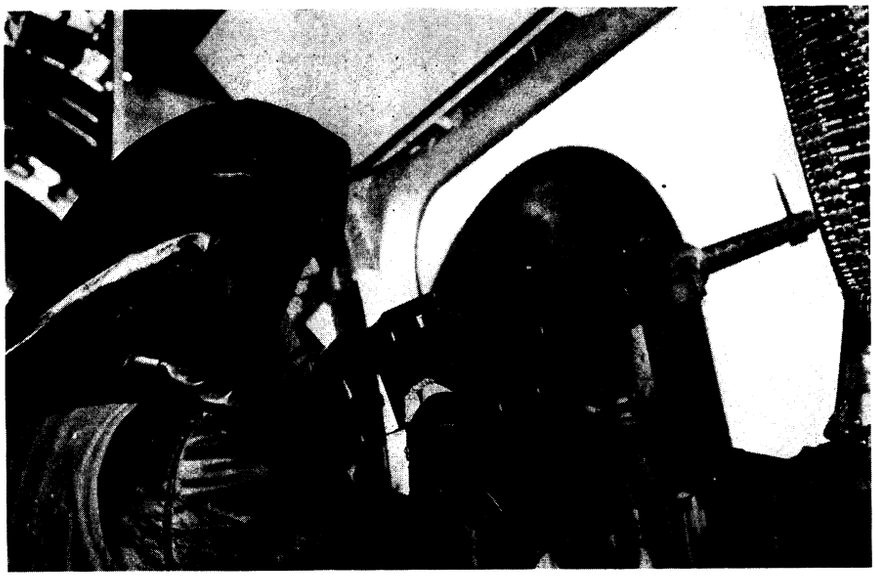

MODERN KNIGHT—This latest flak helmet designed to protect the head and neck of aerial gunners is made up of many small metal squares and is lined with sponge rubber to reduce shock and concussion. Head and neck wounds, suffered by 25% of air casualties, should be greatly reduced by this headgear. Official U. S. Army Air Forces photograph.

at the big hospitals far from battle. For these emergency cases, the Navy operates a fleet of special ambulance planes, carrying up to 30 wounded. As soon as an advanced base is occupied, the naval construction battalions build airstrips for these planes, and the long trip to a safe-area hospital is reduced from days to hours.

When, during a field tour, Captain Johnson arrived at Munda, the Japs were still shelling our beachheads with mortars concealed in the hills. One of their shells landed in the middle of a Navy chowline at breakfast time and a fragment struck a man in the occipital bone, located at the base of the skull. The fragment pierced his brain. Immediate dressing was done by a naval physician, but the injury required the most delicate surgical care, and quickly. He was flown by ambulance plane to the hospital at Espiritu Santo and 20 minutes after he left the plane was on the operating table. A skilled neuro-surgeon removed the shell fragment from the brain. After several weeks, the patient, now in excellent spirits and good physical condition, was returned to the United States for rehabilitation.

Less dramatic, but of wider benefit, is the brilliant naval research into wartime diseases, or diseases which become particularly dangerous in war. One of these is tetanus, most horrible death a man can die. Not a single case of tetanus has been seen in this war, thanks to protective inoculation given all enlisted men and officers as part of their naval "medical indoctrination." Tetanus inoculation was developed for the Navy by Capt. W. W. Hall (M.C.) USN, editor of the Bureau of Medicine and Surgery's *News Letter*. A constant terror in the last war, tetanus no longer lurks on the battlefield or along the hospital corridors. Its elimination is of incalculable benefit.

Backing all naval research is a staff of medical scientists gathered from civilian life and the naval medical corps by the surgeon general of the Navy, Vice Admiral Ross T. McIntire. This body of distinguished men is called the Naval Research Commission. Its headquarters is at the National Naval Medical Center in Bethesda, Md., and its job is the constant search and perfection of new surgical and clinical techniques, new drugs and sera. Like everything else in war, the pace with which research results are given practical expression is amazingly swift. Before the war, it was usually a matter of months or years before the findings of the laboratory were available to practicing physicians. Today it can be a matter of days, or even hours.

The output of the Naval Research Commission is published in a pocket-size, photostated *News Letter* by the Bureau of Medicine and Surgery, and regularly available to all naval medical staff officers. The perfection of the Navy's system of medical care is due to more than military discipline and good administration. Behind these phases is expert research, made quickly available.

Men and officers of the Navy realize in a very practical way the protection their crack medical staff gives, and their morale in battle is none the worse for this realization.

But even the most sober-minded of medical officers will admit that above and beyond all their drugs and skill is one "magic medicine" which produces the most miraculous cures—a trip back home, for rehabilitation. Orders to Tulsa or Flatbush produce a boost in morale which confounds even Surgeon General McIntire's learned staff.

Science News Letter, April 29, 1944

METALLURGY

New Type Copper Powder Produced by Electrolysis

➤ A NEW TYPE of copper powder recently produced in the electrolytic refining of copper was described at the Milwaukee meeting of the Electrochemical Society by W. H. Osborn and S. B. Tuwiner of the Phelps Dodge Corp., Laurel Hill, N. Y. The powder is useful as a bronze powder but does not have the properties necessary for sintered metal products.

This new crystalline metallic material may be obtained as a by-product in refining copper by electrolysis; quantity production will depend upon future uses which may be developed. It is

ideally suited, they stated, to further processing either by ball milling, or by stamp milling, obtaining a very fine grade of bronze powder. The particles formed are flakes. "It is obvious," they said, "that the particles of which these deposits are composed grew in two dimensions only."

In the investigation made which resulted in the discovery of this new type of copper, it was found that when the cathodes in the electrolytic bath had received an application of certain oils, the deposits on them are brittle. The cathode is the electrical terminal on which the refined metal is deposited in the electrolytic process.

"In particular," they declared, "certain asphaltic oils and such vegetable oils as corn oil gave deposits over ten-day periods which were easily stripped from the rolled cathode surface." They were brittle enough to be easily broken up. Castor oil, oxidized with perchloric acid, is preferred. The cathodes are dipped in heated oil and allowed to drain.

Science News Letter, April 29, 1944

PSYCHIATRY

Psychiatry at the Front

➤ AN IMPORTANT step toward salvaging for combat or other active military duty the men who would otherwise crack up mentally under the excessive strains of warfare, is the appointment of a psychiatrist on the staff of each Army division.

This physician will live with the men and share their experiences, "ride their vehicles, participate in their bivouacs, take their infiltration courses." Thus he will gain the respect of the soldiers and will also put himself in a position where he can most effectively apply his professional skill and judgment to problems of training and combat.

Acute manpower shortage has led to the reversal of the Army's former practice of wholesale discharge of men believed to be emotionally unfit for military service, it is disclosed in a special article in the *Bulletin of the U. S. Army Medical Department* (March) announcing this new step in preventive mental medicine.

Now the new Division Neuropsychiatrist will be expected to save such men through his clinical judgment, skill, contacts and influence. He will get personally acquainted with the line officers and be in a position to help them when they seek his advice. He will "forget psychiatric jargon and explain his findings and recommendations in simple terms," the article, which was prepared in the Office of the Surgeon General, states.

For the first time in the Army, the psychiatrist will have an opportunity in some degree to modify and influence the soldier's environment, it is explained, so as to improve morale and prevent malajustments. He will advise in all matters pertaining to the mental health of the command.

The Division Neuropsychiatrist will form a team with the classification officer to aid in the placing of individual soldiers where they can function best and thus eliminate improper placement which is a factor in poor mental health.

He will visit division dispensaries and help the medical officers to solve problems where physical ailments are linked with mental or emotional maladjustment.

And when the men reach combat, the Division Neuropsychiatrist will supervise the care of the neuropsychiatric casualties which, it has been found, are numerous in heavy combat. (*See SNL,* April 22)

Science News Letter, April 29, 1944

MILITARY SCIENCE

Ancient Warlike Device Gets New Improvement

➤ A MODERN improvement on a warlike device that is at least as ancient as the wars between the Greeks and Persians is the subject of patent 2,346,713, granted to an Army officer, Maj. Brooks Walker, and assigned royalty-free to the government.

The device is a caltrop. In its original form, the caltrop was a group of four sharp spikes radiating from a common center in such a way that one would always fall pointing upward when tossed on the ground. Man or horse stepping on a caltrop could be considered through for the day.

Major Walker's improvement consists merely in making the spikes hollow with openings near the ends. Any pneumatic-tired vehicle running over one of them will of course lose the air from the punctured tire through the hole, and be as effectively crippled as any of the King's horses or the King's men of old.

Science News Letter, April 29, 1944

BOTANY

NATURE RAMBLINGS by Frank Thone

Radical Research

➤ MIDWESTERN farmers often assert that no one has ever seen the lower end of a bindweed root. Some go further and declare that they don't have any lower ends—that they come straight up through the ground from the place where they were invented. Certain it is, in any case, that this field-ruining wild morning-glory, probably the worst single weed species in the great Grain Belt, is extremely deep-rooted.

Now, however, someone has seen the lower end of a bindweed root. He is Dr. John C. Frazier, a young botanist on the staff of the Kansas State Experiment Station. Dr. Frazier is an exceedingly persistent young man, for he dug down alongside one bindweed root for a little more than 23 feet before he got to the bottom of it.

Dr. Frazier did his digging into the hidden life of the bindweed in the course of researches aiming at a better knowledge of why and how this ill weed grows so apace. By planting its seeds in cleared soil and keeping close track of root growth week by week, he obtained a more accurate picture of the bindweed's potentialities for mischief than has ever been available.

Even when only two weeks old, bindweeds already had six-inch-deep roots. Before they were three months old, their roots were down more than a yard. And at the end of the 120th week of their persistent, perennial lives, they were sending their roots down to the 23-foot level.

At the same time they were spreading sidewise at comparable rates. When the roots were down a yard, they had a radial spread of a yard and six inches. When they had got to the 23-foot length, they were spreading "at least" 16 or 17 feet.