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THE CHEMIST IN THREE WARS—II

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THE PRESENT WORLD WAR

Now that we are in the midst of the second World War, what is the set-up among chemists for support of the war effort? Have we organized our forces so that they can be and are being utilized in the best possible manner?

I wish I could answer this question in the affirmative.

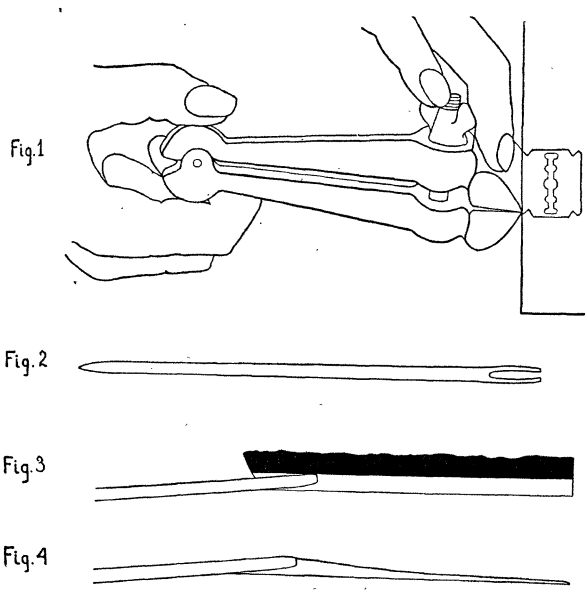
The top government agency created for scientific war work is the Office of Scientific Research and Development, headed by Dr. V. Bush, president of the Carnegie Institution of Washington. This office can both initiate war projects or solve them; in practice it also functions in an advisory capacity. Much actual work is being performed under the direction of the National Defense Research Committee, of which Dr. James B. Conant, president of Harvard University, is chairman. This committee has two chief divisions pertaining to our line of work, that of chemistry and physics; organic problems are in charge of Dr. Roger Adams, of the University of Illinois, inorganic and industrial chemical matters are under the direction of W. K. Lewis, of the Massachusetts Institute of Technology. The National Inventors Council, under C. F. Kettering, is designated to sift novel thoughts submitted to it. Some problems, which are military secrets, have been assigned to government controlled laboratories; there is no doubt that these tasks are being handled well, and under fine leadership.

So far, so good. What we need next is a complete roster of all chemical talent in the country; such a

of a hot soldering iron, and a smooth, sweated union between the prongs and the strip of razor blade is obtained.

The shaft of the scalpel (*i.e.*, the needle) may now be clamped by its pointed end in a needle holder or pin vise, in order to facilitate shaping the blade of the microscalpel. The shaping is accomplished by grinding away the back of the small blade with a fine emery wheel or oil stone to the desired shape, exercising care to avoid grinding the cutting edge of the blade.

The shape of the blade and the angle which the blade makes with the shaft of the scalpel depend upon the use to which the scalpel is to be put. For the purposes of experimental embryology, the blade is ground to a gradually tapering, delicate point of nearly microscopic dimensions. A moderately fine blade is shown in Fig. 4.



In use, the shaft of the scalpel is held in a needle holder or pin vise. Incisions are made in amphibian embryos by inserting the tip of the blade into the tissue of the embryo and then gently stroking the surface of the tissue above the edge of the blade with a fine glass needle or hair loop. For coarser work, the scalpel may be used in conjunction with fine forceps or jeweler's tweezers.

With practice, a dozen of these small knives can be made in a half hour. It has been found most practical to store extra scalpels by sticking the pointed ends of their shafts into a large cork and then inserting the cork into a wide-mouthed bottle so that the blades are protected from moisture and mechanical damage. They also may be coated with oil or grease until ready for use.

ARTHUR B. BURCH

THE INSECTICIDAL ACTION OF PHENOTHIAZINE

PHENOTHIAZINE, an organic compound which is non-toxic to humans, is effective as a urinary antiseptic,[1] anthelmintic,[2] fungicide[3] and insecticide.[4] The compound offers promise as a substitute for arsenicals, especially in codling moth control.[4]

The effect of phenothiazine upon the American cockroach, *Periplaneta americana* (L.) was investigated. The compound is toxic to the roach, acting entirely by contact with the body surface. No toxic effect results when the chemical is taken into the alimentary canal. When applied to the body surface phenothiazine passes through the exoskeleton and is converted internally to a compound believed to be a conjugate of thionol, present in leuco form. The latter compound must reach a definite concentration in the haemolymph before the toxic effect is produced. The effective concentration of the thionol conjugate in the haemolymph is correlated with the particle size and with the quantity of phenothiazine in contact with the exoskeleton. The most rapid kill at the lowest concentration is produced with particles of the smallest size. When an equal amount of phenothiazine in a larger particle size is in contact with the body surface, the lethal concentration of the thionol conjugate in the haemolymph is not reached. In this case only a slight uncoordinated leg movement is evident, and recovery is rapid as the thionol conjugate is eliminated through the Malphigian tubules.

Ingested phenothiazine has no effect upon the roach, although undergoing oxidation primarily during its passage through the mid-intestine. The wall of the intestine is impermeable to phenothiazine and to the oxidation products formed.

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BOOKS RECEIVED

LEY, WILLY. *Shells and Shooting.* Illustrated. Pp. 223. The Viking Press, Inc., New York. $2.00.

MEYER, FRANK HERMAN. *The Crux of Chronology.* Pp. viii + 599. Bruce Humphries, Inc., Boston. $3.00.

NEVIN, CHARLES M. *Principles of Structural Geology.* Third edition. Illustrated. Pp. xv + 320. John Wiley and Sons, Inc. $3.50.

SKILLING, WILLIAM T. and ROBERT S. RICHARDSON. *The Practical Essentials of Pre-training Navigation.* Pp. v + 113. Henry Holt and Company. 75¢.

THOMAS, W. STEPHEN. *The Amateur Scientist.* Illustrated. Pp. 291. W. W. Norton and Company, Inc. $3.00.