

patents in the United States and *Germany*, covering its use as an explosive. . . .

It is a more powerful explosive than T.N.T. It was proposed for use as a booster, but was little used, as the process of manufacture and conditions for use were not satisfactorily perfected by the time the Armistice of November 11, 1918, was declared. Its discovery, therefore, was in no sense a decisive factor in the defeat of Germany.

It will be observed that T.N.A., therefore, was discovered by an English chemist, ten years before the war broke out, was patented in England, the United States and *Germany*, four years before the war began, and, therefore, was well known to German chemists.

On June 5, 1923, I wrote to Dr. Riley, enclosing a copy of Professor Munroe's letter. I concluded my letter as follows:

I call upon you now, formally, hereafter to eliminate the two paragraphs on page 16, for it is an absolutely wrong statement, as you can see by looking up the patents, if you wish to.

For about two years this pamphlet was sold without any alteration of the text. Of late Dr. Riley has added a note on the margin of this paragraph recounting the discovery of T.N.A. by the two young American chemists, as follows: "This illustration, given me by a chemist, is disputed." He is attempting to "save his face" by perversion of the facts. Professor Munroe did not "dispute" this illustration. His letter, above quoted, showed it to be false.

To my limited knowledge the chemical procedure, as described by Dr. Riley, is unintelligible. Professor Munroe wrote that it was "arrant nonsense."

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THE PROPAGATION OF APPLE VARIETIES BY CUTTINGS

IN the *Journal of Heredity*, September, 1925, attention has been called to the occurrence of burr-knots, which contain root rudiments, on the stems of certain varieties of apple trees, and to the fact that these root rudiments can be readily forced into growth by maintaining damp moss around the stems. It was suggested that probably such material could also be used as detached cuttings in the vegetative propagation of certain varieties of apples. The writer is now able to report that the varieties Buckskin, Springdale, Northern Spy and Buckingham (the only varieties used in the first test) have been propagated by detached cuttings. A commercially satisfactory percentage (above 80 per cent.) of rooted cuttings was obtained. The material used was of pencil size or

a little larger and was of the fruit-spur type, being three to five years old. Root rudiments were more or less evident on each cutting at the time it was taken from the tree. The material was cut July 15 from bearing trees in the orchard of the Arlington Experiment Farm, near Washington, D. C. The cuttings were placed in sand in one of the Washington greenhouses, a bench without bottom heat being used. When lifted on August 19, almost every one showed roots from one fourth to four inches in length, although very little callus was observed. There was some evidence to indicate that the presence of functioning leaves was advantageous to root development, as was mentioned by Van Der Lek¹ for willow, poplar and grape cuttings.

From these results it seems that the propagation of apple varieties by hardwood cuttings depends at least in some cases upon the use of material in which root rudiments are already present. It is hoped that physiological studies, now in progress, will throw some light on the question of what are the conditions that bring about the initiation of such root rudiments. The writer will be glad to learn of observations by other workers on the relation of burr-knots and previously formed root rudiments to the rooting of cuttings.

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THE MACKEREL AND PLANKTONIC ORGANISMS

THE life history of the true mackerels belonging to that great family of Scombridae is full of romance and takes us back to the days of Horace and Pliny. The ancients considered the mackerel a fish of mystery and down to the present time the migratory habits of this great food fish have constituted a problem not easily solved. Lacepede, the French naturalist, in 1798 came to the conclusion that mackerel pass the winter in the Arctic region, where hibernation takes place with their heads buried in the mud.

Badham, writing in 1854, says, "The migrations of mackerel have given rise to wide excursions of the imagination and to much ingenious speculations." The investigations made at Port Erin on planktonic life by Johnstone, Scott, Chadwick and Herdman will prove invaluable in finding the missing link to the life history of the mackerel family.

During the past few years Professor Herdman has

¹ Van Der Lek, H. A. A., "Over de wortelvorming van houtige stekken," *Medeelingen van de landbouwhoogeschool te Wageningen (Nederland)*, Vol. 28, No. 1, 1925.