



A STEP IN THE PROCESS OF GETTING ACIDS FROM HAIR

After treatment with hydrochloric acid, impurities are removed with a filter. Later the acids are isolated, purified, tested for purity and end up in bottles whose contents are worth as high as \$1,000 a pound.

WILDLIFE

Wild Ducks Still Suffering From Last Fall's Hurricane

Efforts to Save Trumpeter Swan and Desert Mountain Sheep Related Before Fourth North American Wildlife Conference

WILD ducks of the North Atlantic coastal marshes are still suffering from the effects of the New England hurricane of last autumn. It will be several years before the wet world where they like to swim and feed will be back to normal, Richard Griffith of the U. S. Biological Survey told the Fourth Annual North American Wildlife Conference in Detroit.

Giant waves whipped up by the great wind did the ducks dirt, coming and going. When the water rushed in, it cut away the barrier beach at many points, washing large quantities of sand on to the marshes bordering the inside beach. Then, when the water ran out again, it scoured many acres of bay bottom, removing large quantities of food, as well as the bottom muck that grows duck food.

One good thing, the ill wind blew the ducks: it cut new inlets, permitting tides to run more freely into the ditches that have been cut into the marshes as an anti-mosquito measure. This greater tidal play in the marshes is an advantage from the duck point of view.

The situation is not hopeless, however, Mr. Griffith made plain. In from two to five years the various types of wildfowl food will have reestablished themselves.

The "graceful white swan" of the popular ballad is very close, in one species at least, to total extinction. Not more than 200 trumpeter swans remain in the United States, and a small number in northwestern Canada, A. V. Hull of the U. S. Biological Survey told the Conference.

Efforts to keep the species in existence and to increase the number of birds are facilitated by the fact that the only

places where they live are rigidly protected. They are in Yellowstone National Park and on a newly established wildlife refuge at Red Rocks Lake nearby in Montana. The refuge is administered by the Biological Survey, and National Park Service rangers aid in the protection of the swans that nest in the park.

On Muskrat Houses

Favorite nesting places are on top of muskrat houses, Mr. Hull told the meeting. For this reason artificial mounds resembling muskrat houses were built, to make additional nests possible, and the swans took to them very readily. It is also planned to increase the water areas in their habitat, and to build artificial islands where they may safely rest and preen.

Their worst enemies are coyotes. Absolute control of these predators is essential for their preservation, Mr. Hull declared, adding, "A single coyote on their breeding grounds may destroy many nests, as well as adult birds and cygnets."

Efforts on behalf of the trumpeter swans seem to be meeting some success. A census in 1936 showed 69 adults and 39 cygnets, or young birds; the 1938 census showed 93 adults and 55 cygnets.

Another Vanishing American is being carefully watched, and safeguarded as far as possible, by the U. S. Biological Survey, Joseph C. Allen, Survey zoologist, stated. It is a species of bighorn known as Nelson's mountain sheep, that lives in the desert mountains of Nevada. There are pitifully few of the animals left, and it will require all possible vigilance and care to save the species from extinction.

Coyotes Take Toll

Coyotes and other predators take toll of the lambs, and it is necessary under some circumstances to fight the coyotes, Mr. Allen stated. A much more destructive predator, however, is one that cannot be shot at sight: the prowling human poacher. Incessant and thorough patrol of the sheep's range is necessary to keep his nefarious activities in check.

Bolder, more enterprising immigrants into this new land don't stop right at the ports where they enter this country. They keep on travelling, until they find a homesite that suits them. So is it also with the chukar partridge, a hardy, sprightly game bird brought here from northern India and central Asia, according to W. O. Nagel, research associate at the University of Missouri.

Missouri was chosen as a sample state

for the study of the chukar's habits and preferences, because it offers so wide a range of habitats, from the woody heights of the Ozarks to the flat swamps of the Mississippi and Missouri river bottoms. Other states are watching the outcome of the experiments there, before undertaking large-scale chukar introductions of their own.

During the past two years, 1351 chukar partridges have been turned loose in nine widely distributed and strongly varying habitats, Mr. Nagel stated. All but 341 of them have disappeared. It is not believed that many of them have been killed by predators or died of natural causes, but it is considered more likely that they have migrated out of the territory under observation, in search of the kind of homes that suit their own ideas. They have been known to travel as much as fifty miles in a few days, in these home-seeking wanderings.

Ideal Game Bird

The chukar partridge is considered an ideal game bird in many respects. It is far harder than the ring-necked pheasant, enduring both cold and heat. The young chicks are able to fend for themselves at a very early age. Natural increase is rapid. After the data from the Missouri experimental releases have been properly interpreted, it is hoped that their introduction into America will become general.

Lake Meade, the artificial inland sea now forming behind Boulder Dam, is being made a good place for ducks by stocking it with food plants of the kinds they like, Robert E. Towle, of Boulder Canyon Wildlife Refuge, told his colleagues.

Three zones have to be considered: the fluctuating level of the lake itself, the shoreline subject to periodic flooding as the waters fill in and are drained out, and the dry shores permanently above water. Each habitat requires a different food-plant setup.

In contrast to the difficulty of making Lake Meade fit for ducks is the automatic benefit it has brought to the upland wildlife, especially the mountain sheep. The lake's 550-mile shoreline vastly increases the area where these animals may come and drink, and thereby multiplies their range a thousandfold.

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A large house excavated recently in Crete appears to have been inhabited within two generations of the Trojan War, thus showing the impressive style of mansions in Homer's age.

PHYSICS

Release Atomic Energy From Massive Thorium

Splitting of Uranium Atom Is Followed By New and Sensational Experiments at Johns Hopkins University

SCIENTISTS have smashed another chemical element and made its atoms give off the tremendous quantities of energy which have long been locked within them. The element is heavy thorium.

Experiments just made with the 1,000,000-volt atom smasher at the Carnegie Institution of Washington show that high speed neutrons (neutral atomic particles) will split thorium into two parts and yield energies so enormous that they have not yet been accurately measured, Science Service was told.

This new experiment follows closely on the heels of the splitting of uranium, which also gives up its atomic energy in the splitting. Similar experiments on thorium have been done independently at Johns Hopkins University. Both American researches confirm results known to have been secured a few days ago at the Institute for Theoretical Physics in Copenhagen by Dr. R. Frisch. A report of the Frisch experiments is soon to appear in the British science journal *Nature*.

Takes Higher Energy

The release of thorium's atomic energy differs from that of uranium in that only very energetic neutrons from lithium, with energies of millions of electron volts, seem to be able to split the element and release its energy.

For uranium, both high and low energy neutrons appear able to touch off the "trigger" mechanism inside the atom that makes it split into two parts and release energies estimated at 200,000,000 electron volts.

Carnegie Institution scientists have also made a quick survey of other heavy elements—bismuth, lead, thallium, mercury, gold and tungsten—for similar results. But no conclusive evidence of splitting has been obtained for these non-radioactive elements.

While the research scientists at Carnegie are working night and day on both of their huge atom smashers, theoretical scientists are puzzling over the meaning of the astounding experiments.

Most plausible suggestion now is that the action of neutrons on uranium and thorium is a kind of resonance phenomenon inside the nucleus of the atom. Neutrons smashing into the atom with some special energy can shake it and make it split apart. The enormous binding energy which holds it together is released in this process.

Experiments now in progress seek to find if there is some particular neutron energy which is most efficient in releasing the atomic energy. In the case of thorium, the most efficient energy lies somewhere between 400,000 and 2,000,000 electron volts. The Carnegie scientists systematically are narrowing these limits.

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PHYSIOLOGY

Premature Aging Ascribed To Mineral Starvation

WHEN an adult lacks vigor and becomes old before his time, he is probably suffering from long years of mineral starvation. This suggestion is made in the *Journal of the American Medical Association*. (Feb. 4)

Lack of sufficient calcium and vitamin D in the diet is now known to be the reason why the bones of elderly persons become abnormally porous. "Senile osteoporosis" is the name physicians give to the general demineralization of the skeleton that is commonly present in elderly persons.

This condition over a period of many years may result also in pathologic changes in the kidneys and other vital organs and thus affect the general health, the medical journal declares.

Complete studies of mineral metabolism on normal or average persons in different age groups are recommended.

Too little effort has been made to understand or prevent the sicknesses that we have been accustomed to accept as an inevitable accompaniment of advancing years, the journal states.

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