

PHYSICS

# Artificial Radioactivity Produced For First Time

Prof. F. Joliot and Mme. Irene Curie-Joliot Start Boron Disintegration That Continues After Bombardment Ends

**A**RTIFICIAL radioactivity has been produced for the first time by Prof. F. Joliot and Mme. Irene Curie-Joliot, the famous Paris physicists who are husband and wife. Mme. Curie Joliot is daughter of the discoverers of radium.

Never before has radioactivity been created by an external cause.

This achievement has stirred interest at the famous Cavendish Laboratory, Cambridge, where experiments attempting confirmation are in progress. There is hope that through artificial radioactivity medically useful radiation will be produced.

The artificial radioactivity produced by the Joliot's consists of obtaining positrons or positive electrons from bombardment of boron with alpha particles. The important fact is that the activity or disintegration produced continues for many minutes after the bombardment is stopped. Boron decays exponentially to thirty per cent. in fifteen minutes. Similarly, artificial radioactivity proceeds in aluminum and magnesium. The decay period in aluminum is four minutes.

Lord Rutherford, the famous Cambridge physicist, declared:

"It is remarkable that the life of the unstable atom produced is as long as it is. We do not know whether the atoms so far made artificially radioactive are typical or whether other unstable atoms which may be produced will have a longer or shorter life."

"The discovery of the Joliot's shows how little we really know about radioactivity."

The mechanism of the artificial radioactivity of boron is interpreted to mean that a boron atom and the helium nucleus or alpha particle unite to form a neutron and an unstable nitrogen atom of weight thirteen which in turn changes to a carbon atom of weight thirteen with the release of a positron. The positron is the new particle discovered in 1932 at Pasadena, Calif.

The Joliot's are a famous research team following in the scientific path

blazed by Mme. Curie-Joliot's famous parents. M. and Mme. Joliot made experiments that were an important step toward the discovery of the neutron at Cambridge, England, in 1932.

While transmutations and disintegrations of matter have been accomplished in many ways before, the progressive and continuing disintegrations of atoms have not heretofore been accomplished or instigated artificially. Natural radioactivity has been proved, since its discovery before the turn of the century, to be a property of many atoms.

Uranium and radium are typical elements that are naturally radioactive. Some of the unstable atoms naturally radioactive have an extremely long life. The activity of radium only falls to half its value in 1600 years. Other spontaneous changes require time measured in seconds, thus being similar to the artificial radioactivity discovered.

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GENERAL SCIENCE

## Czar's Books, Rare Costumes Come to Philadelphia Museum

**R**ARE archaeological books from the private library of the late Russian Czar, and Russian peasant costumes centuries old, have been received by the University of Pennsylvania Museum.

About 125 of the Czar's books, mostly archaeological works, have come to the Museum by an arrangement made with leading Soviet museums for exchange of material and scientific data.

Outstandingly magnificent is "The Byzantine Enamels of A. V. Zvenigorodsky," which was printed in a limited edition in 1896, at a cost of about a thousand dollars a volume. Special paper was used, and artists and technicians worked for years on processes that would best reproduce the delicate shades and tints of the enamels. The binding is of white leather ornamented in



**COPY NUMBER ONE**

*Eugene A. Golomshtok, representative in the Soviet of the University of Pennsylvania, is holding the first copy of "The Byzantine Enamels of A. V. Zvenigorodsky," acquired by the American institution. Unusual progress has been made by Soviet archaeologists, Mr. Golomshtok states, and cites the following discoveries: statuettes found at sites used by men of the Old Stone Age; the only complete set of bones of both feet of Neandertal man; remains of dwellings of Aurignacian man; and traces of a "blonde race" in Siberia.*

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Byzantine style, and cloth hand-woven from gold threads. Of the 200 copies printed, the first was presented to the Czar and inscribed, "The Copy of His Majesty the Emperor."

The Russian books have come to the Museum through the courtesy of the State Hermitage Museum in Leningrad. The ethnological material, including the costumes, came from the State Central Anthropological Museum in Moscow.

The peasant costumes and jewelry and embroidered silks and linens are characteristic of those commonly in use in Russia several centuries ago. They are now virtually unobtainable. The front cover shows two costumes being "modeled" by University of Pennsylvania co-eds.

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