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 Lek[1] 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.

made an examination of ten thousand samples of plankton relative to growth, reproduction and movements of planktonic organisms. This investigation goes to show that temperature and salinity are a great factor in the rise and fall of planktonic life. Since 1910 the mackerel catches on the Atlantic coast have declined to an alarming extent.

Some of the English scientists have advanced the idea that the mackerel are leaving America and migrating to the European coast. If this is a fact and taking into consideration that mackerel are plankton feeders the solution seems to be centered around the study of planktonic organisms.

The investigation of the seasonal distribution of plankton in the Woods Hole region by Dr. Charles J. Fish, Bureau of Fisheries, will in all probability pave the way towards surveying the Atlantic coast.

No doubt the tagging of mackerel will show appreciable results. But unfortunately many uncontrollable factors enter into the above experiments, such as hyperglycemia due to handling the fish and being exposed to the air, thus causing them to fall easy prey to their enemies after being returned to the water.

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ABSTRACTING OLD BOTANICAL WORKS AND MANUSCRIPTS

THE value of a complete abstract journal can not be overestimated; we all recognize the great importance of periodicals, such as *Botanical Abstracts, Botanisches Centralblatt, Chemical Abstracts* and a number of similar papers in other fields of learning.

These publications, however, are of relatively recent origin. For example, Just's *Botanische Jahresbericht* was founded by Just in 1873. *Botanisches Centralblatt* was started in 1880. Previous to this time a wealth of important work had been published: some of it can be found in a number of well-known serials. Some of them are still being published, but the earlier issues are not easily obtainable, except in some of the large institutions of the Old and New World. We need mention only Curtis's *Botanical Magazine* (1786), *Botanische Zeitung* (1843), *Linnaea* (1826), *La Belgique Horticole* (1851), Transactions and Proceedings of the Botanical Society of Edinburgh (1843), Transactions of the Royal Society (1663), *Flore des Serres et des Jardins de l'Europe* (1845) and a number of others.

I have spent considerable time in a number of libraries like those of the British Museum, of Kew Gardens, of the University of Amsterdam, of the University of Berlin and others, studying works on plants and on their economical aspects published in earlier centuries. One is surprised by the fine talent of these observers and workers of times long past, men who were heretofore unknown to us. From the sixteenth until the beginning of the last century men like Malpighi, Grew, Swammerdam, van Leeuwenhoek, Camerarius, Linné, Koelreuter or Sprengel have given us an indelible impression of their achievements, but there are others whose work has been forgotten, and no one can estimate the advantage it will be to science and history to have their work revived. If we consider only the work of an investigator of later date, namely, that of Gregor Mendel, one will realize the importance of this task of abstracting.

There are international catalogues besides those of libraries which will facilitate this work considerably. Also publications like Seguier's "Bibliotheca Botanica," 1740; Wikström's "Litteraturae Botanica in Suecia," 1831; Krüger's "Bibliographia Botanica," 1841, and treatises on the history of botany during certain periods which will contribute very much toward making the task of finding originals easier.

In many libraries there are unknown manuscripts, which are not published and probably never will be published, but which are of enormous value. They may contain views or observations which were not ripe for these days, and therefore were not fully comprehended by the learned world of that time. A systematic search, a perseverance and last but not least a love for one's profession will ensure the completion of this work, which will not only be of great historical value but also to science itself.

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SCIENTIFIC BOOKS

Entwicklung und Bibliographie der Pathologisch-Anatomischen Abbildung. BY EDGAR GOLDSCHMID. Leipsig, Karl W. Hiersemann, 1925, 301 pp., 44 pl. 4°. Price 150 marks.

THIS is the first serious attempt to grapple with a theme of some moment to medicine, namely, the history of pathology. Pathology, as a generic term, connotes and comprises everything relating to the essential nature of disease. In ordinary usage, however, it denotes the changes in structure and function produced by disease and thus includes both the "anatomical idea" of Virchow and what Allbutt styled "altered physiology," *i.e.*, the facial appearance and physical habitus of different diseases, as well as in paralytic deformities and other derangements of function. The