

**NEW
EQUIPMENT
FOR
TOMORROW'S
BRUSH-WAR
SOLDIERS**

By Frank Tinsley


WARRIORS of superhuman strength may soon make the feats of Achilles and Ajax and other legendary strong men look somewhat anemic. The Cornell Aeronautical Laboratories, under an Air Force contract, are developing a Strong Boy suit for servicemen that will enable them to pick up the front end of a car or shove a 1,500-pound load uphill like a human bulldozer. This may sound like

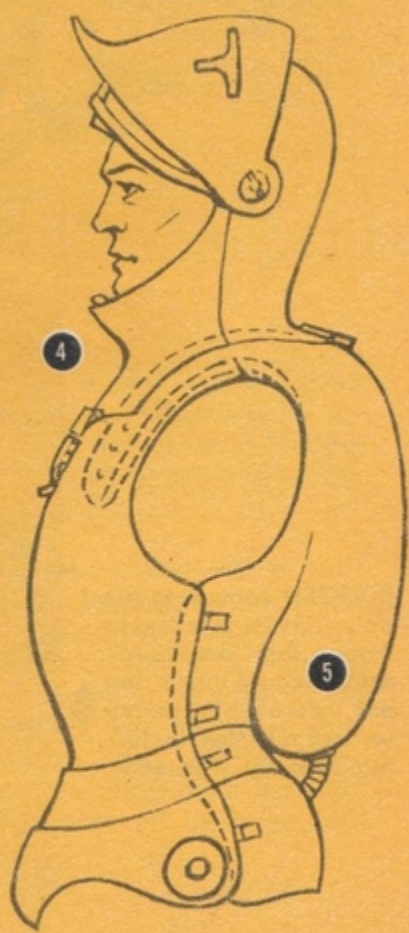
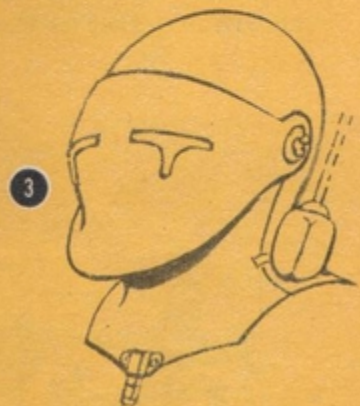
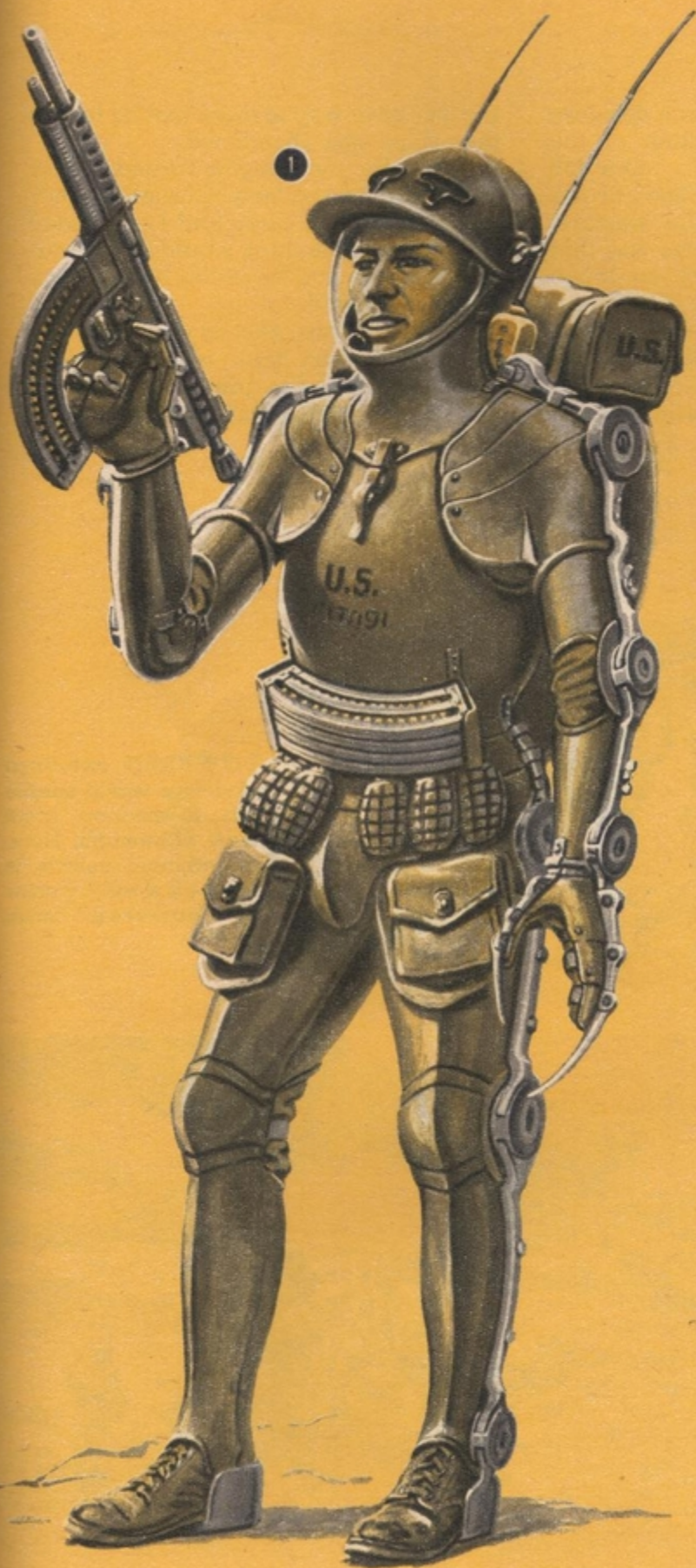
a crazy idea—but the Pentagon professionals who took almost a year to approve the project don't think so. It was in January 1961 that the Pentagon first saw the Cornell proposal for such a rig. What the Cornell boys are shooting for is called the servo-soldier—a human being fitted with external steel "bones" and a system of power-driven muscles that respond to and amplify his natural movements. If, for example, his normal wrist-twist develops a force of 96 inch-pounds, his amplified twist will be up around 5,000 inch-pounds. If his sideways shove is 54 pounds, his amplified shove will be half a ton. This enormous increase in physical power is obviously more than Charles Atlas can give him. It all comes from a rugged outer frame with joints operated by electricity from a power-pack on his back.

As I first saw this device in the publicity drawing released by Cornell, the power skeleton was a system of rods attached to the man's limbs by broad bands of metal. A sort of cuirass enclosed his trunk and on his head was a conventional GI helmet. It was obvious that the designers had not thought of making the soldier's steel bones serve as protection as well as stiffening to take tremendous loads under which human bones would snap like uncooked spaghetti.

The idea did occur to me, however. I did not at first think of that tiny giant, the ant, whose armor is also his skeleton, nor of all the other exoskeletal creatures whose strength is so amazing in relation to their size. What made me think of armor was a memory of my old job as the youngest dollar-a-year man in

HOW WE'LL GIVE ONE MAN THE STRENGTH OF TEN!

GENERAL VIEW of "man amplifier" shows soldier armed with submachine gun (1) with extra clips carried in waist rack. Steel visor raises (2) for upward vision or lowers (3) for protection. Profile view (4) of upper armor shows overlapping breastplate and backplate which contains fuel cell (5) for power. 

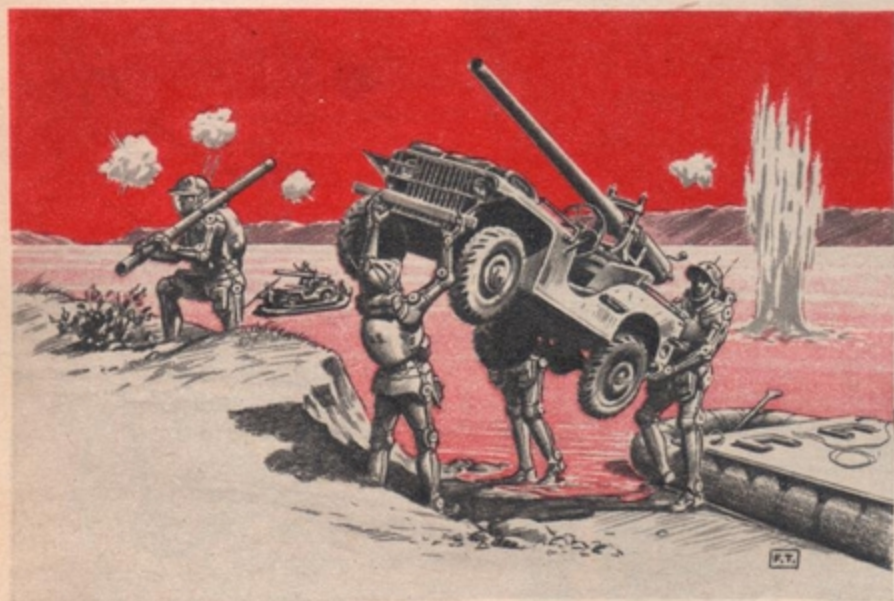


World War I. My career as a designer started in the Armor Section of the Army Ordnance Department. Our job was to develop helmets and body armor for both trench and mobile warfare. One of our principal problems was that a soldier could only carry so much armor and still function. Rifleproof armor for stationary sentinels and machine gunners in key positions was not impractical and the Germans did use such armor. But as the static stage of

the war gave way to more mobile tactics the armor was abandoned.

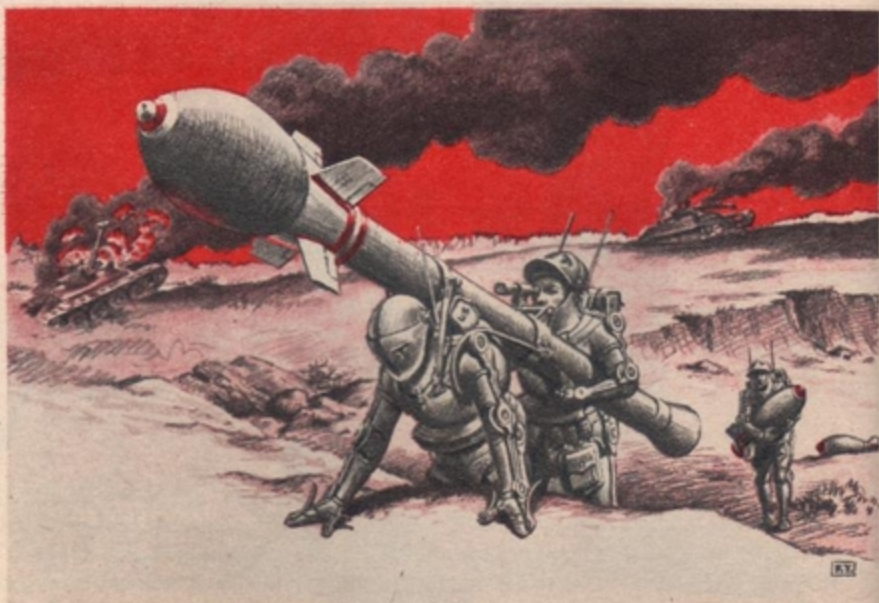
Naturally my thoughts turned to how much armor the new Cornell soldier might be able to carry and I concluded that the sensible thing would be to emulate the ants and have the bones serve as armor as well.

Equipped thus, the servo-soldier becomes a human tank who can wade through heavy fire implacably, spearheading attacks, repairing facilities in



POWERED external skeletons would enable GIs to perform great feats of strength. Here, an armored vehicle is lifted off a raft by crew of "powered" men.

RUGGED enough to act as a living missile mount, the "amplified" soldier could carry and fire extremely heavy tactical missiles, including A-bomb warheads.





TOMORROW'S paratrooper is equipped with powered armor and jump belt. He descends by parachute, then releases harness and uses belt to make an on-the-spot landing.

full view of the enemy, etc. He can be airborne, he can ride or drive ground vehicles, he can wear a rocket jump belt to clear streams, swamps, barbed wire, street barricades, buildings. His potential for special operations is obvious.

In the accompanying designs I have tried to show what the armored "amplified man" might look like. The com-

plete armor weighs about 125 pounds—an insignificant burden to this man-sized Goliath. The power pack is in the double-walled backplate. The manned robot carries a sawed-off version of the new king-sized T-161 machine gun, which he can fire with one amplified hand. This gun is slung from his right thigh and [Continued on page 146]

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The Strength Of Ten!

[Continued from page 71]

swings with his leg as he walks. On his left leg he carries an all-purpose edged weapon that serves as short sword, wire-cutter and in any other way that a knife can be used. Around the front of his waist are racked machine gun magazines and below them hang six jumbo grenades—which he can either throw a city block or, protected as he is, explode in his own vicinity. Field and personal equipment go in the roll on the nape of his neck where it is out of the way and serves as a missile-firing cushion. Other gear is in pouches laced to his thigh plates.

The helmet, rigidly attached to the cuirass by quick-release clamps, is modeled on the heavy tilting helms used by knights in their tournaments. Inside the twin visors—one steel, one plastic—is ample room for normal head movements.

On either side of the helmet, under the visor pivots, is a miniaturized two-way radio. The mike is in the chin piece, directly under his mouth.

As the illustration shows, the amplifier's leg armor terminates in heel stirrups which transfer weight and burden loads to the ground. Thus the "powered man" can achieve complete relaxation in his one-piece, air-conditioned "second skin" worn within the foam-padded armor. He could even sleep, standing up!

When on the march, lifting heavy loads or performing other muscular feats, the thrusts of the soldier's moving limbs act as push button signals to the amplifier's servo motors. These, in turn, actuate the external skeleton and do the actual work. It is estimated that such a system will give the "amplified GI" ten times the power and stamina of a "normal" soldier! Electric power is supplied by a fuel cell carried under the backplate. Such a portable fuel cell is already in existence and being tested.

The device's multiplication of human strength makes many military feats and economies possible. In any combat capacity—as infantry, paratroopers, engineers, artillerymen, commandos—the servo-soldiers will be invaluable and often decisive in the handling of the brush wars of the future. •