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.

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