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NEW ALLOY FOR GUNSHOT LESSENS
DANGER OF WILD DUCK POISONING

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Wild ducks often escape hunters' gunfire only to be poisoned fatally by lead shot which they eat in dabbling for food in marshy areas. Waterfowl losses from lead poisoning are common, and many ducks die from eating only 4 or 5 lead pellets.

The slow, toxic action of the lead first causes ducks to lose their power of flight, and then their ability to swim or walk. In this helpless condition, even should they survive the ravages of poison, the birds are likely to become victims of the elements or of predators. The Bureau of Biological Survey called attention to this waterfowl menace in 1919 and pointed out the hopelessness of any remedial measures.

"All that can be done," said the Bureau then, "is to call attention to the prevalence of lead poisoning and to describe the cause and symptoms, so that persons finding affected birds may understand."

But the outlook for preventing lead poisoning of waterfowl is somewhat brighter now. By mixing lead and magnesium, scientists of the University of Minnesota and of the Biological Survey have developed an alloy that disintegrates in water, or if it is eaten by waterfowl, breaks up rapidly in the gizzard and passes through the intestinal tract before a fatal dose of lead can be absorbed by the bird's body. Ordinary lead shot when eaten by waterfowl are trapped in the gizzard and gradually are ground away. This finely divided lead absorbed by the duck's

body as it passes through the intestine produces the poisoning. When the new alloy has been developed to the point where its use by shot manufacturers will be practicable, the scientists believe, the dangers of lead poisoning will be greatly decreased.

Dr. Robert G. Green of the Medical School, University of Minnesota, and Prof. Ralph L. Dowdell of the University's School of Mines, developed the alloy in connection with Minnesota wildlife disease investigations. The possibility of developing non-toxic shot material was suggested to them by Dr. J. E. Shillinger, in charge of the Bureau's wildlife disease control investigations. The alloy as developed has the essential quality of being non-toxic, and the scientists now hope to improve it for practical shot making.

Experimental shot made of the alloy, when dropped in water, or eaten by ducks, give off small quantities of gas and become porous. This is caused by the chemical action of magnesium and water. By taking X-ray photographs of a mallard duck used in feeding tests, the scientists were able to observe the rapid breaking up within the bird's digestive tract of shot made of the alloy. The shot began to disintegrate soon after it was swallowed, and later it was completely broken up in the gizzard. The broken particles then passed through the intestinal tract rapidly without serious absorption of lead into the body.

"It isn't difficult to understand how a duck may obtain a fatal dose of lead when one recalls how thoroughly these birds work over attractive food areas," says Dr. Shillinger. "A flock of 200 to 300 ducks may find sufficient food in certain marshy areas to hold their attention for several successive weeks. They go over every square foot of this area, and any food overlooked by one bird is likely to be picked up by another. It is during this search for food that they pick up the lead shot.

"Ordinarily only a few lead pellets," says Dr. Shillinger, "are found in the gizzard of waterfowl, but on some occasions the gizzard has been found filled with shot. One bird had 288 shot of various sizes in its gizzard. The abrasive action of grit under the pressure of the powerful gizzard muscles grinds the shot away, and much of the lead found in waterfowl is in the form of irregularly shaped fragments."