

or the disease will start over again. In addition, a ten-mile "safety zone" outside the known infested area is also marked for cleaning up. In all, 5,000 square miles, containing 3,000,000 trees, must be policed.

Just as Washington frequently had to fight without enough ammunition, so the fighters for America's elms must go into this battle without sufficient funds

to complete the whole campaign. It has been estimated that another million dollars will be needed. Friends of the elms feel sure that the money will be forthcoming in time, if people realize that their own elms, even those as far from the scene of action as the Pacific Northwest, are endangered, unless the enemy is driven out before next June.

Science News Letter, December 15, 1934

PSYCHOLOGY

Writings of Gertrude Stein Those of Woman Without Past

A POSSIBLE explanation, on a scientific basis, for the bewildering if amusing writings of Gertrude Stein has been vouchsafed by the Editor of *The Journal of the American Medical Association* (Dec. 1).

"Her writing seems to be the result of a stream of consciousness of a woman without a past," he says. Further explanation is, in part, as follows:

"Those familiar with such symptoms as automatic writing, palilalia, perseveration and verbigeration are inclined to wonder whether or not the literary abnormalities in which she (Miss Stein) indulges represent correlated distortions of the intellect, or whether the entire performance is in the nature of a hoax, and that Miss Stein produces her literary effusions with her tongue in her cheek.

"Palilalia is a form of speech disorder in which the patient repeats many times a word, a phrase or a sentence which he has just spoken. In addition, the speech tends to be uttered more and more quickly and less distinctly. . . .

Verbal Perseveration

"An analogous condition is palilogia, a term sometimes applied to that form of rhetoric whereby the word or sentence is deliberately repeated for purposes of emphasis. Then there is also verbal perseveration, with the same word or phrase repeated as though the original idea persisted for an undue length of time in the patient's mind to the exclusion of fresh incoming ideas

"Now it is interesting in surveying the writings of Gertrude Stein to find that Miss Stein worked at Radcliffe with Münsterberg and that she wrote a paper, later printed in the *Harvard Psy-*

chological Review for September, 1896, under the title 'Normal Motor Automatism,' by Leon M. Solomons and Gertrude Stein. In their experiments, Mr. Solomons and Miss Stein attempted to investigate the limits of their own normal automatism, undertaking to see how far they could split their own personalities in a deliberate and purely artificial way. They were successful, according to B. F. Skinner (*Atlantic Monthly, Jan., 1934*), to the extent of being able to perform many acts, such as writing or reading aloud, in an automatic manner while carrying on at the same time other activity. Miss Stein reported that spontaneous automatic writing became easy after a little practice. Thus she said:

Running in the Mind

"A phrase would seem to get into the head and keep repeating itself at every opportunity, and hang over from day to day even. The stuff written was grammatical, and the words and phrases fitted together all right, but there was not much connected thought. The unconsciousness was broken into every six or seven words by flashes of consciousness, so that one cannot be sure but what the slight element of connected thought which occasionally appeared was due to these flashes of consciousness. But the ability to write stuff that sounds all right, without consciousness, was fairly well demonstrated by the experiments."

"Obviously, therefore, the writing of Miss Gertrude Stein, such as appears in her plays, books and poems, is quite the same as she developed when experimenting with spontaneous automatic writing.

"Mr. Skinner points out that the ordinary reader cannot infer from this

writing that the author possesses any consistent point of view, because there is seldom, if any, intelligent expression of opinion.

"Her writing seems to be the result of a stream of consciousness of a woman without a past. The stream of consciousness is, of course, particularly well exemplified in some of the writings of James Joyce in *Ulysses*. Mr. Skinner is convinced that this spontaneous automatic writing by Miss Stein is that of a second personality successfully split off from her conscious self, and unfortunately a personality without any background, intellectual opinions or emotions. The mere fact that Miss Stein herself occasionally appears in the midst of the writings of this second personality would seem to be the proof of the opinion."

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BIOLOGY

Ultraviolet Rays Make Rare Fish Transparent

ULTRAVIOLET radiation, depended on by basking beach mermaids to give them a fashionably dusky sun-tan, is used for an exactly opposite purpose in preparing specimens of rare fish for laboratory study and museum exhibition. In a study reported to the New York Zoological Society, Miss Gloria Hollister describes its use in a new preservation and clearing technique which takes dark skin colors out and leaves the specimens in a state of X-ray-like transparency, with every delicate detail of bone structure visible.

The process makes it possible to study the internal structure of rare species without resorting to dissection—an important matter when there may be only one or two specimens in existence. Even fine external details, which may not be clearly distinguishable in the natural state, are brought out by a combination of the ultraviolet "clearing" process with the use of the right kind of tissue stain.

The process begins with the fixing of at least the larger specimens in 70 per cent. alcohol, to make the tissues firm. This step is frequently not necessary with smaller fish.

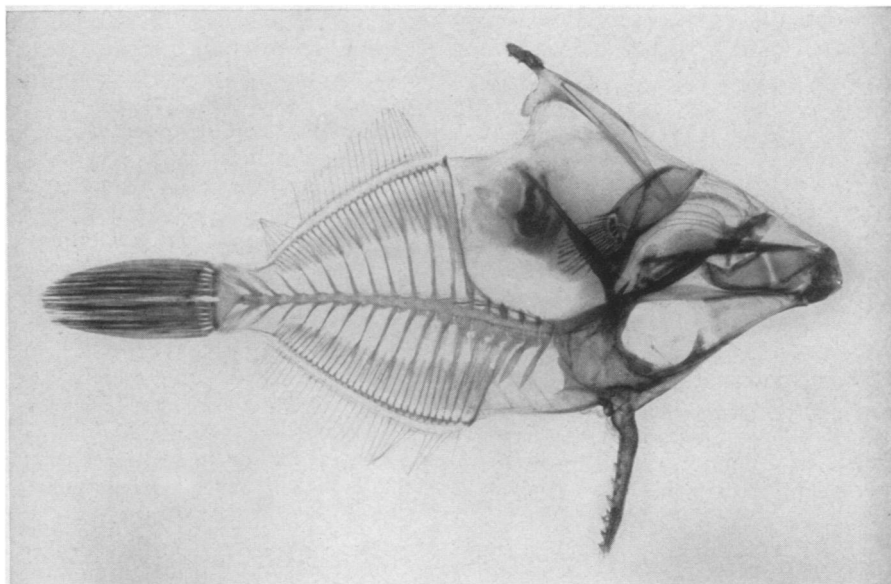
Then the specimen is immersed briefly in distilled water, after which it is transferred to a weak solution of potassium hydroxide. Following this, it is stained in a potash solution of alizarin dye, a red color of vegetable origin.

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 re-

turn, 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*.