Workers

Electricity

PT-SMITH

cs Writer

ind in hand. Nearly all d in our war production later lesson. 'e begin with magnetism. seshoe magnets that can

The magnetic force is thus ntrated at the poles, yet not ly so. If we use fine filings, all find that some will stick ner parts of the magnet, but and fewer toward the mid-

ery magnet has at least two Suppose we break a long etized needle in the middle. hall find that each piece bes a complete magnet with and south poles at its ends, n be verified by the methods dy described. If we break wo pieces again in half, we have four complete magnets Fig. 4.

Magnetic Field

ally let us take one of these s, lable 5 in the table, place a th card or a piece of glass it and sprinkle iron filings on eard or glass. The magnet of will be clearly outlined by filings which will arrange selves in curved streams or passing from one end of the et to the other.

is experiment shows that is a field of force, a "mag-field," in the space about a et, and the filings can teach uch about it. We shall find e go along that the field is mportant thing, the magnet only one means of produc-

Experiments

ned Many Uses knitting needle as shown in Fig. 1, and touch the ends of the wire for a moment to the terminals of a dry battery or a flashlight cell. This will convert the needle into a permanent bar magnet. The reason for this will be explained in a

2-Lay an unmagnetized needle on the table near the edge, and stroke it with one end of a magand knows that they at- netized needle as shown in Fig. 2. Stroke always in one direction, lifting the magnetizing needle high on the return stroke as indicated by the dotted line.

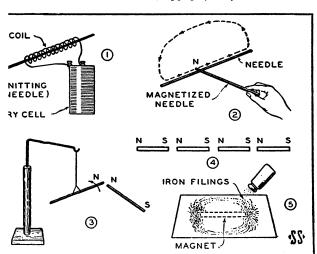
> 3-Suspend one of the magnetized needles from a stand made of wood or other non-magnetic material, using a thread stirrup to keep it horizontal as shown in Fig. 3. Perform the experiments al-

ready described.
4—With a pair of pliers or the aid of a vise, break a magnetized needle in two, and show that each piece is a complete magnet.

5-Place one of the broken pieces under a card, sprinkle with iron filings, and tap. Object of using one of the shorter pieces is to get a better field. If a good bar magnet or a thicker piece of steel can be obtained, the effects will be better.

Review Questions

- 1. What is the property of magnetism?
- 2. What is a natural magnet? 3. How can an artificial mag-
- net be produced?
 4. What is the difference be-
- tween a temporary and a permanent magnet? What material is used for each?
- 5. What are the poles of a magnet, and where are they situated in a bar magnet?
- 6. What is the law of attraction and repulsion?
- 7. How many poles must a magnet have?
- 8. What is the effect of break-Wind a few turns of ordinary ing a bar magnet in two? ated bell wire around a steel (Copyright, 1942, Science Service)



War—It's Technical

All ages, men and women, are urged to study science fundamentals to aid in the war program. Courses being developed in response to Army request.

By WATSON DAVIS

➤ AMERICA'S fighting forces and the great industrial army for production need more technically trained men and women. Science Service is answering this call by making it possible for men, women, boys and girls to begin learning the fundamentals of electricity and ma-

The two simple articles on this page are the first of a series sent to newspapers that present the fundamentals of technical trainings recommended in the War Department's official pre-induction training program. (See SNL, Nov.

They are shown here, reduced in size of type but otherwise exactly as they will appear weekly in newspapers all over the country.

Anyone who will read these articles carefully, do the experiments, and answer the review questions will have taken the first steps toward better preparation for actual service in the Army or in war work.

Lieut. Gen. Brehon B. Somervell, chief of the Army's Services of Supply,

"Our Army today is an army of specialists. Out of every 100 men inducted into the service, 63 are assigned to duties requiring specialized training. We aren't getting those 63 specialists through the induction centers. Modern warfare dictates that we must have them.

'Yes, we must have these specialists these men who know the fundamentals of electricity, who know automotive mechanics, who can operate radios or dismantle carbureters. Without them, your Army would be an incongruous mass, incapable for attaining any objective.'

The Army through the U.S. Office of Education has asked the high schools of the nation, some 28,000 of them, to begin immediately courses in the fundamentals of electricity, machines, shopwork, radio and automotive mechanics, especially for the boys 16 to 18 years of age who are destined for induction into the Army. Within the next few months more than a million pupils are expected to be taking these special courses, following study outlines recommended by the War Department itself.

Secretary of War Henry L. Stimson praised this cooperation by stating: "No greater immediate contribution can be

made by the schools of the nation toward winning the war than to give our youth the basic knowledge and technical skills needed for modern combat. By doing this job well the schools will free resources of the Army for specialized technical, military training."

It is of almost equal importance that older men and women of all ages learn the fundamentals of technology in order that they may make a maximum contribution to the war, in shop, factory and home. Men between the ages of 18 and 45 likely to be inducted in the Army at a later date are being urged by government officials to take these basic courses in evening schools. Both they and the high school boys will earn rapid promotion when they are in the Army if they can show that they have completed these basic courses with credit.

Science Service through newspapers is publishing practical and simple material that may be used for study in these classes or for home study and reading. Any reader will be able to profit from these clear, simple fundamental explanations that are as useful in everyday living as they are in war. The mother who stays at home while her menfolks go to war or work will need this information to meet the emergencies of war-

For the first time all high schools throughout the United States have the opportunity of studying the same basic courses. During the summer a corps of educational experts and teachers were assembled by the War Department to outline the material most essential to the Army's pre-induction training program. This outline was made standard for the whole nation.

In many high schools throughout the nation, science clubs are playing a leading role in introducing these war studies into the daily programs of the schools. Science Clubs of America, administered by Science Service, with over 2,000 affiliated clubs in high schools, has lent its energies to this war program, especially in connection with the more advanced courses that include radio code practice, touch typing, radio maintenance and repair and advanced auto mechanics.

A shortage of teaching equipment for these science courses has arisen in many schools. In such cases science clubs are cooperating in building needed apparatus or reconditioning it.

Science News Letter, November 21, 1942