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Mobile vans as disaster scene emergency rooms

MERVANS, operated by the New York City Health and Hospitals Corporation, deliver triage and treatment to victims at multiple injury accident sites

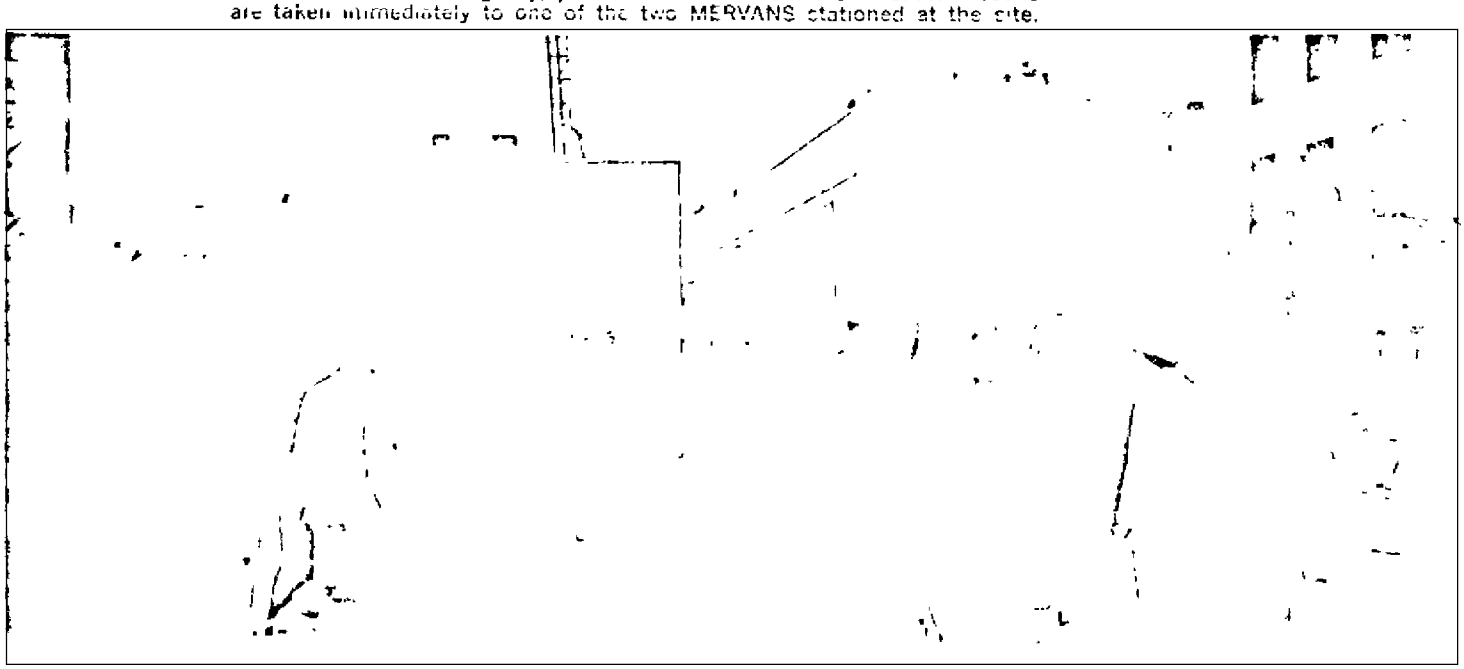
by Ronald M. Holloway, M D., and Julius E. Stolfi, M.D.

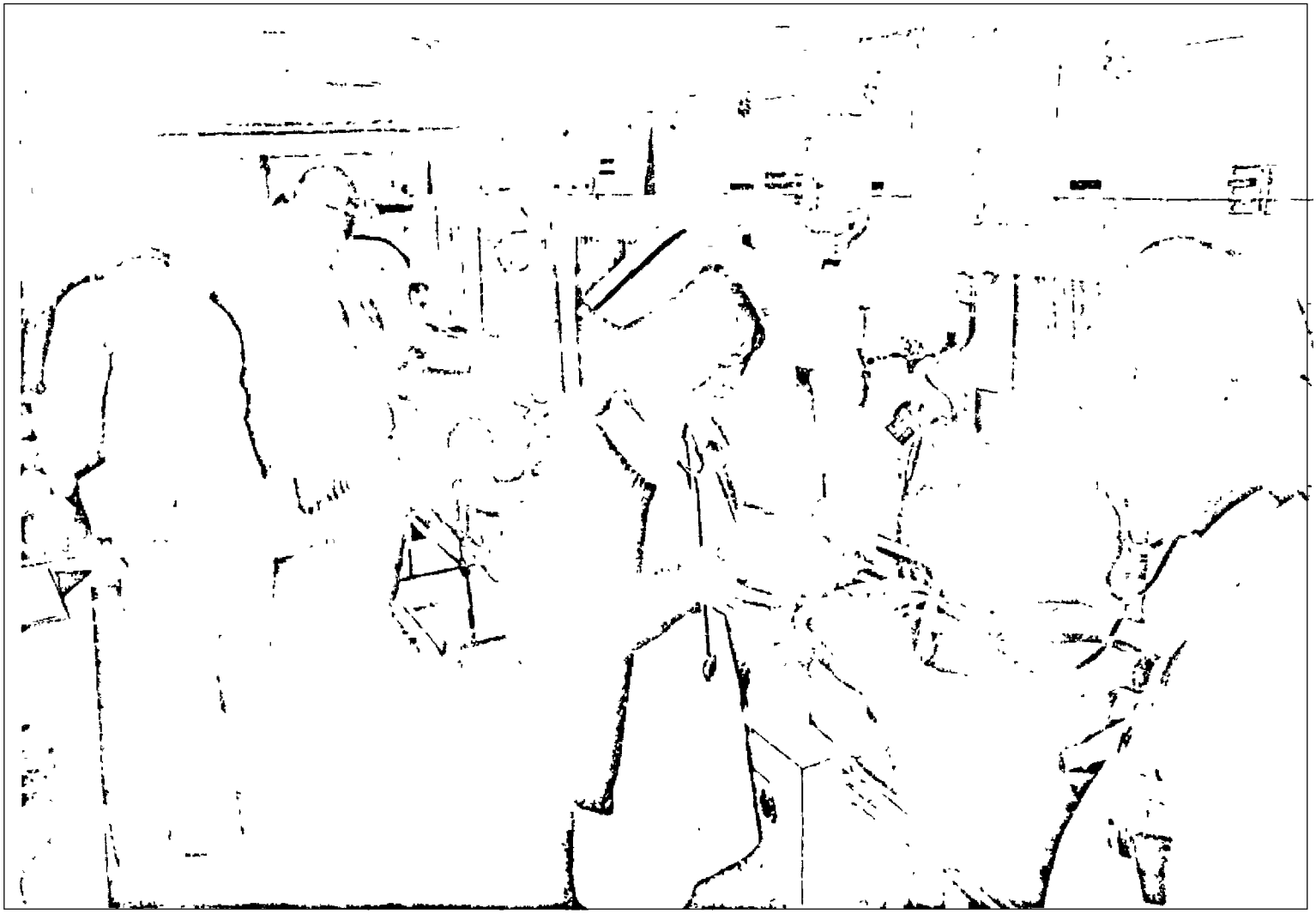
FRIDAY, Dec. 4, 1970, was a clear, cool, winter day in New York City. At approximately 10.30 a.m. the fire department responded to a report of a building fire at Third Ave and 53rd St in midtown Manhattan.

Soon after the start of the fire, supervisory officials of the Emergency Medical Service of the New York City Health and Hospitals Corporation arrived on the disaster scene. Shortly thereafter, the disaster unit stationed at Bellevue Hospital also arrived with a complement of physicians and nurses This disaster unit vehicle was a van somewhat larger than a New York City ambulance and was outfitted with medical supplies, medications, and ancillary equipment However, it contained no treatment space.

Within 20 minutes of the van's

IN A SIMULATED emergency, patients removed from the "disaster" scene are taken immediately to one of the two MERVANS stationed at the site.





MERVANS 2 AND 3 contain space for three mobile stretcher cots. This arrangement has the advantage of permitting patients to be moved from the disaster scene, to the van, and then to an ambulance on the same cot.

arrival, a temporary first aid station was set up with the cooperation of the manager of a retail store on Third Ave. By this time the majority of the victims had left the scene of the fire, but approximately a half dozen were brought to the store for triage and initial treatment by physicians from Bellevue Hospital. Even after the center had been set up in the store, however, patients were being removed directly by ambulance without being seen by a physician. This situation resulted from poor communication regarding the location of the triage area.

One week after this event, an explosion and fire occurred in downtown Manhattan. Again the Bellevue Hospital disaster unit responded and established a treatment center in the lobby of a building adjacent to the disaster site. Within a short time, however, water began to seep into the lobby and the disaster medical team had to move to the lobby of a bank nearly 500 feet away.

An analysis of the problems in

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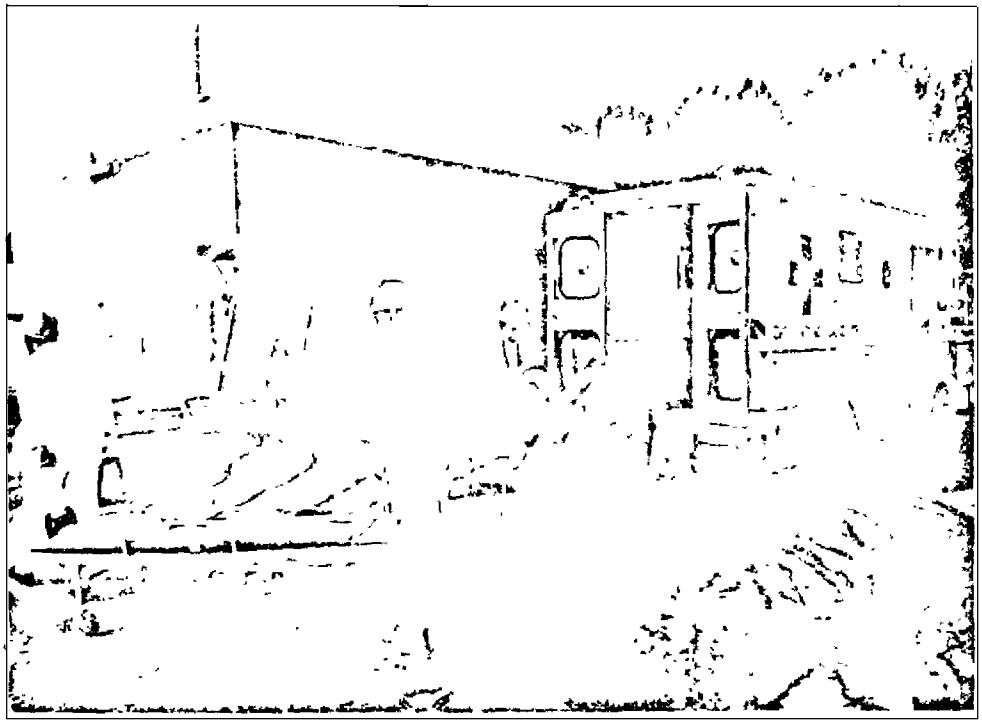

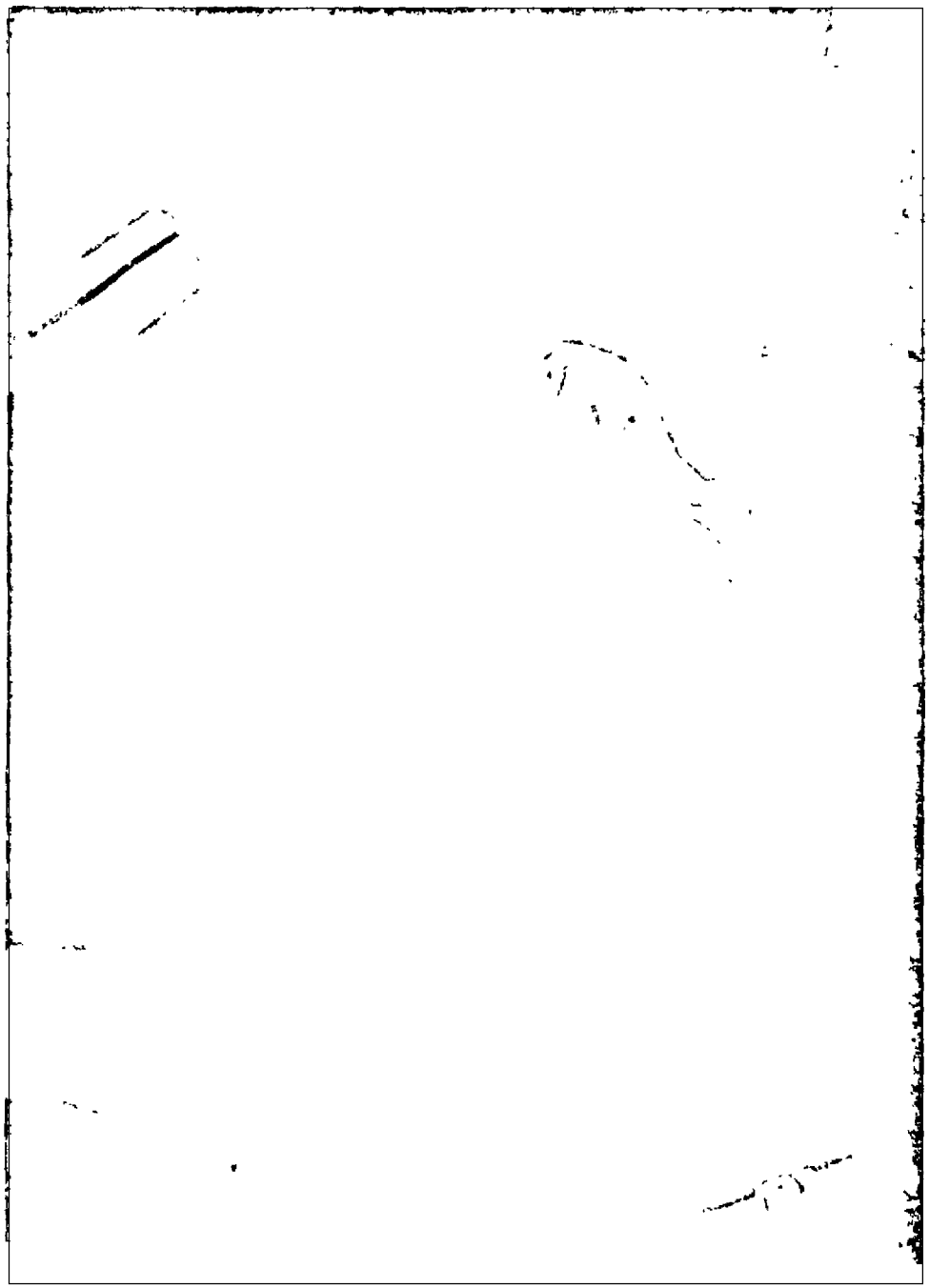

(LEFT) AFTER seriously injured patients have received initial treatment in the mobile van, they are transferred to one of the Emergency Medical Service's ambulances for transport to a hospital. (BELOW, LEFT) The Emergency Medical Service provides continuous training for the physicians and nurses who serve on the disaster teams.

delivering medical care at these fires and in similar emergency incidents led the Emergency Medical Service of the New York City Health and Hospitals Corporation to conclude that there was a great need for a mobile triage and treatment station that could be readily identified and that could begin to function as soon as it arrived at a disaster scene.

The service recognized that there is a lack of easily identifiable and adequate space for physicians and other medical personnel to triage or treat patients in most disaster situations. Although space usually is found, it may not be located before most victims have been evacuated. Even when it is set up, a triage area may not be easily visible, and policemen, firemen, and ambulance crews may not know its location. While improvised treatment sites are valuable at a scene where victims are being evacuated slowly, they offer little aid at an incident where the patients are being evacuated quickly.

At the time the two fires occurred in December 1970, the Emergency Medical Service was working with a charitable organization* on the development of a vehicle that could be used as a mobile emergency room. The first such van was constructed and delivered to the service in the fall of 1971.

Because of the size of New York City and its slow traffic, it was believed that at least six medical vehicles should be positioned strategically around the city to ensure rapid response to emergencies. The high cost of the first unit and the lack of real operational experience with it led the Emergency Medical Service to decide to convert two 35-passenger buses,

*The Julius E. Stolfi Medical Educational and Research Fund, Inc.

usually used by the corporation for nonemergency patient transportation, into similar mobile emergency vehicles. Although these units were not to be used solely for large multiple casualty emergencies, they obviously lend themselves to this purpose.

Van layout

The three units, christened MERVAN (mobile emergency room van) 1, 2, and 3 have now been placed in operation in geographically strategic locations within the city. Although MERVAN 1 is the most sophisticated, all three have common features. These include built-in generators, air conditioning, running water, built-in suction and oxygen, storage space for medications and equipment (including underbody compartments for chairs and scoop stretchers), working counter space, electrocardiogram and defibrillating equipment, and miscellaneous supportive equipment, such as two-way radios and external spotlights. The treatment area of MERVAN 1 is 8 feet by 21 feet; the other two vans are three feet shorter. Ceiling height in all vans is well over six feet.

In contrast to the fixed surgical tables in MERVAN 1, vans 2 and 3 have three mobile stretcher cots. These have the advantage of allowing patients to be moved from the site of injury to the mobile emergency room and then by ambulance to a hospital without being removed from the stretcher.

Additional vehicles will not be designed until experience demonstrates the flaws, if any, that may exist in the units described. One disadvantage already noted is the high floor level of the vans, which necessitates an extra effort to load stretchers. At the scene of multiple casualty incidents, however, help is always sufficient, so this is not expected to present a serious working problem. Another disadvantage is the large size of the vehicles, which makes garage storage a problem. Serious thought is being given to building smaller mobile units in the future.

Standard operation

When notification of a multiple casualty incident (one involving five or more patients) or an incident with potential for multiple casualties is received, the Emergency Medical Service dispatches the nearest MERVAN to the emergency site. Depending upon the location of the mobile emergency van, it may respond with a team of physicians and nurses from a hospital emergency department, or it may respond alone with the

THE SPECIALLY designed MERVAN 1 contains fixed surgical tables. All vans are equipped with built-in generators, running water, built-in suction and oxygen apparatus, and electrocardiogram and defibrillating equipment.