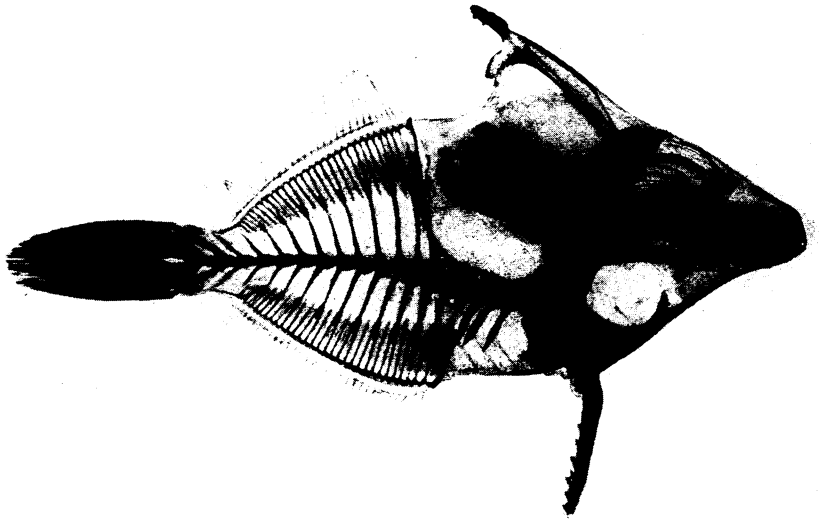
After proper staining, the fish is exposed to ultraviolet radiation, still in the alkali solution, to which glycerine is added, in one or two stages. Finally the specimen, its flesh now glassy-clear and its bones and other denser parts a delicate red, is put into a permanent glass jar, in pure glycerine with a little thymol added to keep molds from growing on it.

Miss Hollister's technique has been gradually developed over a fairly extended period of time. It is especially adapted for the preparation of fish. Some parts of it are based on the Schultze method used by her for Dr. William Beebe and other zoologists with whom she has been associated. Exact details are given in *Zoologica* (*Aug.* 30), a scientific journal published by the New York Zoological Society.

Miss Hollister is research associate in the New York Zoological Society's Department of Tropical Research, and a Fellow of the Society.

Science News Letter, December 15, 1934



NO SECRETS

Ultraviolet, used by bathing beauties to give them a becoming coat of summer tan, has been used to the opposite effect on this fish in a process which makes him transparent, for study.

PHYSICS

Research in Radioactivity Spurred by New Principle

A NEW principle of separation of man-made artificial radioactive elements from the normal substances, from which they are produced, is announced (*Nature*, Sept. 22). The discovery is expected to speed research in the field of atomic studies of how the smallest unities of matter are composed.

Drs. Leo Szilard and T. A. Chalmers of the physics department of famous St. Bartholomew's Hospital of London describe a method, which they call "a new principle of separation," for concentrating an artificially produced radioactive element even in the case where the radioactive element is an isotope of the original element.

Thus, for example, by bombarding iodine crystals with neutrons it is possible to produce a radioactive form of iodine but it has hitherto been impossible to separate it from the iodine crystals in the original target because both the radioactive form of iodine and the normal form are isotopic. Chemically isotopes are indistinguishable.

The London scientists report that now they have found a way of separating the two forms of iodine.

Their method is based on the following reasoning:

1. It is logical to expect that atoms of an element struck by neutrons in atomic collisions should be removed from the compound. These impacted atoms frequently are radioactive.

2. Around the target, therefore, would be a swarm of struck-atoms. But normally there would be a constant interchange between these free radioactive atoms and the normal non-isotopic atoms still in the target. Experiments should thus show, as they do, that part of the radioactivity is still in the material of the target.

3. BUT—if the impact experiments are carried out under conditions in which this interchange is impossible or considerably reduced, it should be possible to obtain the "free" radioactive element. Chemical changes like reduction and precipitation might then be able to remove the radioactive atoms permanently from the scene.

In analogy the trick would seem to be that by controlling the conditions of the experiment a "one-way street" is created, in a chemical sense, along which radioactive atoms can travel. Their return, however, is prevented. One might think of the "street" as a hill down which balls can roll but not come back.

In experiments with iodine compounds Drs. Szilard and Chalmers used a vapor of pure iodine as the blocking condition which prevented, considerably, the radioactive atoms from rejoining the target of ethyl iodide. The pure iodine somehow protected the radioactive isotope, they say.

The method should be especially valuable for the many radioactive experiments on elements having atomic numbers higher than 30. Below atomic number 30 artificial radioactivity produced by neutron impact commonly creates substances having different chemical properties. Thus a radioactive gas may be created from a solid element, just as radon gas is produced by naturally disintegrating radium.

Above atomic number 30, however,—as in the case of arsenic, bromine, iodine, iridium and gold—radioactivity can be produced, but most of it still stays in the target. Its presence can be detected but it is most difficult to concentrate it. The new British method appears to solve this baffling problem. For iodine, it is reported, a concentration of the radioactivity ten times more than normal has been achieved.

Science News Letter, December 15, 1934

In the 500 years when the Valois and Bourbons ruled France, 21 French kings died from tuberculosis, says *Hygeia.*