

taining 18 electrons into a group of 32 electrons, the numbers of electrons in the groups of 5- and 6-quantum electrons remaining unchanged. Bohr was able to conclude that in the element lutecium (71) the group of 4-quantum electrons is complete, and we consequently must expect that in the neutral atom of the next element (72) the number of electrons moving in 5- and 6-quantum orbits must exceed that in the rare-earths by one. The element 72 can therefore not be a rare-earth but must be an homologue of zirconium.

In view of the great theoretical importance of the question we have tried to settle it by an experimental investigation of the X-ray spectrum of extractions of zirconium minerals. We have succeeded in detecting six lines which must be ascribed to the element 72 (in Siegbahn's notation *L alpha* 1, *alpha* 2, *beta* 1, *beta* 2, *beta* 3, and *gamma* 1. The complication was met that the lines *L alpha* 1 and *alpha* 2 lie almost exactly in the place corresponding in the spectrum to the zirconium *K alpha* 1, and *alpha* 2, lines in the second order. Difficulties which might arise from this fact may easily be avoided by keeping the tension on the tube between the critical tension of the zirconium K-lines (18,000 volts) and that of the L-lines of the missing element (10,000 volts). Besides, the relative intensity of the *K alpha* lines is so different from that of the two *L alpha* lines that any ambiguity is already thereby excluded. Not only the *L alpha* lines but also the lines *L beta* 1, *beta* 2, and *beta* 3 were, as regards their mutual distance and their relative intensity, in exact agreement with the expectation. The values which we obtained for the wave-lengths of the six mentioned lines all agree within one X.u. with those found by interpolation. Between our values for the lines *L alpha* 1 and *L beta* 2, and those published by Dauvillier, however, there exists the discrepancy referred to of about 4 X.u. (in general for other elements which have been measured by Dauvillier and by Coster the discrepancy is never more than 2 X.u.). Exposures under different conditions as well as a thorough discussion of the plates showed that the new lines found during our investigation cannot be ascribed to the first or higher order spectrum of any other known element. Our provisional results are, *L alpha* 1 = 1565.5; *alpha* 2 = 1576; *beta* 1 = 1371.4; *beta* 2 = 1323.7; *beta* 3 = 1350.2; *gamma* 1 = 1177 X.u. More accurate and complete data

as well as photographs of the spectrum will soon be published.

In a Norwegian zirconium mineral the new lines were so intense that we estimate the quantity of the element 72 present in it to be at least equal to one per cent. Besides we investigated with low tension on the tube a sample of "pure zirconium oxide." Also with this specimen the *L alpha* lines were found, but very faint. It seems to be very probable that ordinary zirconium contains at least from 0.01 to 0.1 per cent. of the new element. Especially the latter circumstance proves that the element 72 is chemically homologous to zirconium. Experiments are in progress to isolate the new element and to determine its chemical properties.

For the new element we propose the name Hafnium (Hafniae = Copenhagen).

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MEDICINE

Skin Color Makes Negroes Get Rickets More Easily

DISEASES which Negroes may safely be said to have oftener or less often than whites solely because of the racial factor are only those diseases which depend on differences in the skin, Dr. Harry Bakwin of New York University and Bellevue Hospital Medical College has found as a result of studies of the differences between white and Negro infants in health and disease.

For example, rickets-preventing ultraviolet light does not penetrate the Negro skin as readily as the white skin, which explains why rickets and tetany occur more often in Negro than in white children in temperate regions, Dr. Bakwin explains in a report to *Human Biology*.

"A second difference in the Negro skin is its reaction to external heat," Dr. Bakwin pointed out. "When the external temperature is high, body temperature regulation is better in the Negro than the white individual. This explains, in part at least, their greater ability to withstand high external temperatures, e. g. in stoke rooms, and the lower incidence among them of heat-stroke.

Some investigators have found a relation between heat and the incidence of summer diarrhea. If this is true, the Negro's more effective mechanism for withstanding heat may account for the fact that in certain communities the Negro infant death rate from diarrheal diseases is no higher than the white, even though the Negro lives under poorer hygienic conditions, which would

tend to increase the death rate from this disease.

Another property of the skin, which is probably racial, may account for the comparative immunity of the Negro to various skin infections, such as erysipelas and boils, Dr. Bakwin concluded.

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ZOOLOGY

Yellowstone Elk Have Steam-Heated Dormitory

A SMALL BAND of Yellowstone Park elk, through luck or animal instinct, has found for itself a steam-heated dormitory in the midst of the park's winter-bound interior.

Park Ranger Curtis K. Skinner, while on patrol one winter day, observed the elk in Midway Geyser Basin, just above the great Excelsior crater. Examination of the spot showed a small plot of level sandy ground which is kept constantly dry and warm throughout the long snowy winter months by steam channels which lie close beneath the surface and which give off their vapor through surrounding vents and pools. Mr. Curtis inserted a small thermometer beneath the surface of the sand and found the temperature to be just about 70 degrees Fahrenheit, the standard room temperature. Experimenting still further, he found by personal experience that one could rest quite comfortably on the ground.

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with the left hand is controlled by the right side of the brain. Speech going on at the same time would naturally come under the same control.

The person begins by copying words and speaking them at the same time. The writing movement is always started before the word is pronounced. Then the words may be spoken more rapidly and only the initial letter written. Finally ordinary conversation is conducted in this manner.

The stutterer finds it much easier to speak when he combines his speech with writing in this manner. Gradually his speech improves until only certain sounds give difficulty. Then he need only write the first letters of those words which cause the trouble.

If you stutter, you will be glad to know that Dr. Travis does not recommend phonetic drills. Forcing a stuttering child to recite frequently in class is condemned as downright harmful.

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