

Workers

★ Electricity



Used in Many Uses

FT-SMITH
cs Writer

and in hand. Nearly all
d in our war production
e begin with magnetism.
eshoe magnets that can
and knows that they at-

The magnetic force is thus
ntrated at the poles, yet not
ly so. If we use fine filings,
all find that some will stick
er 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 be-
s a complete magnet with
and south poles at its ends,
n be verified by the methods
y 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, table 5 in the table, place a
th card or a piece of glass
it and sprinkle iron filings on
ard or glass. The magnet
th 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

Wind a few turns of ordinary
ated bell wire around a steel

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 per-
manent bar magnet. The reason
for this will be explained in a
later lesson.

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

3—Suspend one of the magne-
tized 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 mag-
netism?
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 perma-
nent magnet? What material is
used for each?
5. What are the poles of a mag-
net, and where are they situated
in a bar magnet?
6. What is the law of attraction
and repulsion?
7. How many poles must a mag-
net have?
8. What is the effect of break-
ing a bar magnet in two?

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War—It's Technical

All ages, men and women, are urged to study sci-
ence 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, wo-
men, boys and girls to begin learning
the fundamentals of electricity and ma-
chines.

The two simple articles on this page
are the first of a series sent to news-
papers that present the fundamentals
of technical trainings recommended in
the War Department's official pre-induc-
tion training program. (See *SNL*, Nov.
14).

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 an-
swer the review questions will have
taken the first steps toward better pre-
paration for actual service in the Army
or in war work.

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

"Our Army today is an army of
specialists. Out of every 100 men in-
ducted 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 of attaining any objec-
tive."

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 funda-
mentals of electricity, machines, shop-
work, 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 recom-
mended 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 re-
sources of the Army for specialized tech-
nical, 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 con-
tribution 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 explana-
tions 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 infor-
mation to meet the emergencies of war-
time.

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 pro-
gram. This outline was made standard
for the whole nation.

In many high schools throughout the
nation, science clubs are playing a lead-
ing role in introducing these war stud-
ies into the daily programs of the schools.
Science Clubs of America, administered
by *Science Service*, with over 2,000 affil-
iated 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 appa-
ratus or reconditioning it.

Science News Letter, November 21, 1942

