



HEART OF APPARATUS

This tube which extends ceiling-high in the apparatus on page 392 is where the separation takes place. The tiny inner tube is heated by the coil of wire while the outer tube is cooled by water entering through the black tubing. The temperature difference sets up a swirling of gases causing the separation.

Their scheme—a pioneer method yet untried—may some day correspond to the “drafts and dampers” on a furnace which keep coal burning steadily and under control.

While the French have thus publicly mentioned a scheme which has been in the minds of many other scientists in America—but yet unreported because it seemed ill-advised in the present preliminary stage—there has been a strange and perhaps ominous silence on such matters from Germany, the land where the original discovery of uranium’s splitting was made last summer.

Perhaps, the keen resources of Germany’s regimented scientists are even now at work pushing the exploitation of uranium’s splitting—and its release of atomic energy—for military purposes.

The worries of Americans on this point are real for two reasons. One, the original discovery was made in Germany and enabled them to get a “jump” on the rest of the world if they wished to do so. Two, one of the best methods of separating isotopes is German-made; the method of Clusius on thermal diffusion.

This Clusius method is now exhibiting promise in America on a tiny

experimental scale but it is well-known and long-tried in Germany.

All of this is, of course, conjecture. However, it does have considerable scientific possibility. Indeed there is so much that is true mixed with what may

amount to mere speculation that American scientists are pushing their uranium research diligently to learn, at least, whether atomic power can be obtained in a safe and reasonable form.

Science News Letter, June 24, 1939

PUBLIC HEALTH—BACTERIOLOGY

Advise Precautions Against Horse Sleeping Sickness

Control of Rabies, Yellow Fever, Typhus and Rocky Mountain Fever Also Discussed at Virus Meeting

EQUINE encephalomyelitis, or horse “sleeping sickness,” for years of great economic consequence in the livestock industry, has become an outstanding public health problem with the discovery during the past year that man can contract this horse disease, Dr. Leroy D. Fothergill of Harvard University told the Harvard virus symposium.

The first important control measure, he said, is to use a very effective horse vaccine which has been developed in an effort to eradicate the disease from horses. To prevent its spread among humans, he urged screening against the mosquito carriers. Man could be vaccinated against the disease, he said, but the low incidence does not warrant this now.

Despite this low incidence, however, he urged care, for few viruses are capable of causing infection in such a wide spectrum of different species. The discovery last year by Dr. Fothergill that birds may also have the disease complicates the epidemiology. Primarily a summer and autumn disease, it attacks children more often than adults.

Don’t Shoot the Dog

DON’T shoot a dog suspected of being rabid unless necessary for protection. Instead, capture and quarantine it under observation for a 10-day period. This advice on the control of rabies or hydrophobia was given by Lieut. Col. Raymond A. Kelser, chief of the U. S. Army Veterinary Corps.

If the dog is killed it is often impossible to tell if it had rabies and diagnosis of the disease in man is possible only through diagnosis of the biting dog. When man shows the symptoms of the disease, it is too late for the

Pasteur treatment, which must begin within four days of the bite to be effective. Bites about the head and face, he recommends, should be treated at once if the dog is suspected, and the dog quarantined. Treatments can be discontinued if the dog proves well.

For control measures, Col. Kelser urged quarantine of imported dogs, restraining of dogs in an infected community and prophylactic immunization against rabies as an adjunct, not a substitute, to these measures.

He said the danger of the disease was often overemphasized and that while treatment should be given in definite cases, its use to “play safe” was not always advisable.

Yellow Fever Control

AT LAST medicine is in a position to control jungle yellow fever in South America and some advance can be made in Africa, the other great focus of this disease, Dr. Frederick F. Russell, professor emeritus, Harvard University, reported.

Dr. Russell emphasized that control in South America may be more im-

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portant to the United States than is realized for the southern states have the carrying mosquito and, while no recent cases have been reported, there is always the danger of an outbreak, particularly with modern transportation facilities to aid the spread.

Control in South America, he said, is possible through use of a recent and very effective vaccine, made from attenuated virus, which seems to confer a fairly lasting immunity. Over a million vaccinations have been carried out thus far with very encouraging results. Mosquito-control projects are also used.

Information concerning the African problem is still inadequate and control will be slow, but Dr. Russell said some advance can be made each year.

Rickettsial Diseases

PROGRESS toward control of the rickettsial diseases, typhus fever and Rocky Mountain spotted fever, was reported to the virus conference at Harvard Medical School by Dr. Hans Zinsser of Harvard.

The most encouraging method, he said, is the use of killed typhus virus for immunization. The use of living virus and a combination of living virus and antiserum for vaccination, he emphasized, are dangerous and should not be attempted until the use of killed material has been fully explored.

The major problem with the use of killed material is that large amounts must be employed but with the recent amazing progress in culture methods, this problem seems well on its way to solution.

While passive immunity, because of its temporary nature, is incomplete as an answer to the control problem, Dr. Zinsser reported, the serum of immunized horses has been proved to have specific protective, prophylactic and therapeutic action against typhus fever in Mexico.

Would Prohibit Parrots

ABSOLUTE prohibition of the importation of any birds of the parrot family and rigid regulation of domestic stock, with destruction of infected birds, was urged by Dr. John F. Enders of the Harvard Medical School as offering the best hope of safeguarding man against the parrot disease, psittacosis.

Such a program would require strict enforcement of existing laws on bird control, a few new ones, and close cooperation among public health officials, bird dealers and the public, he said, but it would be well repaid by the stamping out of a disease which despite the fact

that it is easily preventable, constitutes a definite public health menace.

The most insidious feature of the disease is that apparently well birds may carry the disease and pass it on to man. The familiar green parrot of Brazil and the Australian parrakeet are the worst offenders in this respect but canaries, finches, sparrows and even young chicks are susceptible to the disease.

The problem of immunizing against the disease is not yet fully understood, Dr. Enders reported. Some success has been had with inoculations to produce mild cases of the disease, however, and the use of immune serum may also be possible after further research.

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PHYSICS

Search for Elements Heavier Than Uranium Unsuccessful

THE INTRIGUING picture of scientists being able to create super-heavy chemical elements by the bombardment of uranium with neutral atomic particles, the neutrons, apparently is now proved impossible by elaborate and careful experiments performed by the Italian physicist, Dr. Emilio Segrè, working at the radiation laboratory of the University of California.

Describing his results in *Physical Review*, (June 1) Dr. Segrè concludes that "transuranic elements have not yet been observed."

Such elements more massive than uranium—heavyweight of all chemical elements—were suggested by the 1934 experiments of the Nobel Prize scientist Prof. Enrico Fermi of Rome, who is now at Columbia University. Dr. Segrè was one of the research group which worked with Prof. Fermi in these earlier experiments.

By bombarding uranium with neutrons, Dr. Segrè found that the well-known radioactive isotope of uranium—having a half-life of 23 minutes—was produced. This isotope disintegrated with the emission of an electron, a so-called beta particle. A search for alpha particle emission was unsuccessful.

While he was not able to demonstrate its presence chemically, Dr. Segrè concludes that the beta emission means the isotope breaks down into element 93, which is extremely long-lived. This is in keeping with the present picture of radioactive disintegration, but furnishes only very indirect proof, and makes true Dr. Segrè's conclusion that transuranic elements have not yet been observed.

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