MAINTENANCE AND SPARE PARTS

28 January 1955

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(No general discussion)

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Brigadier General Frederick J. Brown, USA, Special Assistant to the Deputy Chief of Staff for Logistics, Department of the Army, was born in 1905 at Britton, South Dakota. He was graduated from the U. S. Military Academy in 1927 and was commissioned a second lieutenant with the Sixth Field Artillery. He completed the Battery Officer Course at the Field Artillery School at Fort Sill in May 1932 and was assigned to the Civilian Conservation Corps Camp at Centennial, Wyoming. In 1936 General Brown became an instructor in the Department of Physics at the U. S. Military Academy. He joined the 54th Armored Field Artillery Battalion at Camp Polk, Louisiana, in 1941; and in 1942 was named artillery commander of the 3rd Armored Division, with which he fought in France, Belgium, and Germany until the end of hostilities. In 1945 he was made chief of Morale and Special Activities Group of the U. S. Forces in Europe. He became assistant artillery officer of the First Army in January 1946; was graduated from the National War College in June 1946; and remained on as an instructor. In July 1950 he was appointed deputy director of Operations and Plans, European Command. He was named deputy chief of staff for Operations, European Command in June 1952 and later was made deputy chief of staff of the newly organized U. S. European Command. General Brown returned to the United States and was named Special Assistant to the Deputy Chief of Staff for Logistics in May 1954. This is his first lecture at the Industrial College.

MAINTENANCE AND SPARE PARTS

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CAPTAIN McCAFFREE: General Niblo, ladies, and gentlemen: The success of our production capacity for military end items can be completely nullified unless we have the spare parts and items which go to keep the machine going. The importance of these spare parts is emphasized by the fact that their procurement and production are scheduled concurrently with the initial orders.

As all of us in wartime have so well appreciated, the rolling stock is a continuous headache because of spare parts, the lack of interchangeability, and things of that kind. The service which has the greatest headache in this is the United States Army.

We have today as our speaker General Frederick J. Brown, Special Assistant to the Deputy Chief of Staff for Logistics, Department of the Army, who will discuss and bring us up to date on the Army's current planning to get rid of this headache which we have.

General Brown, it is my pleasure to welcome you to this platform and to introduce you to our present student body. General Brown.

GENERAL BROWN: Thank you, Captain McCaffree. General Niblo, gentlemen: I'm greatly honored to be invited to lecture at this institution. I have lectured here many times before but always from the other side of the fence--on the staff of the National War College. Now I come as one of you but as a neophyte. It is with some qualms that I address a body of professional men who have operated long in this difficult field of maintenance and supply.

While generally familiar with the Navy and Air Force problems, I'll confine myself to the Army problem as I see it today. Any inferences or application to the other services will be left to you. However, I have tried to put the problem on your level. There are many aspects of great importance that you are not concerned with at this level, such as teaching methods for 2-year draftees with very low preservice skill levels, the annual turnover of skilled technicians, and the techniques of lowest level supply procedures. Please bear in mind throughout that the picture is necessarily incomplete and that we are aware of these other important aspects.

Let me make one thing clear now: We consider Army maintenance and spare parts supply to be unsatisfactory. Why is this so? How did it come about? We have added quality and quantity of complex equipment beyond our apparent capability to maintain and supply it. By prodigious overproduction and wasteful utilization of personnel we got by in World War II. Since then, research and development have produced new and more complex equipment at an increasing rate without compensation in the form of ease of maintenance, simplification of supply, or, for that matter, any reduction in existing lines of equipment. Indeed, the only thing I can think of that has been eliminated is "walking" as a means of transportation.

It is not lack of production capacity, money, nor transportation that is causing the trouble now or that caused it in Korea. The cause and the cure of our troubles lie right within us, the military. It is time that we do some intensive soul searching. We have demanded better and more complex equipment without full appreciation of the impact on operations and maintenance. I will use the Army aviation program as an example.

It started on a relatively small scale with simple equipment in World War II. The Air Force procured the materiel, and a few barnstorming type mechanics in our units sufficed to keep it operational. We now have quite a respectable line of equipment, fairly complex; however, overseas our maintenance and parts supply, particularly in helicopters, is very difficult. We are just embarking upon our cargo helicopter program. We have integrated their usage in our new field Army concepts. They will greatly increase our battlefield flexibility and mobility. The program is a modest increase from 200 H-19's now on hand to 900 much larger types. Here are some hard facts. Our inventory for helicopters alone will be 1.1 billion dollars, a good chunk of anybody's budget.

Chart 1, page 3.--The maintenance and operating cost per flying hour goes from $136 for the H-19 to $232 for the 1.5-ton Piasecki H-21, to an estimated $567 for the 3-ton Sikorsky H-37. I'm emphasizing the materials and man-hours represented and not the dollars. The cost of the components in the supporting supply system is staggering.

Let us compare the H-19, a headache to maintain, with the new H-21. The H-19 uses one transmission worth $9,300 with an overhaul

CHART 1

CARGO HELICOPTER COST DATA

DESCRIPTION	H-19 UTILITY (SIKORSKY)	H- 21 1 1/2 T CARGO (PIASECKI)	H-34 1 1/2 T CARGO (SIKORSKY)	H-37 3 T CARGO (SIKORSKY)
END ITEM COST	$146,900	$322,700	$304,200	$1,333,700
COMPONENT COST				
ENGINE	30,000	25,000	25,000	(2 ENGINES) 33,500 EA
TRANSMISSION	9,300	(3 TRANS) 21,500	12,500	UNK
ROTOR BLADES (SET)	1,800	10,650	2,500	UNK
COMPONENT LIFE (TIME BETWEEN REBUILD)				
ENGINE	600 HRS	600 HRS	225 HRS	225 HRS
TRANSMISSION	300 HRS	120 HRS	300 HRS	200 HRS
ROTOR HUB	300 HRS	120 HRS	300 HRS	300 HRS
ROTOR BLADES (SET)	850 HRS	240 HRS	400 HRS	400 HRS
MAINT AND REPAIR COST	$136.31	(AIR FORCE COST) $231.96	(ESTIMATED) $181.61	(ESTIMATED) $567.31

life of 300 hours. The H-21 uses three transmissions worth $21,500 each with an overhaul life of 120 hours. A set of rotor blades on the H-19 costs $1,800, with an overhaul life of 840 hours. A set of rotor blades on the H-21 costs $10,650 with an overhaul life of 240 hours. It is now estimated that within the U. S. Army, Europe, the support requirement for Army aircraft within five years will be increased by 800 percent. Now, the maintenance situation there is critical and extraordinary measures are being taken.

I believe you will agree that this program has impact. Has the impact been fully appreciated? An increase in maintenance and supply personnel would increase the ratio of service to combat strength. What corresponding decrease in other transportation requirements will result from use of cargo helicopters? Can more maintenance load be carried by existing organizations or does this capability justify an increase in service support?

Careful adjustment of new materiel into an already complex Army structure and the practical testing of the result require a high degree of competence in operations and maintenance from the user point of view. However, all too often, a staff study and a service test have resulted in the adoption of a new piece of equipment. Once in the system, the price tag of maintenance and service support horrifies everyone. There is, invariably, a great hue and cry to reduce the ratio of service support to combat as if some evil genius had secretly increased it. I firmly believe in the Army aircraft program, in the adoption of new complex equipments. I also firmly believe that to successfully exploit these possibilities we need the professional skill to equal the task.

We have intensively studied the requirements for new materiel. We have studied the strategic and tactical exploitation of superior equipment. We have studied the production and procurement of new materiel. Yet individually or collectively, we have not studied and prepared ourselves for the task of efficiently operating or maintaining these equipments. We have not brought supply and maintenance along with the other aspects. In this we have not completely transposed ourselves into the new military era.

Basically, we cannot hope to maintain the equipment unless the user properly operates it and through preventive maintenance procedures obtains the maximum built-in life. Adjustment, simple repair, and replacement must be decentralized to the user level as the man-hour requirement for our whole range of equipment is too huge to centralize. We have long recognized this problem, hence our U. S. Army precept of command maintenance responsibility.

The commander is responsible at each echelon for the maintenance and supply of his command. The maintenance and supply organization at each level of command are the commanders and not the responsibility or under the command of the chief of a technical service. The backbone of our system is organizational maintenance, backed up by a responsive efficient spare parts system. Therefore, our immediate targets are organizational maintenance and the spare parts system.

I will briefly cover our approach to the organizational maintenance problems as most of them are below your level. The first step is to review the whole field of organizational maintenance and revamp the procedures, tools, skills, and parts allocations to bring them in line with present concepts of operation, organization, and equipments. Up to date no one agency has been responsible for this and we are about to create an Army Maintenance Board with this mission. The work has been done in a piecemeal, uncoordinated manner by schools, boards, and the technical services. The amount of the maintenance load that can and will be carried in organizational maintenance will be determined by this agency; it will supervise the engineering of special tools, procedures, and parts that are required to support these organizational maintenance operations. When the organizational maintenance structure has been revamped and our supply system behind it is equal to the strain, we will recommend to the Chief of Staff that a command maintenance inspection system, Army-wide, be instituted. This should assist in focusing the user's interest in the maintenance of his equipment.

So much for the maintenance aspects. Now let us look at the spare parts picture. My analysis of the present spare parts system is that it is too cumbersome to be effective. Why? I believe it is because it has been basically handled as a routine supply problem and not as a maintenance problem. We developed systems and techniques for supply of rations, hay, oats, ammunition, and then gasoline over a long period of time. These systems for few items, each item with few and stable design components, large tonnages, and relatively constant consumption or flow; hence the pipeline concept. Demand is simply expressed--"I need 10,000 rounds of 105 How H. E.". Parts naturally fell into the supply concept of the major end item.

In repair parts we are dealing with an entirely different problem which requires a system designed for a great range of items, changing design, small tonnages actually consumed, and in some cases almost unpredictable consumption factors. With constant improvement of end items, development of parts to correct deficiencies, different conditions due to age of equipment and climate, no real experience tables in the majority of items can be developed that have validity in a new situation. Demand is difficult to correctly express. For example, I want H012-132012 bearing, ball, Jan 111-01202-2000 (radial, single row, light, nonloading groove, 2 shields, 0.4724 bore, 1.2598 outside diameter, 0.3937 width). This happens to describe a ball bearing used in the clutch drive gear of the traversing mechanism of light tank T41E1--a high wear item and one of 27 ball bearings within the traversing mechanism. We have done well on standardization here since there are only 12 different bearings in this subassembly. If a mistake is made in one element of my description, you will get an unusable thing delivered.

Visualize a company supply sergeant or his 2-year draftee assistant identifying this bearing and then pecking this description out on his standard requisition form, filling in the due in, due out, on hand, and authorization. Each echelon consolidates these standard requisitions. Why? We are not adding 10 bales and 15 bales. Visualize this consolidated requisition entering a depot stuffed with every conceivable piece of each item of equipment. Visualize a 2-year draftee finding that bearing and getting it delivered to the supply sergeant, each echelon breaking down its requisition as it receives it. This system worked and delivered bales of hay and woolen socks, size 10, for us; therefore, we stubbornly tried to make it work for ball bearings.

Identification is a technical problem, as is the ordering. These operations must be performed by skilled personnel--maintenance and parts specialists. An order by a maintenance specialist must be translated by a parts specialist into supply action. The parts specialist must have the technical knowledge to accord priority and initiate substitute supply if necessary. I stress this level for here is the critical point in maintenance supply. No machine system can integrate the technical knowledge and judgment necessary here. It's not a numbers racket nor a problem of deciding which slick system of punch cards we use.

Stockage must be a judicious balance between insurance type items, such as machinegun bolts, and consumption-type items, such as spark plugs. The system must accord priority in reorder and delivery to critical items, such as a junction box for a tank over a noncritical item, such as a door handle for a truck. To give an emergency requisition status for parts supply isn't the solution as we will get into absurdities, such as flying predictable items, tank tracks weighing 2.63 tons each, for example, across the Pacific on a 24-hour order. While unpredictable statistically, many parts requirements can be planned by efficient management, based on operating conditions and accurate knowledge of condition of equipment. A parts system must be responsive to peak and erratic demands as normal procedure.

Let us analyze Army parts supply. Time is one of the critical elements in parts supply. A piece breaks; this was unforeseen. The requirement for the replacement is instantaneous, not tomorrow or in a week but now, because we have planned for the utilization of the end item although not the repair piece. It immediately becomes a problem of "For want of a nail, a kingdom was lost." Therefore, we must have the proper spare parts as close as possible. It would be best, of course, to have the part right with the equipment and you do have the extra machinegun barrel or firing pin. This is the first echelon of parts supply. If the part cannot be with the equipment, the second echelon of parts supply must be well forward. The limited transportation and variety of equipment forces selectivity and limitation on the amount of any item. The third echelon must therefore replenish forward stocks and carry a larger range of stocks. The rapid replenishment requirement again forces forward deployment and limitation on quantities.

Let us say that we are now at the field Army level. This far tactics have forced a short time element, selectivity, and quantity limitation. This far our present concepts seem correct although the practices need much improvement. Now we are back at the fourth echelon or a static depot where tactics have taken off the quantity restrictions and time pressure. Here is where the built-up demand for both the number of line items and the quantity of each line item must be met. This in itself poses a difficult problem but we have also permitted the simultaneous release of time pressure. The fourth echelon is allowed to stock 30, 60, or even 90 days of supply. In other words we do not force fifth echelon to rapidly replenish fourth echelon stocks. This compounds the difficulty to the point of stagnation of the whole system. Time has been transmuted into stock of unmanageable proportions.

Translated into days of supply, at the height of the Korean War, the Far East was authorized a 60-day operational level with a 30-day emergency reserve level. The order and shipping time, I repeat time, was 270 days. This gave a requisitioning objective of 360 days, a year. Since this produced only 40 percent of its requirements, one technical service depot recommended increasing this objective to 570 days as a cure.

These requisitioning objectives were finally met. At this date, two years and six months later, there are still unidentified stocks within those mountains of supply in Korea. In desperation the Engineers bypassed this impenetrable mass and supplied direct from Columbus to Eighth Army by cabled order and express delivery.

To reduce the COMZ (communications zone) type stock to manageable proportions, we must keep the pressure on quantity by selectivity but more importantly by not permitting time to be translated into quantity.

The first element to be attacked is order and shipping time. Once this element is drastically reduced, enough confidence will be generated to permit operating and emergency levels to be reduced. I believe the Engineer trial proved the feasibility of this approach; now the problem is to work out the procedures for reducing order and shipping time and operating levels. The overseas organizational framework for expedited supply is currently under study by the Army school system.

This design of a worldwide parts supply system is a maintenance management problem of the first order and beyond the experience of industry. We haven't the solution. We are keenly aware of the problem and we have vigorous programs in many fields that should lead to a solution. These programs deal mainly with new items and parts supply on the wholesale and industrial level.

We will start with a new item of equipment. It is in the design and development of a new piece of equipment that maintenance and parts engineers have the opportunity to control the introduction of new parts into the Army supply system by careful analysis, screening and evaluating these parts from a maintenance standpoint. All technical services have now instituted specific review points in the development cycle. One review point is a check on the development model by part specialists and maintenance engineers to insure maximum use of standard or stocked parts, where possible, and ease of maintenance in design. A second check point is at the preproduction model stage.

At this stage, the item is checked by examination of parts and actual maintenance operations. This operation on combat and wheeled vehicles is painstaking and thorough to the point of laying out every part of an item and selecting maintenance spares. The selection of repair parts at this stage by maintenance personnel is a most important step in changing parts supply from a routine supply operation to a maintenance supply operation. When the production procurement contract is let, it includes the purchase of parts for delivery concurrently with the new equipment. In general we concurrently buy an estimated year's supply of parts. After that we can establish usage rates and effect replenishment procurement, based on proven requirements. We withhold shipment of new end items overseas until these concurrent parts have been distributed overseas.

We have a standardization program that is producing results, particularly in the fittings and accessory categories. Standardization is most effective in military design items as, when we pay for the development of an item, the Army acquires the manufacturing and patent rights; thus we can go on the open market, advertise with design and drawings furnished, and get good prices, plus a product that is uniform in its spares.

An example of this is in the auxiliary engine field. The Engineers are now buying production models of a new family of small air-cooled engines developed for us by contract with an enginemaker. This family has parts interchangeable between sizes as does our family of tank engines and will eventually replace all small engines of this type in all services. The payoff of this action will be large, since we now have hundreds of makes and models with their attendant spares within the Army.

The troublesome area is the use of civilian-type end items and those items covered by proprietary rights. Engineer construction equipment is a good example of this area. We do not and should not design military types for this equipment. In order to achieve some standardization, we are authorized by specific legislation to procure without advertising in order to have follow-on procurement of a make that we now have in the system provided we stock spares.

Although essential in isolated cases, this is not the solution as we will get the current model--1954, which may be an improvement over the 1953 model, but also may have an entirely new set of components or a new lineup of secondary suppliers. This means we again have to stock the supply system for the parts for the new model. I believe the answer to this problem lies in industry cooperation. If we can determine the high mortality parts in field maintenance and concentrate our standardization efforts on those parts, we will narrow the problem a surprising amount. Then I'm confident we can get a large measure of industry cooperation in voluntary standardization and interchangeability. We are proceeding on this approach as is the Department of Defense.

High mortality parts have been mentioned and in this field we are concentrating much effort. Believe it or not, we do not have consumption figures on any spare parts in the Army, either currently or as a result of World War II or Korea. We had no system for getting this information. We know what we have purchased, what we have issued from class II depots, but we do not know what we actually consumed in organization and field maintenance. Large undetermined quantities of parts were stocked overseas, disposed of as war surplus and aid programs, used in overseas rebuild programs, and so on.

The Ordnance Corps has developed a field stock-control system and has tried it out in Korea. It was designed to secure consumption data at using unit level and to automatically determine items and quantities for field-depot stockage. They are now installing it worldwide. The Department of the Army is developing a uniform system for all technical services, based on this experience.

Chart 2, page 11.--The results accomplished in depot stockage alone are astounding. For example, in Korea, direct support and Army-depot item stockage was cut 50 percent and base-depot stockage 63 percent.

Chart 3, page 12.--Twenty percent of the authorized stockage supported 97 percent of the requirement.

CHART 2

SELECTIVE STOCKAGE PLAN
AVERAGE LINE ITEM REDUCTION
KOREA

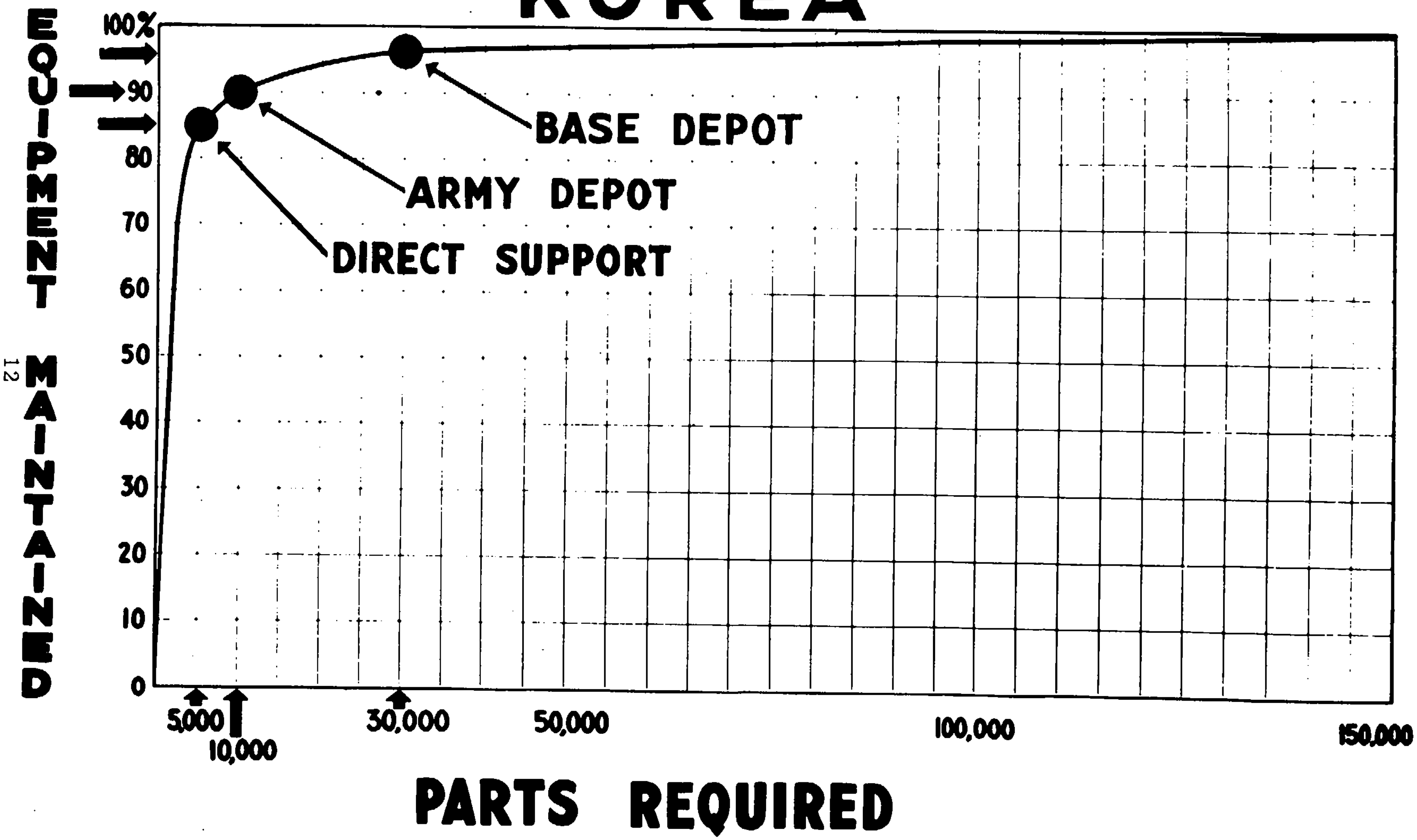
SUPPLY ECHELON	BEFORE PROJECT 170	AFTER PROJECT 170	% REDUCTION
DIRECT SUPPORT	10,000	5,000	50%
ARMY DEPOT	20,000	10,000	50%
BASE DEPOT	80,000	30,000	63%

CHART 3

SELECTIVE STOCKAGE PLAN

PARTS–MAINTENANCE RELATIONSHIP

KOREA



To know what to buy and when to buy it in order to prevent parts shortages from developing, we need to know the total quantity of any item we have on hand and the rate at which we are consuming it. Presently, we are getting systems improved for supply control that produce this information in the ZI. We are now studying the means for extending this to overseas stocks, also for electronic transmission of these data. This is necessary as a rollup such as Korea gives a false picture in procurement planning as they will be living on their fat in the Far East for some time and hence no requisitions or demands on the ZI. This in the past has also appeared as no consumption.

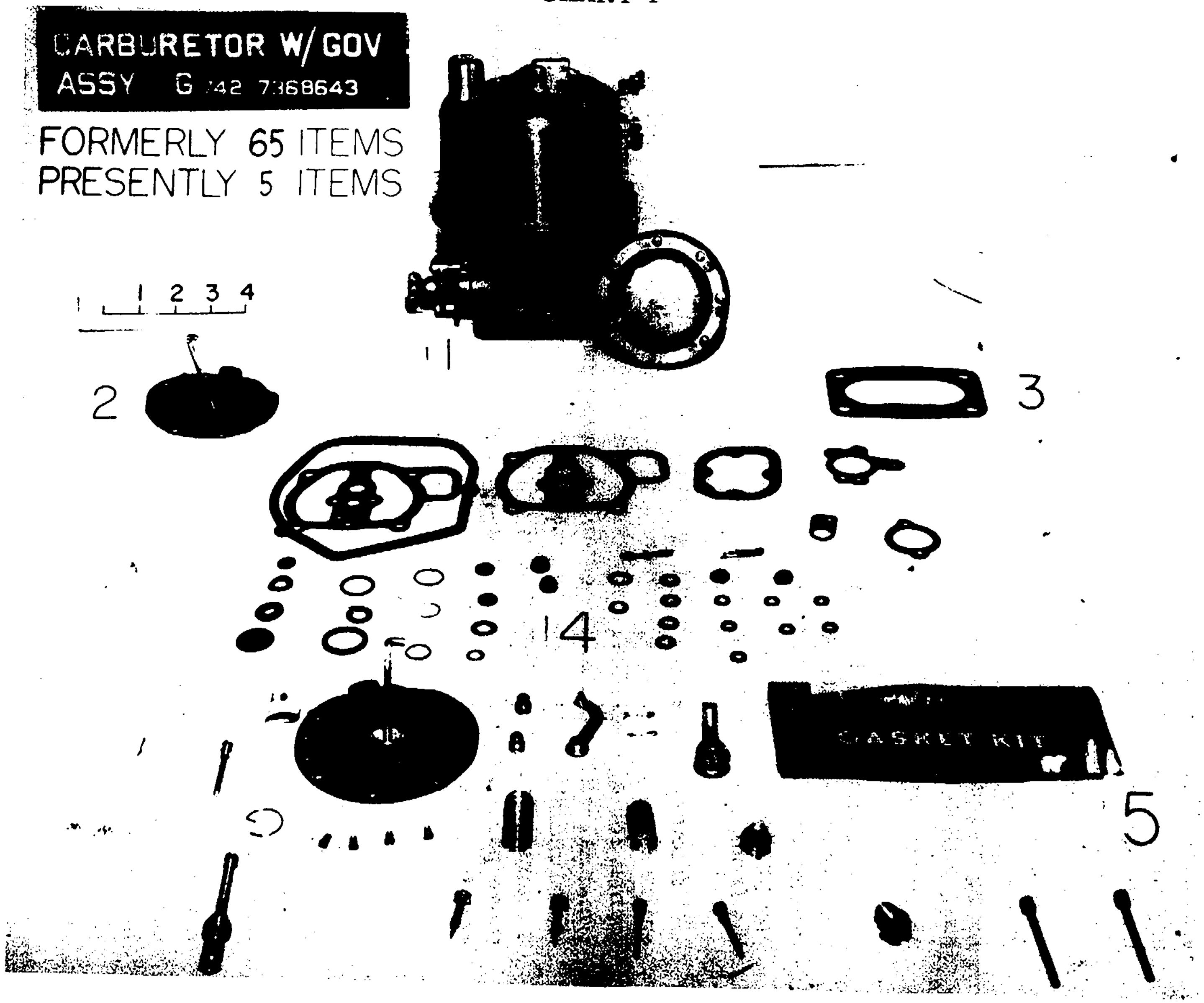
An extension of this system can eventually replace requisitioning from overseas theaters as when we have the information on the theater stock status and the rate of depletion, then we can maintain any predetermined level by shipments. This will be intelligent "impetus from the rear" or automatic supply.

Another important field is cataloging. We are revamping our entire supply manual system and from now on will have a uniform format for all technical services. The organization maintenance type 7 manual will specifically establish spare parts lists for organizational maintenance at each unit level. The wholesale catalog or type 8 manual designed primarily for technical service use will list only those parts required in field maintenance and stocked by distribution depots and which have been selected as functional and maintenance parts.

Concurrently with revising supply manual format and completing the Federal Catalog Program for numbering and identifying items, the technical services are reviewing the parts in the type 7 and 8 supply manuals from a maintenance standpoint. This is a slow, tedious process, considering the parts required to support our tremendous range of equipment. During this maintenance editing, maintenance specialists are deleting parts which show little usage, can be fabricated in the field, are nonfunctional, and can be repaired in the field, or should be issued as a part of a kit or assembly. Kitting is being resorted to in order to simplify maintenance and reduce the number of items in stock.

Chart 4, page 14.--No longer will each piece of a carburetor be listed or supplied. All gaskets are in one kit, all wearing parts are

CHART 4


CARBURETOR W/GOV
ASSY G 742 7368643
FORMERLY 65 ITEMS
PRESENTLY 5 ITEMS
1 2 3 4
2
3
4
GASKET KIT
5

in another kit, and the carburetor as a whole is the third item. If you break a lower bowl, you turn in the carburetor and fourth echelon will obtain the bowl for rebuild from another salvaged carburetor with a broken upper bowl.

Chart 5, page 16.--This same selective process is being applied to procurement of parts for items already in the system.

The thought probably occurs to you: Why not have the manufacturer do this part selection on new equipment? The answer is, we do--as a first step, he submits his recommendations.

Charts 6 and 7, pages 17 and 18.--However, unless this list is carefully screened by our maintenance and supply organizations, we get assembly line parts, sales promotion quantities, identical parts with a new name and number, and subassemblies not suited to military maintenance.

Chart 8, page 19.--We have warehouses bulging with the results of manufacturers' selection and an expensive and time-consuming operation on now to rid the system of these unusable parts.

Other programs that will materially improve the parts supply are the Packaging Program to facilitate fast shipment, sorting, identification and distribution, the Parts Specialists Program, and "Reduction of End Items" Program, a joint program with Continental Army Command to drastically reduce the number of major items of equipment now called for in T/O&E's.

We have established a "Parts Specialists" MOS (military occupation speciality) and a career ladder for these specialists. Our T/O&E's have been amended to authorize parts specialists within the technical service maintenance and supply units. Training courses for these specialists have been set up in each technical service.

In order to reduce overseas shipping time for parts, a test of "CONEX" (container express) has been under way for some time.

Chart 9, page 20.--CONEX utilizes a reusable steel shipping container, loaded and sealed at a point of origin in the CONUS, then shipped by truck or rail to a port, thence deckloaded on vessels for transport to the overseas port, where it is rapidly delivered to

CHART 5

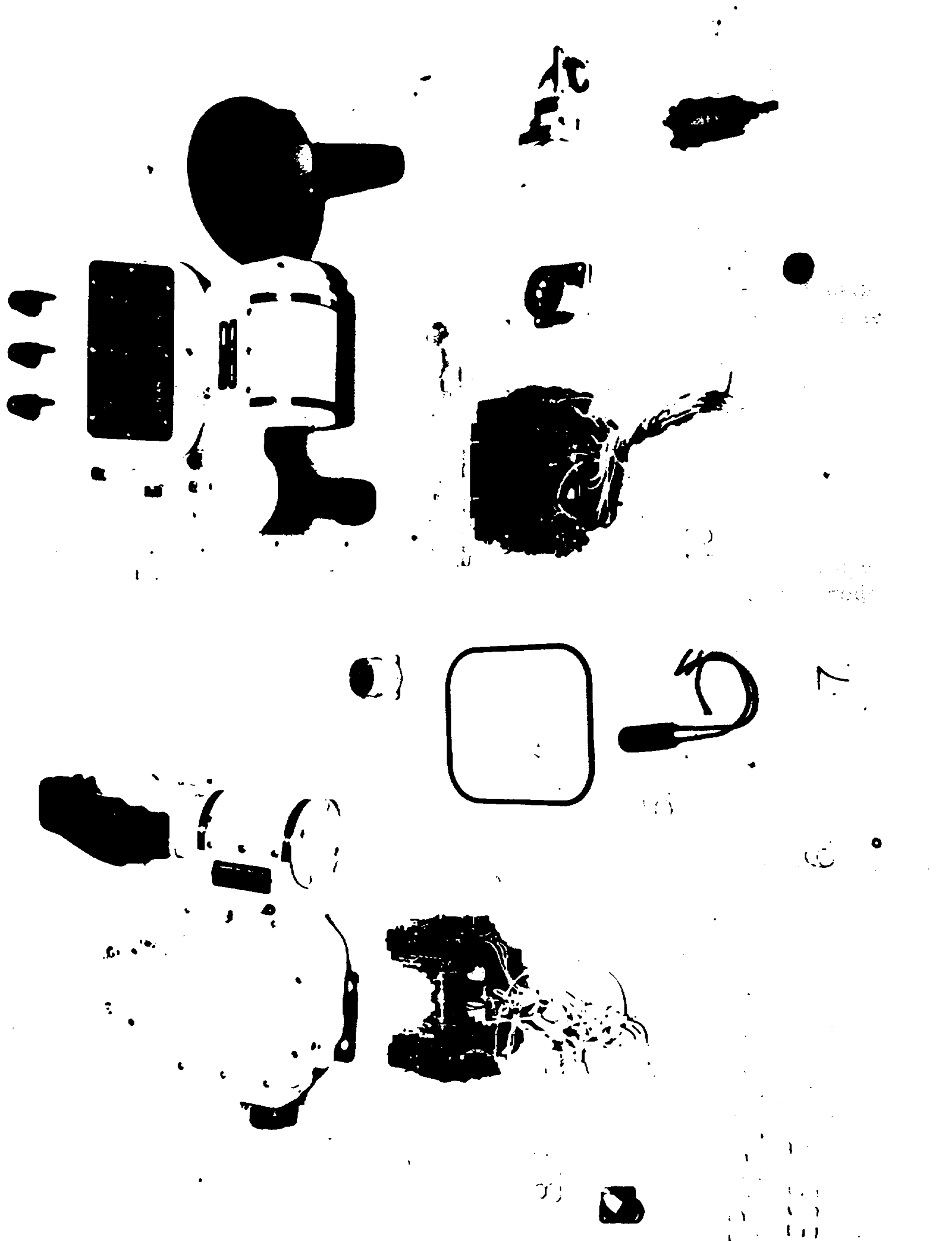
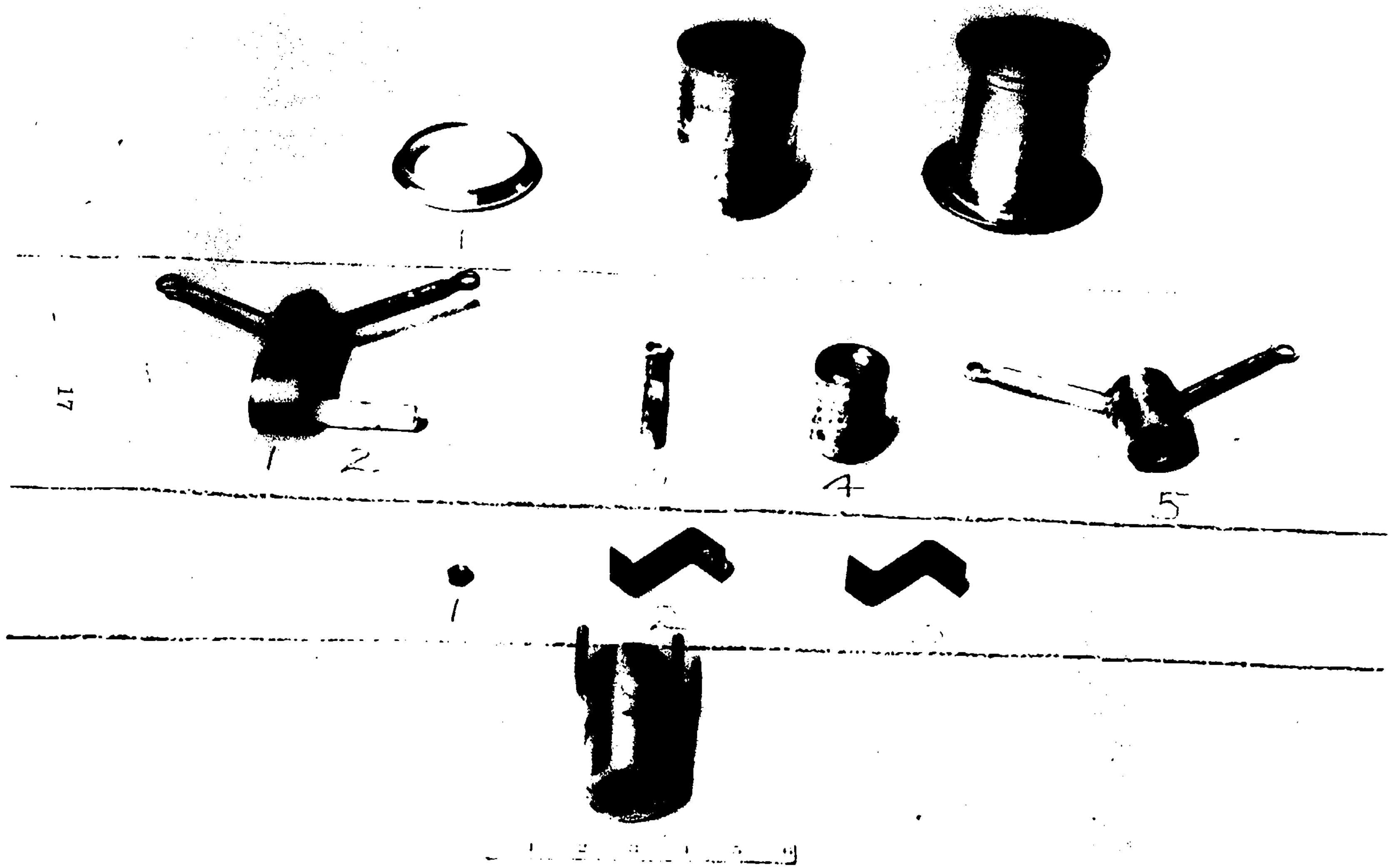


CHART 6



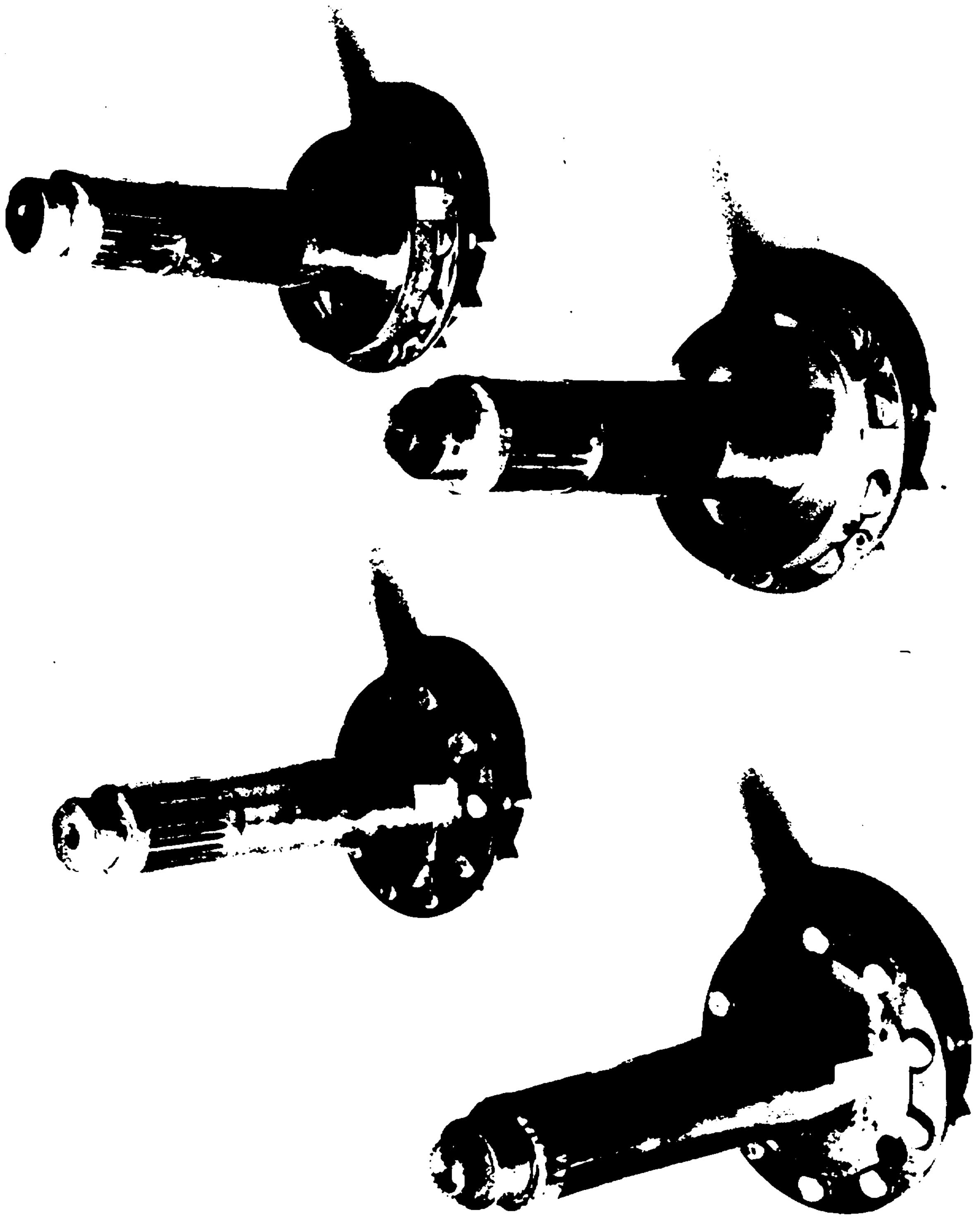


CHART 7

CHART 8

CARGO TRANSPORTERS

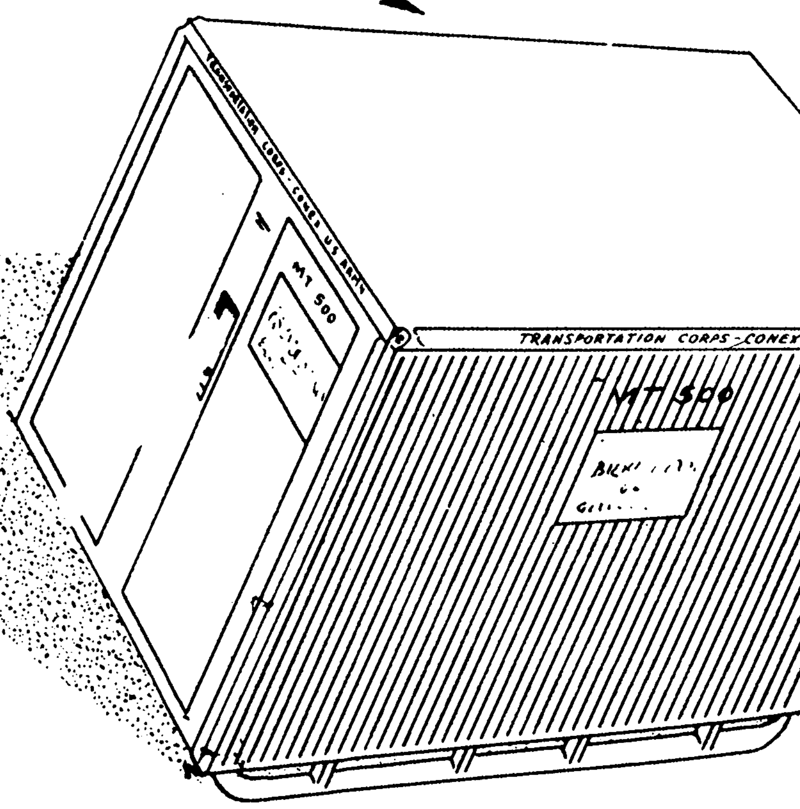
CHART 9

LOADING CHARACTERISTICS

	INSIDE	OUTSIDE
LENGTH	8' - 1 5/8"	
WIDTH	5' - 11 3/4"	8' - 6"
HEIGHT	6' - 0 3/8"	6' - 3"
		6' - 10 1/2"

CLEAR DOOR OPENING 5' - 1 1/2" X 5' - 9 9/16"
SKID HEIGHT 6"
LIFT-EYES AT TOP FOUR CORNERS

...O CAPACITY 9000 LBS.
...WEIGHT 1430 LBS.
...WEIGHT 10430 LBS. BALE CAPACITY 295 CU. FT.
GROSS CUBE 365 CU. FT.



appropriate destination. The container has a cargo capacity of 9,000 pounds. It is 8.5 feet long, 6 feet wide, 7 feet high. It can be carried in an Army 6 x 6 truck. Three containers can be carried in usual flatbed or opentop semitrailers. From 6 to 8 can be carried in various flat and gondola railway cars in CONUS. They are suited to ondeck stowage on vessels.

The CONEX plan was developed in the late summer of 1952 to alleviate the inadequacy of air freight for critical engineer supply to the Far East. It provided rapid delivery service for movement, via surface means, of high priority engineer maintenance parts. Loading and movement was on a fixed shipping schedule of three cargo containers per week from Columbus General Depot to San Francisco, thence via MARINEX to the Yokohama port, where delivery was completed via truck to the Yokohama Engineer Depot and out of containers by air to Eighth Army strips. During the first year's operation from November 1952 through December 1953, 1,000 tons of engineer parts were shipped CONEX.

Comparison of transit shipping time from Columbus to San Francisco:

CONEX, 5 days; LCL, 18 days; Carload lots, 16 days.

The average turn-round time for a container from Columbus to Yokohama and return, 48 to 51 days.

The order and shipping time to FECOM for engineer parts in stock by CONEX shipments was reduced from 120 days to 75 days.

The initial utilization of CONEX by the Engineers to the Far East proved so successful it is now being tested and utilized by all technical services for shipments between CONUS and FECOM, EUCOM, Alaska, Hawaii, and USFA. It has proven to be consistently faster than air freight. Not only is it being utilized for parts but for other troop cargo as well. Containers are now loaded at depots, procurement agencies or contractors, and, also, consolidation of small separate shipments into containers is made at ports. They are now being used for the return of household goods to CONUS from overseas instead of being shipped back empty.

All of these programs are directed toward having distribution depots of manageable proportions containing adequate quantities of the proper parts and a system that is really responsive to demand. Is anything being accomplished? The answer is, definitely! Although I cannot isolate an example from this large picture, I believe the over-all figures which reflect the sum total of present policies will prove this.

As of 30 September 1933, we had 893,000 parts items that were centrally supply controlled and stocked in the ZI depot system. By 1 November 1954 this was reduced to 638,000, or a reduction of 28 percent. We are currently introducing and distributing an estimated 120,000 new items, both parts and other supplies, each year into the system and the reduction of 28 percent in parts was accomplished over and above the annual increase.

For the results in dollars, our inventory of parts within the ZI depot system at the beginning of fiscal year 1954 was an estimated 5.3 billion dollars; at the end of fiscal year 1955 it is forecast as 3.1 billion dollars, or a 40 percent reduction in two years.

The programs I have described are well under way and in my opinion will be attainable within two years. In other words in two years the tools will be there. Will we be ready to use them?

Let us recap where we stand in the logistic area of this problem. Within two years we will have straightened out parts supply at the organization level, developed a system of properly stocking the field depots. On the industrial side we will be buying only those items necessary for maintenance, based on worldwide stock status and accurate consumption data. We will be capable of substituting world-wide stock leveling for requisitioning. We will cut order time from an overseas control point to the time of telecommunication to designated points in the United States. We will be able to ship from source to a specified consumer in an overseas theater by container with turn-round time of 48 days by surface means. We already have the business machines in overseas theaters to consolidate demand and maintain control of theater stock. We do not have an Army overseas theater logistic concept or organization which can utilize what will be at hand two years from now. All we have is a COMZ concept that skittered along avoiding total collapse in two wars.

General Palmer has long recognized this problem and immediately after taking over as G-4 of the Army set up the 1st Logistical Command at Fort Bragg with the mission of developing a COMZ organization which fits our modern concepts of war and which utilizes logistic developments long in the making. A new concept of Army theater organization has been developed and will be tested in our annual LOGEX 55 (logistic exercises) this spring. This concept, of course, is for an Army theater organization and is a unilateral Army approach. To my knowledge, there is no such project on the joint aspects of the overseas theater problem.

I have just finished a 2-year tour as Deputy Chief of Staff of HQ USEUCOM, one of our major joint overseas commands. In spite of the unique logistic authority of USCINCEUR, lack of joint guidance on theater logistic planning prevented any effective joint theater logistic organization which could direct service theater organization. I commend this problem for your study and thought.

One point is very clear to me. It is that the maintenance and supply can and must be designed and engineered to fit the operational concepts of nuclear war. This is your job as logisticians. Unfortunately, we must force decisions on operational concepts. The operational planners conceive of a war in which concentrations of personnel or materiel are subject to total destruction to great depths, a war requiring striking forces of great mobility. However, these same planners are adding new and more complex equipments, increasing days of fire or hours of operations and cutting down on the proportion of manpower devoted to maintenance and supply, decentralizing command functions and creating autonomy.

On one hand combat units can be made more self-sufficient. The conclusions of the German postwar studies on their operations in Russia were that self-sufficiency was a maintenance objective. The cost of self-sufficiency is provision of skills and general purpose tools within the unit. This means more men and equipment overall as decentralization disperses resources.

On the other hand, combat units can be relieved of this logistic tail by centralization of maintenance and supply. This results in real economies of skills and equipment. We can engineer the maintenance and supply system for either concept. The skills, equipment, and parts, however, are radically different even down to the packaging and identification of pieces.

To meet the demands of the complex equipments of today's forces, the maintenance and parts systems must be engineered to a concept and the maintenance system designed for one concept cannot support another concept. In other words you can't "have your cake and eat it." You can't decentralize in one breath and get the economies of centralization in the next breath.

In going over proposed organization charts and duties enumerated thereunder, one finds the same echelonment of doing things that exists today. Each echelon controls supply; each echelon of depots supports the next. In other words each echelon has a reporting system, a control system--a consolidation of demands from below. Are we developing modern management methods of purchase, production, distribution, and communications to have them merely brighten up the old horse and buggy organization chart?

As logistic planners you must see this problem clearly and force necessary decision. To assist you in this, avoid the organization chart generalities and plan, study, and talk only on the basis of the mechanics of doing things in the language of the tools at hand. Get specific.

To design a logistic system to support the complex equipment of our Armed Forces of today on a global basis in the face of a nuclear war is one of the toughest problems ever to face the military. While industry and civilian research can be and are of tremendous assistance, the problem is our problem and we as logistic planners must come up with the answers. You've got to be good.

Thank you very much.

CAPTAIN McCAFFREE: General Brown, as a former member of the faculty of the War College and as a military man, I'm sure you appreciate that we must observe certain routines--namely, schedules and the like. I regret we do not have time for a question period. Thank you for coming over and giving what is to us the "real" information on a most important subject.

(21 Mar 1955--250)S/ekh