

PSYCHOLOGY

The Human Price of Combat

Research team of scientists, for the first time, took instruments to front lines to learn just what the strain of battle does to a man's body and mind.

By MARJORIE VAN DE WATER

► NOW FOR the first time scientists know what happens to a man's body and mind under the terrific strain of combat.

Taking their test tubes, needles, gauges and mental tests right up to the front line in Korea, they have learned something of what made one man come through with flying colors and distinction while another broke into uncontrolled sobbing or a speechless, quivering wreck of a man.

Now that the fighting has stopped, it can be told.

Worst place for a man to be during combat is alone in a place of relative security. Sitting there, inactive, while buddies are shot down can shatter a man's morale and sanity.

Carrying a wounded friend back to where he can get help only to find that he has died without ever reaching succor seems to be the worst experience that can befall a soldier.

It is strain like this and not the enemy's bullets, knives or bayonets that try men's souls the most.

The assessment of the human cost of combat was made by a research team made up of scientists from various fields. Included in the party of 13 were five civilians from the Operations Research Office of Johns Hopkins University, which sponsored the study under contract with the Army, five people from the Office of Naval Research, two scientists from the office of the Surgeon General of the Army and one from the Naval Medical Research Institute.

Taking part were scientists from the fields of physiology, biochemistry, psychiatry, psychology, medicine and nutrition.

WAVES in Combat Zone

It marked the first time that Navy WAVES were taken into the combat zone. Two women officers were taken along because of special technical qualifications. These women who made history for their sex were Lt. (j.g.) Elaine L. Walker, and Lt. (j.g.) Muriel E. Johnston, both physiologists. Lt. Walker had the experience of being within 25 yards of an enemy mortar round when it burst.

With their laboratory mounted on two jeeps and a trailer, the research team of 13 covered the central front and some of the heaviest action for a period of seven weeks.

The strain of combat is strictly an individual matter, it was found. Two men fighting side by side, climbing the same

mountain pathways, subjected to the same enemy fire, straining every sense to detect the close presence of the enemy, carrying the same weight of burdensome pack, eating the same diet, fortified by the same training and special knowledge and weapons, nevertheless are each in a private world of stress and strain. That is because it is what the situation means to the individual soldier that is important, not the external facts.

One man may fear death; it takes every ounce of his courage to go forward toward the enemy. Every shell burst is a hideous climax of torture to this man. Another may be comparatively indifferent to death, safe in the confidence of divine protection or reassured by a strong faith in life after death. This man is not worried about a shell "unless it has his name on it." One man may be intelligent and well-trained and confident in his own ability; another

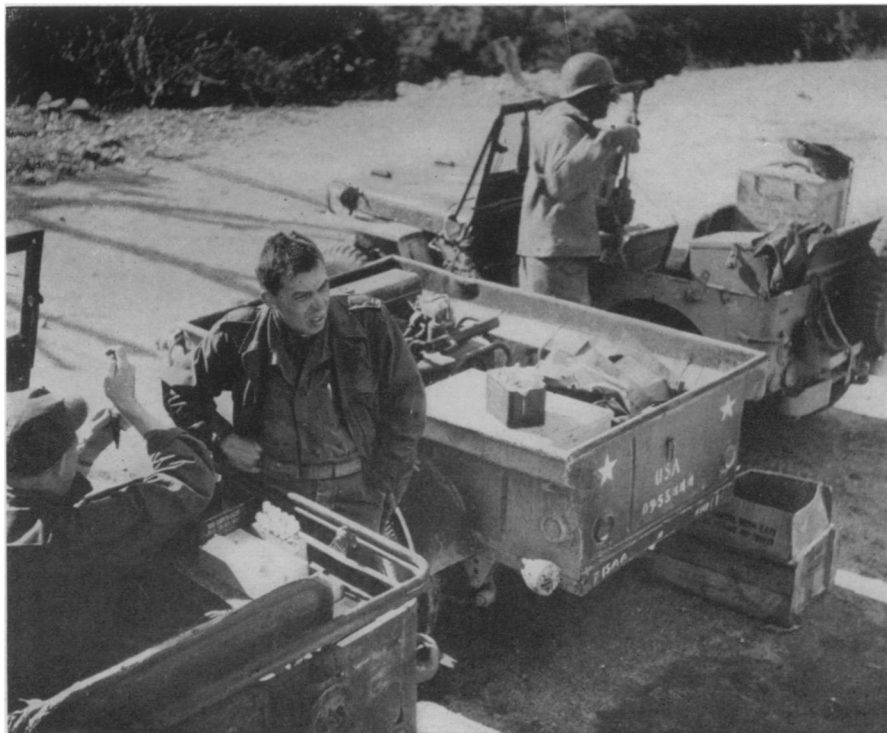
may be new to the situation and distrustful of himself.

But no matter how difficult the situation faced by any individual soldier, he is able to stand up to it while "the heat is on." In no case observed by the research team did a soldier crack up mentally during actual combat. It is when the urgent demands of duty let up; when he has made the long trip back to comparative safety, particularly if he is carrying or aiding a seriously wounded friend and especially if the friend dies on the way; or when he must wait alone in a position of comparative safety or wait, defenseless, under enemy artillery fire that a soldier may break.

The strain of combat does not paralyze the functioning of the higher brain centers, it was found. If anything, a man thinks better when "the heat is on."

White Cell Shortage

Striking finding from the blood studies of men just come out of combat was a great shortage of white blood cells. The shortage is apparently due to a disappearance from the blood stream of adult white blood



TESTING COMBAT EFFECTS—In these two jeeps and trailer, a research team of 13 scientists took their centrifuges, hypodermic needles and other laboratory equipment right up to the front lines in Korea to find out what the toll of battle is on a man's body and mind. Here Lieut. Fred Schaffer, USNR, centrifuges fresh samples of blood and racks them up as Lieut. John Kilbuck, USNR, another member of the team, watches the troops.

cells. Instead of 18 adult cells to one immature cell, the proportion was changed to three immature cells to only one adult. It is the adult white blood cell that battles for the life of an individual when an infectious agent enters the blood stream, so an absence of these cells could expose the soldier to danger from infection.

A similar shortage of adult white blood cells occurs in the blood of persons who have been very severely burned or who have suffered from such acute infections as a ruptured appendix.

Weight Lost by Dehydration

However, in the case of the combat soldier, no one knows what has happened to the adult white blood cells. Does the stress of combat in some way act as a poison in the blood of the soldier so that the cells are destroyed in repelling this toxic invader?

Another striking finding was that the man in combat loses water from his body. This is only natural. The man in combat is scared. That means that he sweats profusely. He urinates frequently.

Yet in spite of losing water in these ways, the man in combat does not drink. It may be because he is just too busy to think about it, but the chances are he has no particular desire for water under the circumstances.

As a result of the dehydration, the man in combat loses weight. He does not usually realize this; in fact, he may tell you that he gains at the front. It is true that he gains, but this occurs after he comes back from the attack or patrol, after his recovery from the stress of severe combat, when the body is again storing the natural supply of water.

The man in combat or on a patrol does not eat. He does not find fault with the food provided for him; it is the man back a little way who complains bitterly when the food is not hot or when the diet is not varied enough. The man in contact with the enemy just has no interest in eating. Rather than walking a few hundred feet to where a hot meal is being served, he will stay in his bunker and nibble on "C" rations.

Men who make a shock attack on an enemy stronghold carry assault rations with them, but only a few eat any part of their supply even though the attack may last 16 hours.

They say they are "too busy," "not hungry" or that their stomachs are "weak." Some complain of nausea.

Pill Against Crackup?

Failure to eat and maintain his nutritional well-being probably adds to the stress endured by the combat soldier. A man should be well fed if he is to maintain his peak resistance to the stress of combat.

Getting his men to eat and drink would seem to be a new responsibility of the unit leader in battle.

Will it some day be possible to give a

man a pill or an injection that will immunize him against a physical or mental crackup in combat? This is a question I put to one of the scientists of the research team, Dr. Stanley Davis of the Operations Research Office.

It will be possible, he assured me. However, the research team are not yet ready to recommend such a measure. It may be, he said, that taking a dose of some hormone would enable the soldier to stand up under strains that otherwise would cause him to break. But when such a fortified soldier did reach his breaking point, it might not be possible for him to recover. It may be nature's way of protecting the human organism to set a limit beyond which a man cannot drive himself. It will be necessary to know a great deal more than scientists know now about the human's ability to stand strain and to recover from it, before they are willing to recommend an "anti-strain" shot in the arm for men going into combat.

Recovery Time Lengthy

It takes much longer anyway to recover from combat strains than has been supposed. A couple of days back of the front line and "a good night's sleep" are not enough. It is more like 5 to 12 days before the soldier is back to normal.

It is now known that it calls for a delicate balance in the functioning of the body's defense mechanism to withstand stress. Links in the chain are the hypothalamus, "emotion center" of the brain, the pituitary, a small gland at the base of the brain, and the adrenal glands.

When a man is badly frightened or greatly angered, the hypothalamus is roused. It acts on the pituitary, causing it to secrete ACTH. This, in turn, acts on the adrenal gland, stimulating it to secrete the recently discovered compound F along with other hormones.

After a brief but very difficult encounter with the enemy, the pituitary apparently lets down on the job. When the soldier is given a shot of ACTH, supplementing the activity of the pituitary, the adrenals respond by increased activity. But after a prolonged period of severe combat, the soldier loses the ability to prod his adrenals into service. Then the ACTH injection no longer has effect.

Science News Letter, December 5, 1953

HORTICULTURE

Use of Weed Killers Delays Tree Replantings

➤ KILLING SCRUB growth with chemical herbicides, such as 2,4,5-T and 2,4-D, will prevent successful replanting with other tree seedlings for probably six months or more.

U. S. Forest Service tests at Upper Darby, Pa., show that most trees planted five to seven days after the chemical spraying do not grow.

Science News Letter December 5, 1953

BIOCHEMISTRY

Soothing Drug Now on Market

➤ A NEW drug that calms nervous patients as well as reducing blood pressure is now on the market, its manufacturers, Ciba Pharmaceutical Products, Inc., announced in Summit, N. J.

The drug is called Serpasil. It is an alkaloid from the herb, *Rauwolfia serpentina*, long used in India.

Its sedative action comes from its depressing effect on the hypothalamus, a structure located in the midbrain which is believed to be the seat of basic uncontrolled emotional behavior. Other sedative medicines, such as the barbiturates, act by depressing the cerebral cortex, or thinking part, of the brain.

Science News Letter, December 5, 1953

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