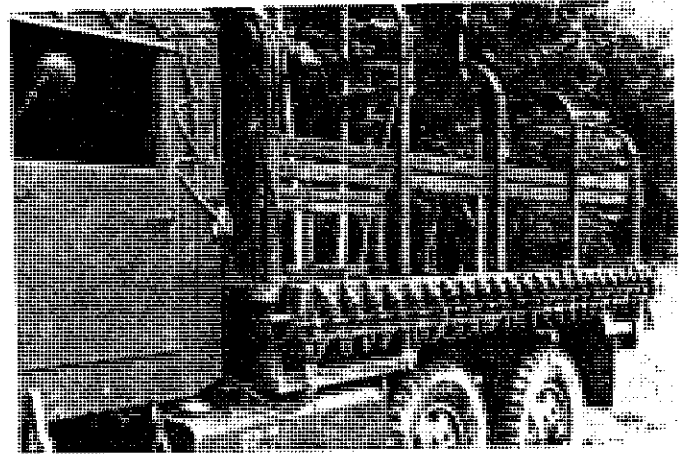


Developed for Vietnam:

Although the American and South Vietnamese forces now have some of the most modern weapons and equipment, they are not infrequently faced with unsurmountable obstacles in their battle against the Viet Cong. The ability to detect an enemy column in the dense jungle, the provision of drinking water for the troops, but above all, protection against surprise attack are just a few of the requirements giving headaches to the engineers and technicians in the military research laboratories. There is also the problem of detection of concealed explosives and mines and the clearing of tunnels which often extend for miles and have numerous exits. Another difficult problem is that of communications, for there is, literally, a world of difference between a conversation via satellite over whole continents and a radio message passed through a few thousand yards of dense jungle.

Lt. Gen. A. W. Betts, Chief of Research and Development for the US Army, recently likened the Viet Cong's guerilla tactics to the Indian wars: the enemy is master of the technique of surprise attack and is able to make maximum use of the wilderness in which he lives.

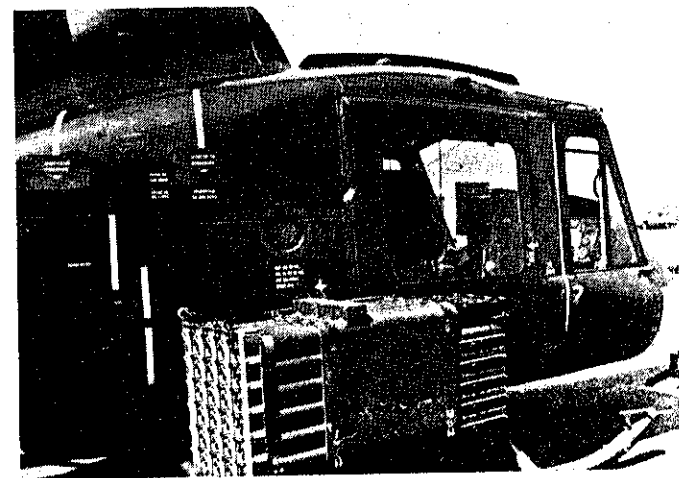
As a result of experience gained, and in addition to the new army weapons described on pages 282-285 of this issue, there have been a few "innovations", perhaps of little significance in the overall picture, but none the less providing a distinct contribution to the successful conduct of jungle warfare, and these are briefly presented here.



▲ To forestall surprise attacks on Army supply convoys, the Limited War Laboratory of the US Army has developed this counter-ambush weapon mounted along the sides of a 2½ ton truck. The installation consists of two 2 inch thick boards, 1 ft. (0.3 m.) wide and 12 ft. (3.7 m.) long, on which are mounted 23 miniature Claymore mines containing steel pellets. Electrically connected to a control box in the cab of the truck, the mines are exploded simultaneously. Effective radius extends up to 38 yds. (35 m.) and allows the crews time to leave their trucks and deploy to fight their attackers.



► To protect infantry landed by helicopter in enemy-occupied areas, the US Army has modified the M-3 weapon system (48 unguided 7 cm. rockets in two racks) fitted to the UH-1B Iroquois to fire a total of 288 AW-M8 smoke grenades. At a flying speed of 50 to 90 kts. (90-170 km/hr.) and an altitude of 200 to 300 ft. (60-90 m.) the system can lay a smoke screen 1,100 yds. (1,000 m.) long.



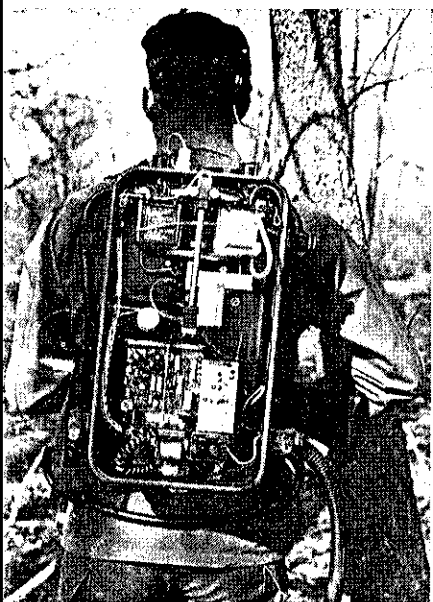
▲ The first units of an improved combat zone refuelling system entered service in Vietnam towards the end of last year. The system is airtransportable and can be set up by six men within an hour. It weighs only 11,000 lb. (5,000 kg.) and consists of two 50,000 gallon (190,000 l.) polyurethane-coated nylon tanks which when unfolded are 66 ft. long and 24 ft. wide (20 m. x 7.3 m.) but fold for transport into a bundle 13 ft. long by 50 in. wide (3.9 m. x 1.27 m.). Designed to refuel two aircraft simultaneously either by pressure or gravity flow, the system includes interconnecting hose assemblies, automatic pressure controls, a filter/separators, quantity meter, fire extinguishers and a 600 g.p.m. (2,500 l/min.) diesel engine driven centrifugal pump.



► Where thick jungle precludes the clearance of helicopter landing points, a provisional platform on the tree-tops will in future solve the problem. This platform consists of two steel nets 200 ft. (60 m.) long and 20 ft. (6 m.) wide, laid in the form of a cross over the tops of the trees, and an 18 ft. (5.5 m.) hexagonal platform which is then placed on the intersection of the nets. An integral power hoist on the platform allows supplies to be lowered to the ground or casualties to be raised to the platform. Laid in five minutes by three helicopters, the platform can also be used as an observation post or a radio relay station.

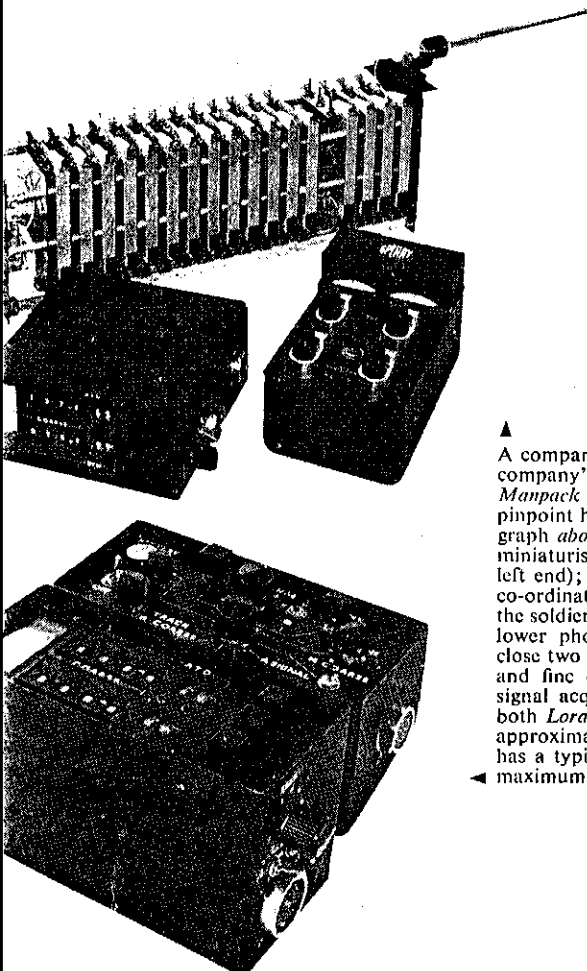
◀ The new M-17A1 protective mask enables the soldier to take a drink from his canteen without risking contamination during a gas attack. In addition, the mask incorporates a flexible hose to make mouth-to-mouth resuscitation possible. Weighing less than 2 lb. (900 gm.), the mask uses the same filter as the older M-17.





▶ Martin Company's Man-Carried Auto Navigator (ManCAN) is a fluidic navigation device that can be carried on a soldier's belt and which only requires puffs of air generated by a foot bellows to power it. Three simple adjustments are all that are required to permit the operator to determine his position accurately in dense jungle.

◀ In a move to counter the often highly successful ambushing tactics adopted by the Viet Cong, General Electric's Ordnance Department has developed a Manpack Personnel Detector which will alert a foot patrol to the presence of concealed personnel by detecting chemical vapours given off by human beings. Transistorisation has reduced the first bulky experimental model to a manpack unit weighing less than 30 lb. (13.5 kg.) that would be carried by the leading soldier in a patrol; a 12 V battery supplies the power. The chemical sensing probe is attached to the soldier's automatic weapon; a pump, located in the back pack, draws in air through the probe and through a number of filters contained in it. One method of indicating to the soldier the detection of human products in the atmosphere is by means of deflection of a meter needle; it is quite feasible, however, that other warning signals—for example aural—can be envisaged. No official indication of the range of the device has been given, but this would appear to be between some thirty to a hundred yards depending on the chemical concentration detected, i.e. on the number of humans in the area being "smelt out".



▲ Ford Instrument Company's position locator is the outcome of a follow-up contract awarded to the company by the Department of Defense in 1964. Basically, this personnel navigator is a dead reckoning device weighing 10 lb. (4.5 kg.) with a pedometer step sensor to determine the soldier's stride length and a highly accurate magnetic compass specially designed and developed for this application by Ford. Information is fed into a small computer which constantly updates incoming data to provide a continuous position display in grid co-ordinate form with a quoted error of not greater than 1%.

▲ Under the terms of a \$3.8 million contract, RCA is manufacturing the AN/PRC-77 tactical FM transmitter/receiver for the US Army Electronics Command. The manpack version has been designed to provide voice communications over maximum distances of three to five miles; it can also be operated on vehicles equipped with an amplifier and power supply unit.

Heavily contaminated water in jungle areas or river deltas can be made potable with this device. Fitted to the mouth of the standard canteen, it has two filters through which water is pumped into the canteen—all particles larger than 10 microns being thereby removed.



▲ A company-funded development that is an outgrowth of the company's Loran D tactical radio navigation system, Sperry's Manpack Loran can be carried by one soldier and will pinpoint his position to within a few feet. Basic units (photograph above) are, in the background, the extensively micro-miniaturised receiver unit with a rechargeable battery (at left end); the control indicator (front left) and the optional co-ordinate converter (front right). The receiver is carried on the soldier's back, all other units on his belt. As shown in the lower photograph the control indicator is hinged to disclose two control panels. That at the front is used for coarse and fine coordinate readout, whilst the rear panel is for signal acquisition. The Manpack Loran is compatible with both Loran C and Loran D signals (maximum usable ranges approximately 400 mi. and 800 - 1,000 mi. respectively) and has a typical search time of two minutes, with five minutes maximum.