CHEMISTRY

Extinct Elements Found

The neptunium series, heavy radioactive elements, may have existed naturally in the earth's beginning but because of short lives have become extinct.

➤ A PREHISTORIC family of heavy radioactive elements which may have occurred naturally in the earth's beginning but now is extinct was unearthed during development of the atomic bomb.

This missing link in the periodic table was found with production of synthetic elements neptunium, americium and uranium 233. It includes the recently identified elements 85 and 87, explaining fully for first time the absence of these elements from nature.

Called the neptunium series because neptunium 237 is the longest-lived of the family, it is the missing one of our four series of heavy radioactive elements. The others are the uranium, thorium and actinium series.

Two parallel investigations are reported in the *Physical Review* (Aug. 1). One was headed by Dr. Glenn Seaborg, of the University of California, while he was at Chicago, with co-authors listed as Drs. French Hagemann, Leonard Katzin, of Argonne, Martin Studier, Chicago, and Albert Ghiorso, University of California. The second study was by Canada's Division of Atomic Energy.

One of the authors of the Canadian report was Dr. Alan Nunn May, who is now serving a 10-year sentence in Britain for revealing atomic research data to Soviet Russia. Other Canadian scientists reporting on the work were A. C. English, T. E. Cranshaw, P. Demers, J. A. Harvey, E. P. Hincks and J. V. Jelley.

The reason for the extinction of the newly-discovered series is the relatively short half-life of parent, neptunium, which is two million years. The age of earth is estimated at two billion years.

Neptunium, like other heavy radioactive elements, decays by alpha particles, until it reaches a stable isotope. It decays to uranium 233, the synthetic isotope made by bombardment of thorium, and then down through isotopes of radium, actinium, francium, astatine and polonium until it reaches stable bismuth 209. Americium, element No. 95, is an even more remote ancestor of series with half life only 500 years.

The other three series exist in nature because of the long half-lives of the parents, these being four and half billion years for uranium 238, fourteen billion years for thorium 232 and seven hundred million years for uranium 235. The latter isotope was not known when the actinium series was named, but it is the actual parent.

Science News Letter, August 16, 1947

ZOOLOGY

Sickly Baby Gorilla Spends Record Time in Captivity

➤ AN 11-POUND, year-old baby which experts figured would not live long, today is a healthy six-footer weighing approximately 435 pounds.

He is Bamboo, famed gorilla who has spent 20 years in the Philadelphia Zoo. Two decades in captivity is a record for gorillas. Before Bamboo arrived here, most gorillas lived only a short time after capture.

Now, scientists believe Bamboo is right in his prime. His quarters have been strengthened by extra bars since the gorilla wandered out of his cage recently. How much longer Bamboo will live cannot be estimated with any accuracy. No one knows how long gorillas live normally in the wilds of Africa.

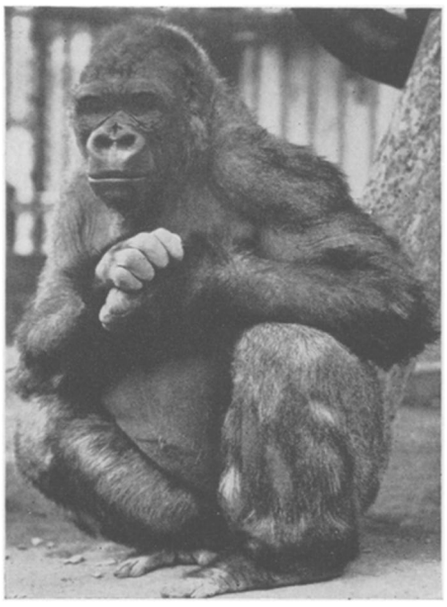
Science News Letter, August 16, 1947

MEDICINE

Dye Glows Under Rays To Detect Cancer Tissue

➤ A DYE that glows under ultraviolet light may help detect cancer tissue for the surgeon to remove. At present, bits of cancer that have invaded and become hidden by normal tissue may be missed at operation.

Trials of this method in 46 patients are reported by Dr. George E. Moore, National Institute of Health fellow at the University of Minnesota Medical School. His report appears in *Science* (Aug. 8).



BAMBOO—This gorilla, once a sickly baby, has been in captivity 20 years, a record time.

Best results were obtained when the dye, sodium fluorescein, was injected into the patient's vein three to eight hours before operation. During the operation, when the surgeon has reached the point where the patient's stomach, for example, can be seen, he inspects the area with an ultraviolet lamp. Cancer tissue glows with a vivid yellow color, showing the surgeon where to cut to remove it.

Good results were obtained in 31 of the 46 cases. Most of the nine failures occurred in attempts to fluoresce large, bulky tumors within the abdomen. Cancers of the lower intestine, stomach and breast were found less likely to fluoresce. This might be due to insufficient amount of dye or insufficient time between its injection and the ultraviolet inspection.

The most consistent results were obtained in examination of brain tumors. A bit of tissue from suspected areas was sucked out with a needle and readily recognized by its exaggerated fluorescence under ultraviolet light.

The use of radioactive iodine is now being considered for aid in distinguishing more accurately between cancerous and non-cancerous tissue at operation. Certain mouse tumors could be seen better by X-ray when iodine was substituted in the dye, which suggested putting the radioactive form of iodine into the dye.

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