is one of the most striking results of the latter theory, that a rational interpretation of the appearance of the rare-earth metals in the periodic system could be given. For these elements, according to Bohr, we witness the gradual development of the group of 4-quantum electrons from a group con-

#### ETHNOLOGY

## Seminoles Not Un-Musical But Have Kept Music Secret

A LONG-STANDING mystery regarding the picturesque Seminole Indians of the Everglades has at last been fathomed.

The mystery is why the Seminole should be so hopelessly un-musical a tribe. The solution, discovered by Miss Frances Densmore, collaborator for the Bureau of American Ethnology, is that the Seminole are not hopelessly un-musical at all. They have merely kept their music very much to themselves, and so it remained unheard, and unheard of, among their white neighbors.

Miss Densmore, who has had long experience in studying music of Indian tribes, has found the Seminole friendly and cooperative, despite their reputation for being most uncommunicative.

"People who have lived for years among the Seminole have insisted that they do not sing, except 'ki-yi' when they are drunk," says Miss Densmore.

"The explanation is that they sing only at the June Corn Dance and the

October Hunting Dance, and on those occasions the singing is done mostly by one man. The dancers do not sing."

Learning this important fact, Miss Densmore won an introduction to the head singers of the Big Cypress group and the Cow Creek group of Seminole and thus found herself at the source of information on Seminole music.

#### Sang for Three Days

The ethnologist stated that she has just finished recording 125 songs from one of the head singers of this "un-musical" tribe. And the singer had not exhausted his supply. He sang one song after another for three days, while the ethnologist made her records. Never before has Miss Densmore found an Indian who knew so many.

Far from being monotonous "ki-yi" singing, the Seminole songs are good music, with pleasing melodies and showing wide variety, she discovered.

*Science News Letter, March 12, 1932*

Fifty years ago, Pasteur's contemporary

### ROBERT KOCH

opened up a new chapter in the history of medicine with his discovery of the

### Tubercle Bacillus

This paper will be the next

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