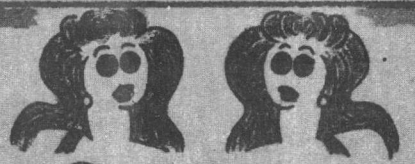
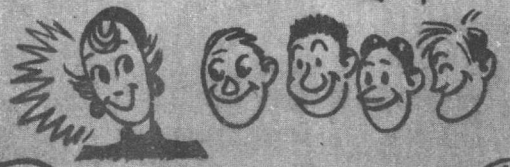
CONSIDERATIONS OF MATERIALS FOR STORAGE

PRINCIPAL CONSIDERATIONS OF MATERIALS FOR STORAGE

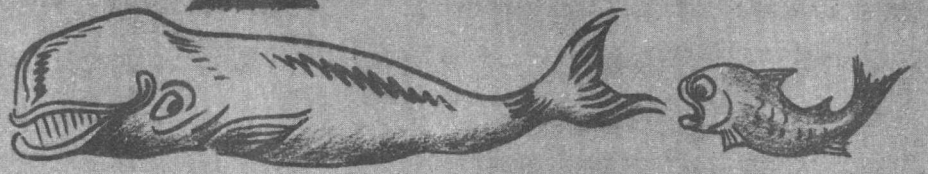
1. SIMILARITY



2. POPULARITY



3. SIZE

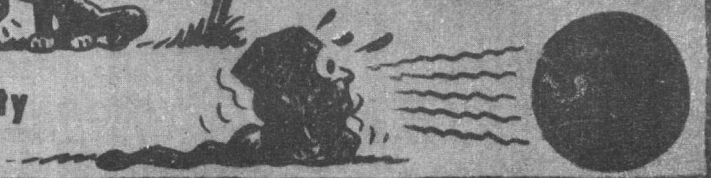


4. CHARACTERISTICS

a. Hazardous

b. Security

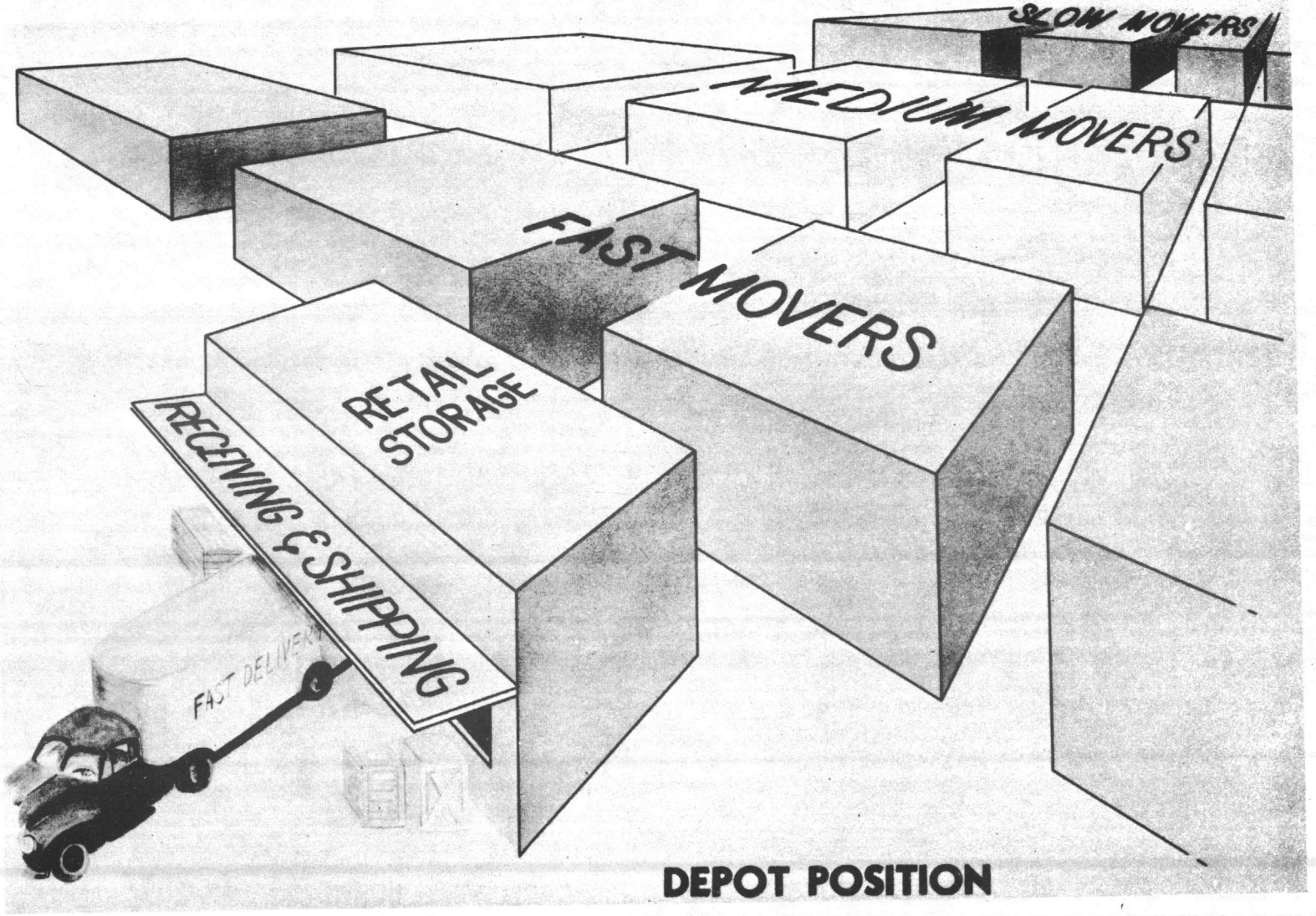
c. Perishability



STOCKS MUST BE STORED BY POPULARITY
(Depot Position)

A basic requirement for effective storage at the depot level is the proper location of stock in accordance with popularity; hence, retail storage is located near the receiving and shipping area and the fast moving back-up stock is located in adjacent areas. This system of storage provides for rapid concentrated receipt and issue of stock. Popularity storage of stock works on all levels.

STOCKS MUST BE STORED BY POPULARITY



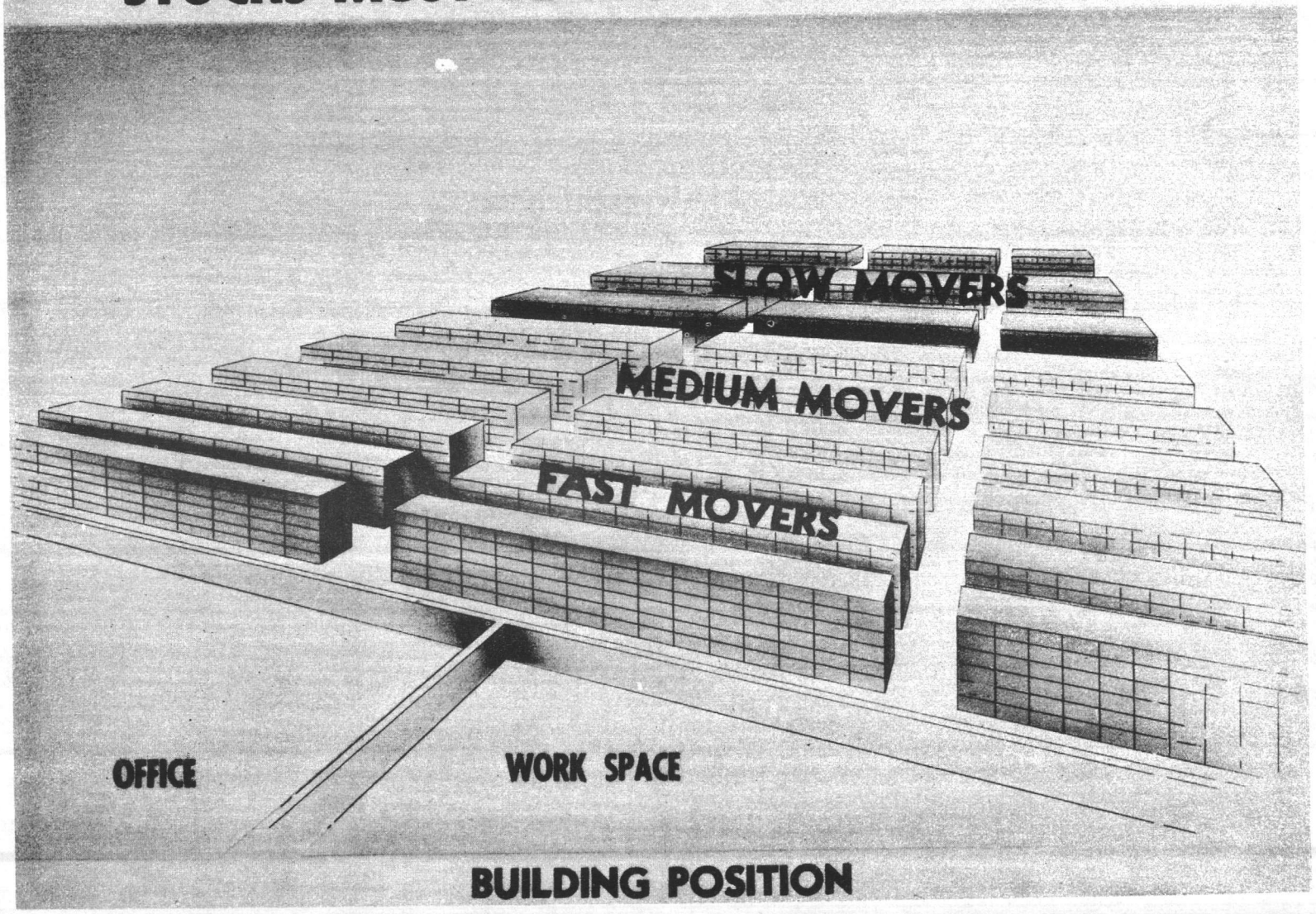
DEPOT POSITION

STOCKS MUST BE STORED BY POPULARITY

(Building Position)

The same system of popularity storage as applies to the depot applies to the individual warehouse area. By placing the fast movers near the shipping and receiving area, the greatest percentage of stock issue and receipt is accomplished in the smallest portion of the warehouse. This results in higher productivity and expedites consumer service. Any other arrangement will result in loss of time and, thus, create inefficient effort.

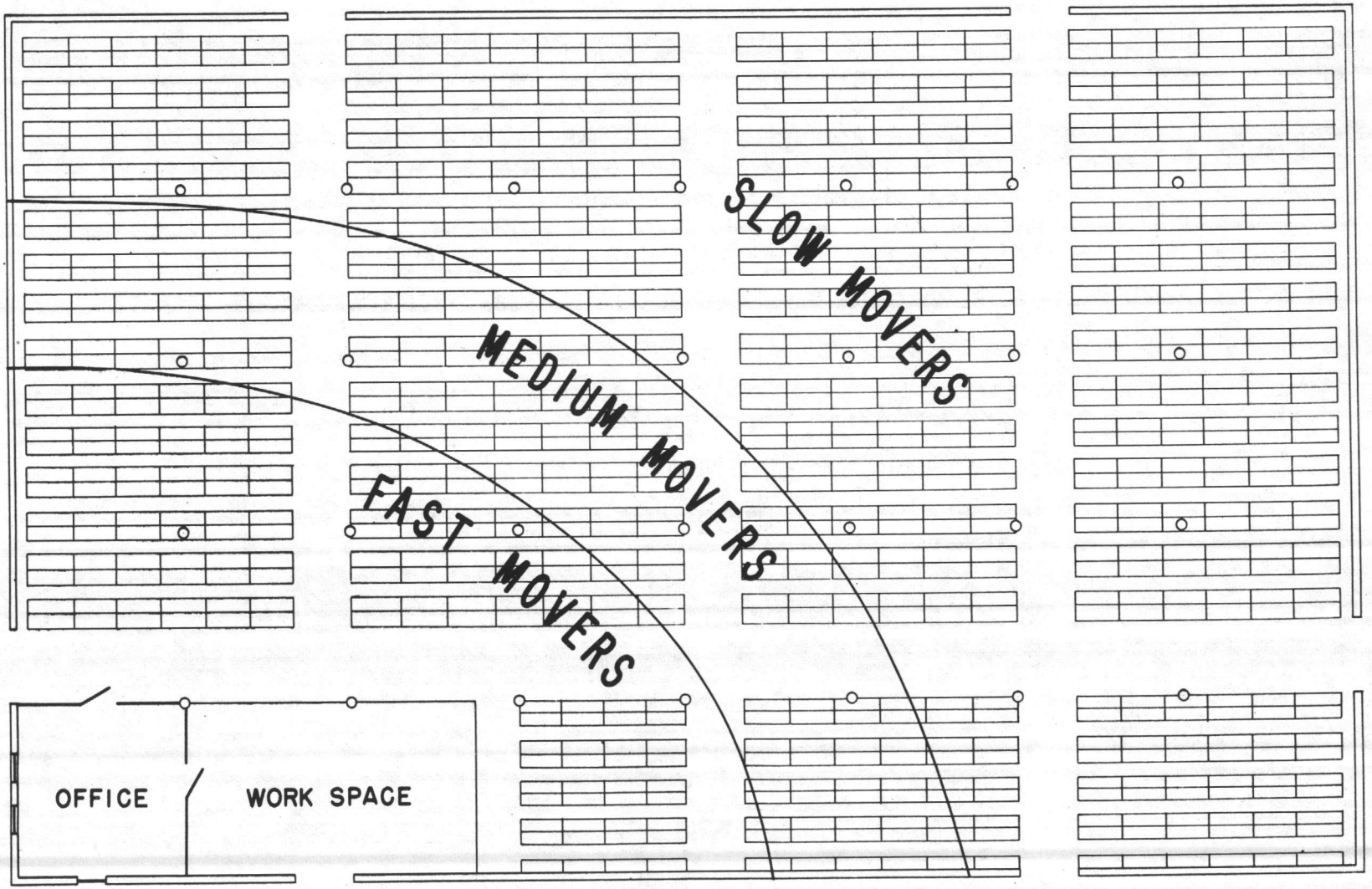
STOCKS MUST BE STORED BY POPULARITY



RETAIL POSITION

To emphasize positioning, the accompanying illustration shows a typical retail bin section. Assume that this section is laid out for sequence storage and that our stock is electronic spare parts. In such a layout the A, B, and C categories would be near the receiving and shipping area and the R, S, and T items would be to the rear of the bay or building. Under such circumstances our most popular items, such as resistors and tubes, from which we receive the bulk of our business, would be located at the back of the building. This means that the pickers must walk a maximum distance for each issue in this category and because they are popular items do so frequently. All of which creates fatigue and wastes effort, which results in inefficiency.

STOCKS MUST BE STORED BY POPULARITY



RETAIL POSITION

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LOCATION BY SEQUENCE

Here, graphically portrayed, is what happens when popularity storage is not used. It is comical only in the presentation - - not in its intent.

The issue storekeeper has received a request for a tube, the tenth that morning. His "T" stock is located at the extreme end of the retail section. Obviously he isn't pleased. But.....

A
B
C
D
E
F
G
H
ONE RADIO TUBE
#T-100
RETAIL ISSUE

-----WILL RESULT IN THIS

..... the invoice must be filled. Here our storekeeper nears his destination; twenty rows, and double that many long-legged strides, from his issuing counter.

There are as many steps on the return trip, which add up to fatigue and inefficiency before the day is done. The tube is obtained and.....

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-----AND THIS

..... our storekeeper returns. Tubes are a popular item and many trips will be made before the day is over. Each trip will add to the total time lost by unnecessary steps, since the tube unfortunately comes under the letter "T" in the alphabet and is located accordingly. The storekeeper's problem though.....,


A
B
C
D
E
F
G
H
RETAIL ISSUE

WHEN IT SHOULD BE LIKE THIS.....

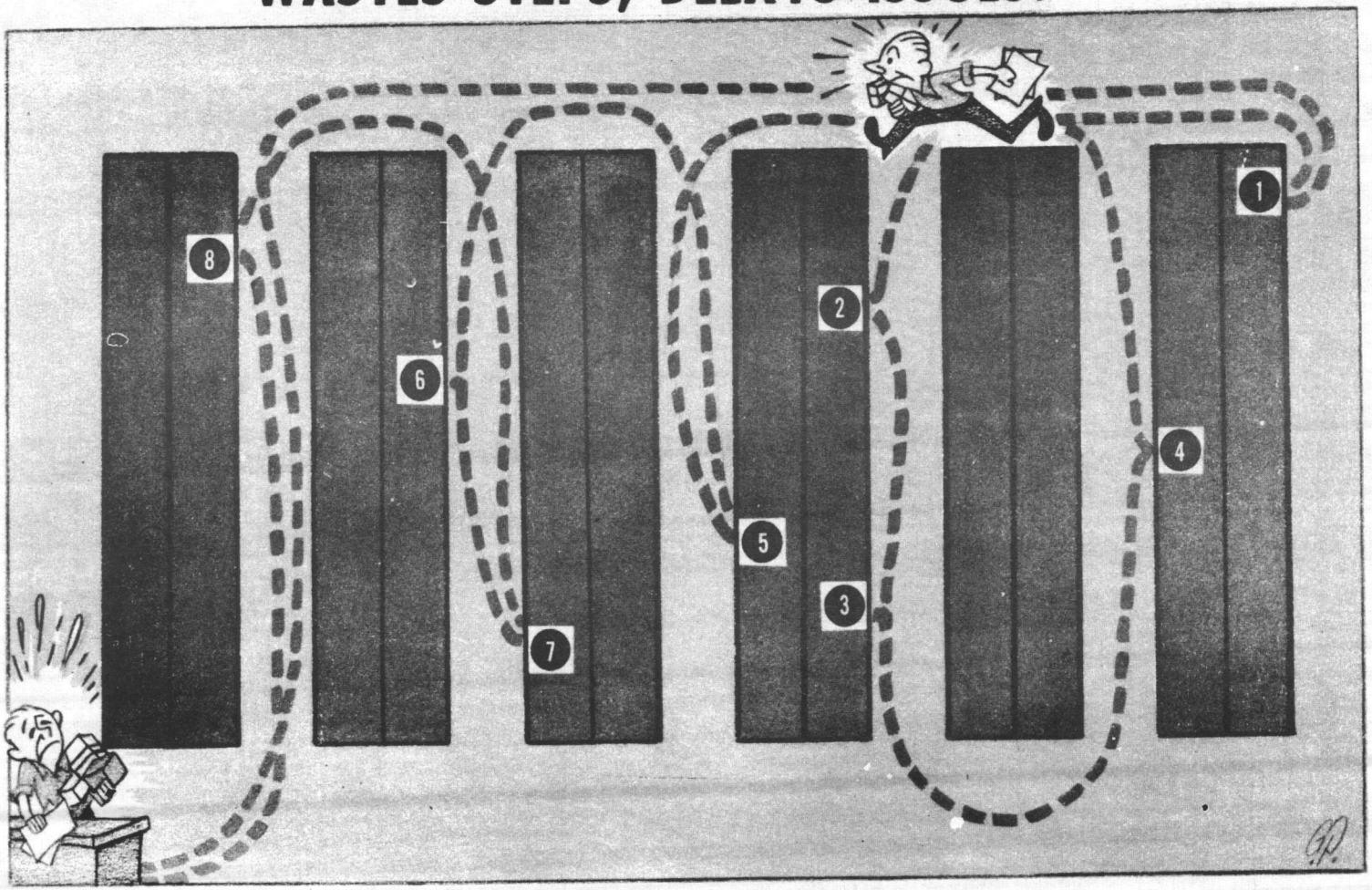
.....could be solved by popularity storage. He feels that if an item is more popular than other items it is logical to locate the popular item where it is easily accessible for quick issue and receipt.


RADIO TUBE
T-100 - 11
EA.
ONE
RADIO
TUBE
#T-100-11
RETAIL ISSUE

STORAGE WITHOUT REGARD TO SIMILARITY

Similarity, the assembly of material by class and application, is another basic consideration in layout of stock. For example: our little man in the opposite illustration has a requisition that requires him to pick eight items, all of which are in one ordnance category. His layout does not consider similarity of items and, accordingly, he must move from end to end, and take many extra steps to complete the requisition.

STORAGE WITHOUT REGARD TO SIMILARITY -- WASTES STEPS, DELAYS ISSUES.

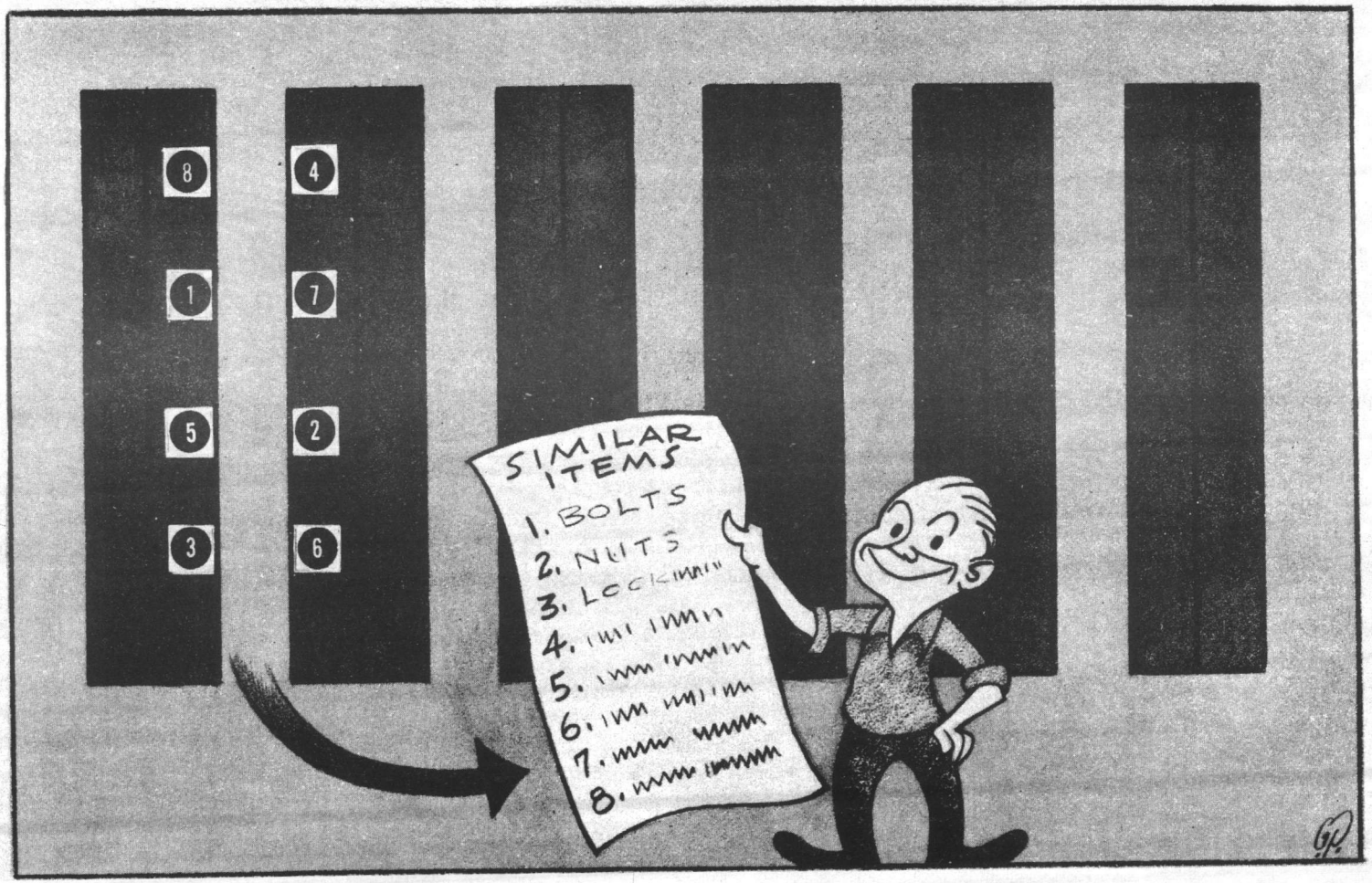


79-7-TA

STORAGE WITH REGARD TO SIMILARITY

If our storage system had considered similarity of items in the stock positioning, it would have simplified our storekeeper's task of stock picking considerably. The ordnance items of the class group now are arranged within a compact area and, accordingly, the storekeeper need only direct his steps to one place rather than wandering aimlessly throughout the whole storage area to pick the stock required.

STORAGE BY SIMILARITY SAVES STEPS, SPEEDS ISSUES.



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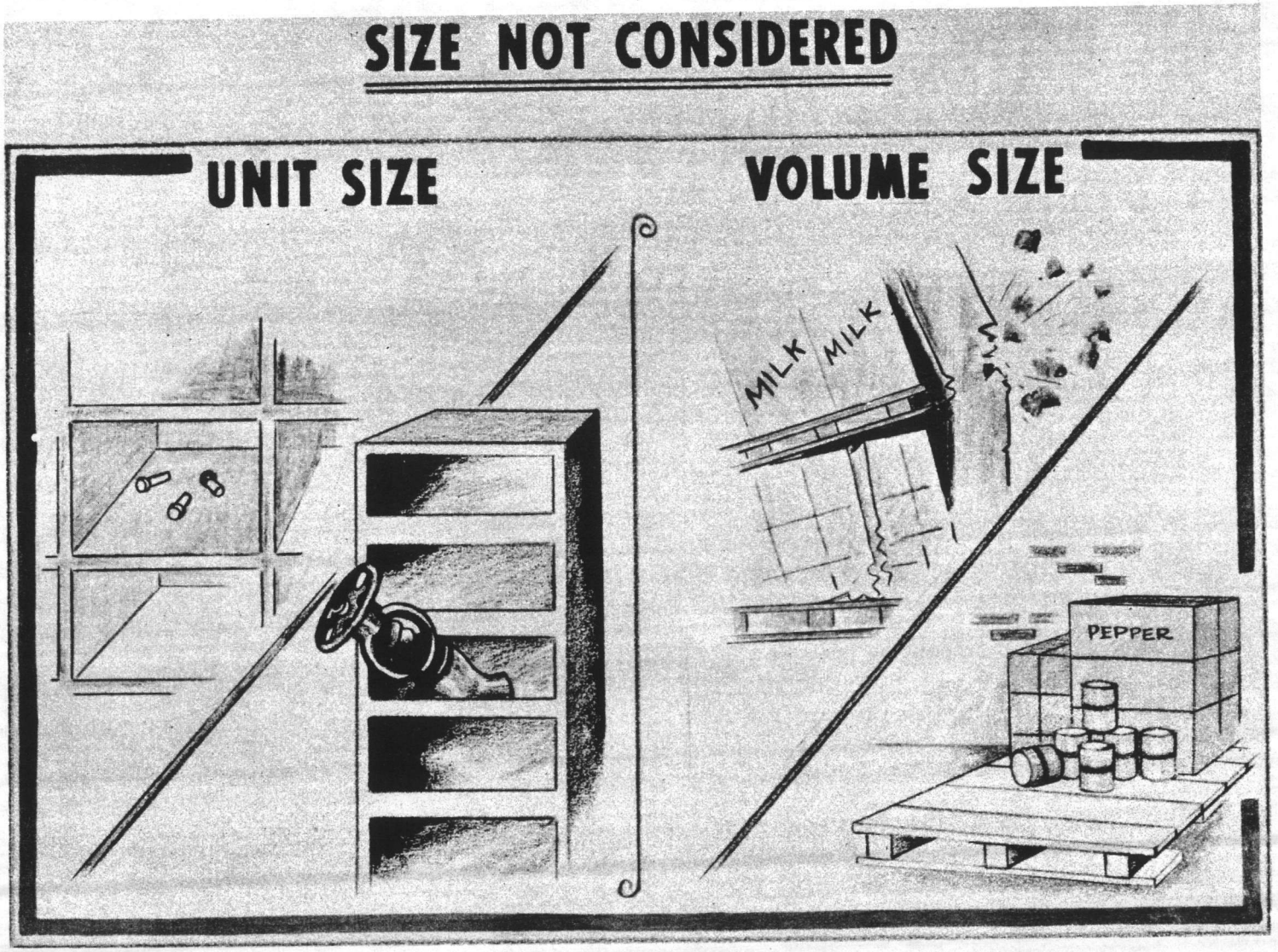
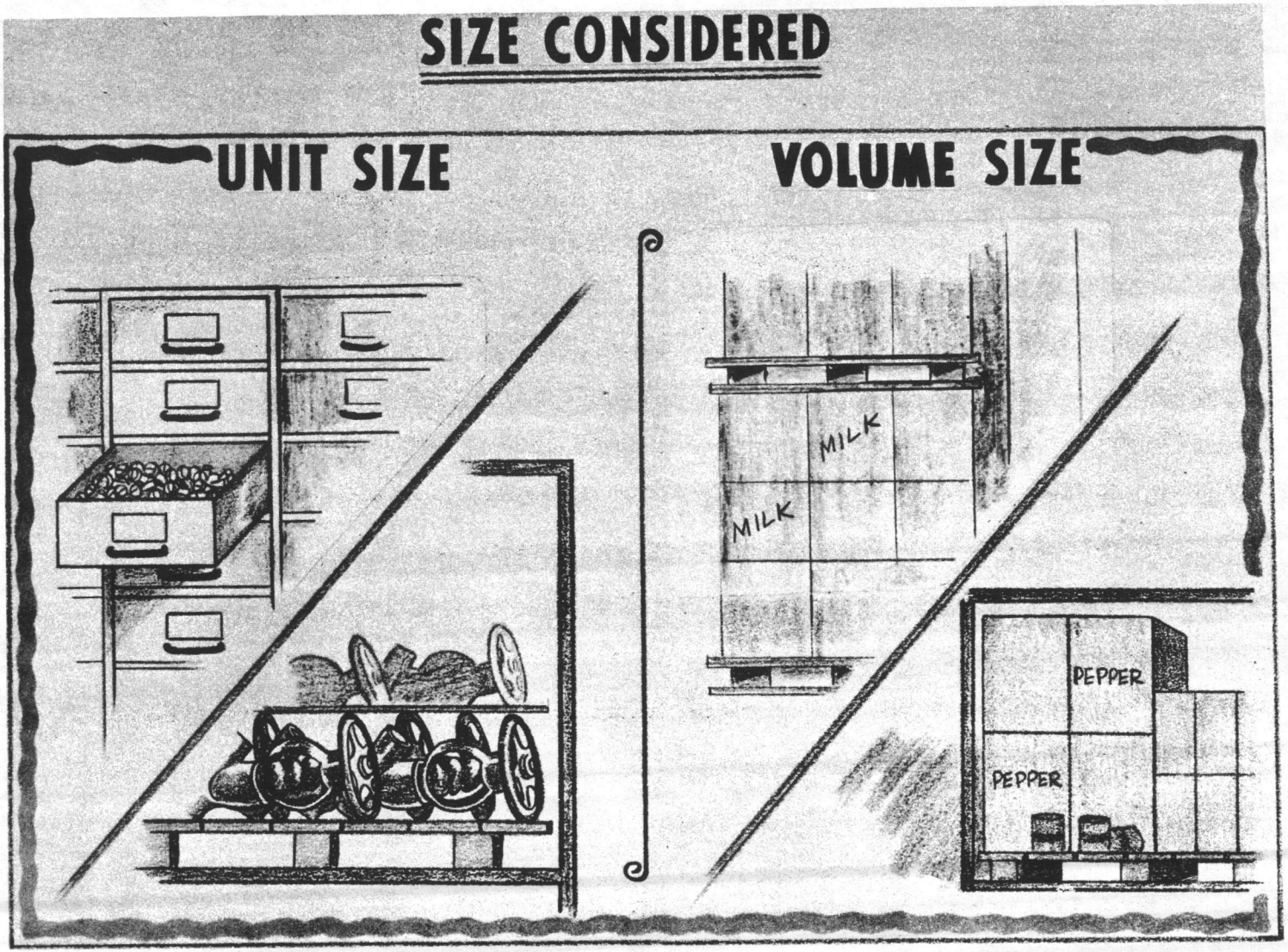
SIZE NOT CONSIDERED

An equally important consideration is size. Size, as used here, is by unit or by volume. An individual item may be small, but many such items add up to a large volume. An individual item may be large, but such items may never be stocked in quantity and, therefore, are relatively small by lack of volume. Whatever the situation, size by unit or volume must be taken into consideration, and only the space actually required should be allocated for any given item.


SIZE NOT CONSIDERED
UNIT SIZE
VOLUME SIZE
MILK
MILK
PEPPER

SIZE CONSIDERED

Here size is given consideration. Because the unit size of bolts is small and the issue rate is in small quantities, a 90 day or more supply is stored in a single shelf box. Milk, by unit of issue, is small, but it is stocked in quantity because of its popularity; therefore, it requires and is allocated adequate space for storage. The valves illustrated are large in unit size, but stocked in low quantities and accordingly placed in pallet racks. Pepper is small in unit size, is a slow mover, and accordingly total stock may be carried in a single rack opening. We must by these examples, provide the space and storage conditions which best suits the item and the activity of the item within the storage mission.

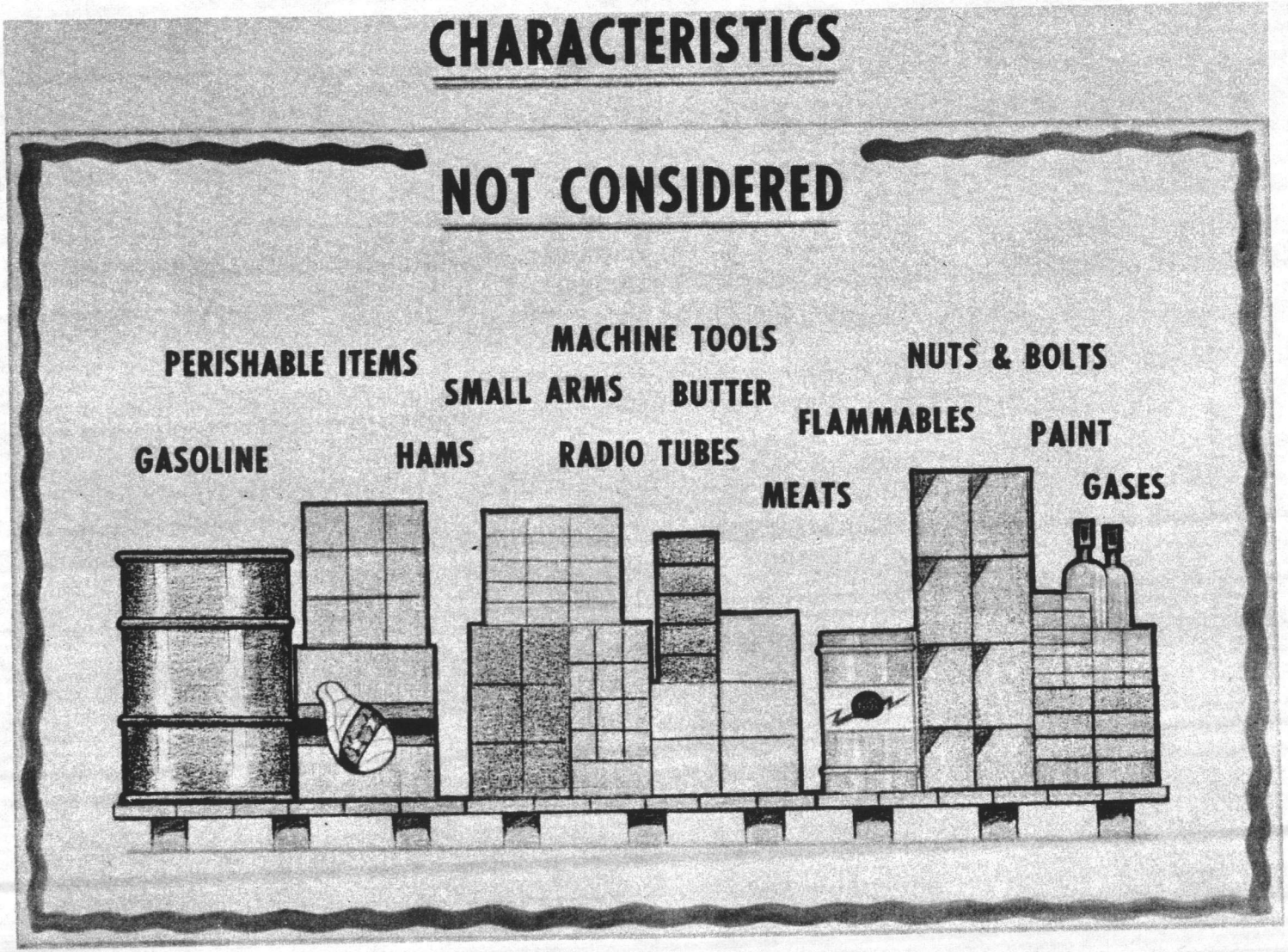

SIZE CONSIDERED
UNIT SIZE
VOLUME SIZE
MILK
MILK
PEPPER
PEPPER

CHARACTERISTICS NOT CONSIDERED

As a final basic consideration the characteristic of a stock item is one that must be given due thought. Such a consideration seems obvious, but regardless must always be borne in mind. The illustration is an exaggerated condition, but emphasizes certain storage errors. Flammable, perishable, and security items are thrown together with general stores stock. Obviously an impossible situation, and one that is not only poor storage, but of more importance, it is dangerous storage.

CHARACTERISTICS

NOT CONSIDERED



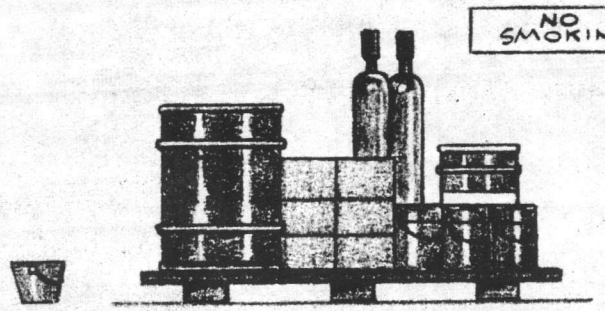
CHARACTERISTICS CONSIDERED

As shown in the accompanying illustration, the question of consideration of characteristics is answered. Flammables are protected and isolated and fire preventive measures are taken. Security items are under lock and key; general commodities are stored in normal manner under shelter; and perishable items are refrigerated. An elementary matter of simply noting the need and fitting the answer to the requirement.

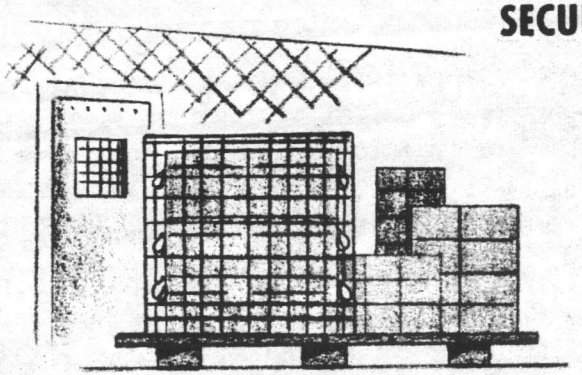
CHARACTERISTICS

CONSIDERED

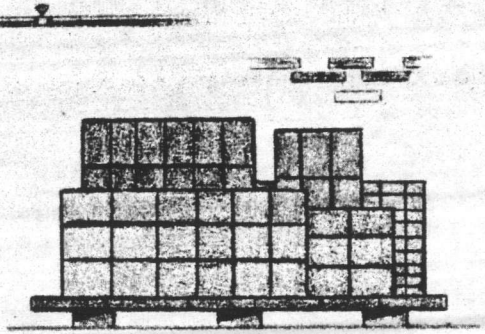
FLAMMABLES



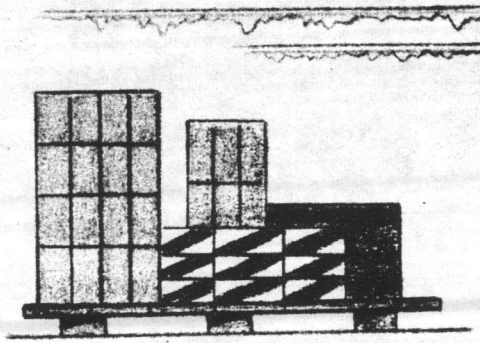
SECURITY



GENERAL COMMODITIES



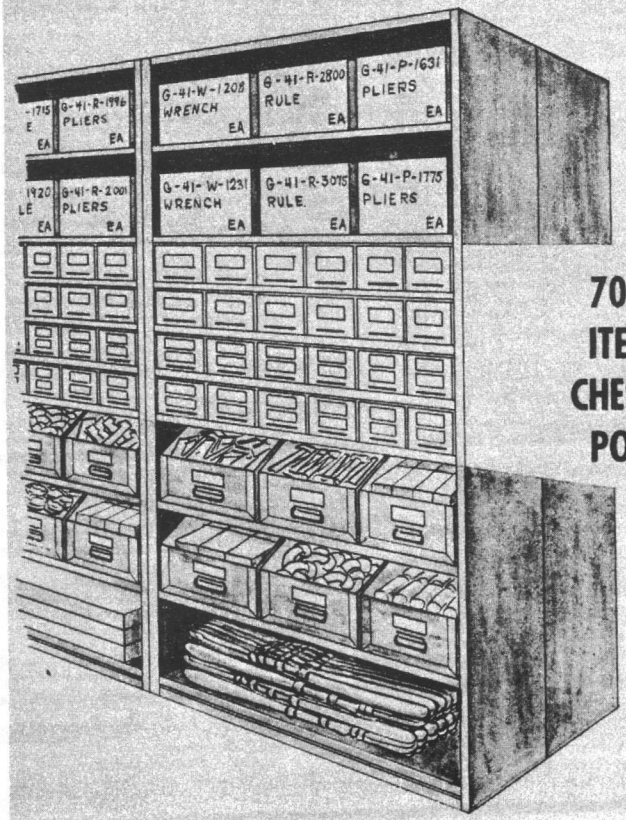
PERISHABLE ITEMS



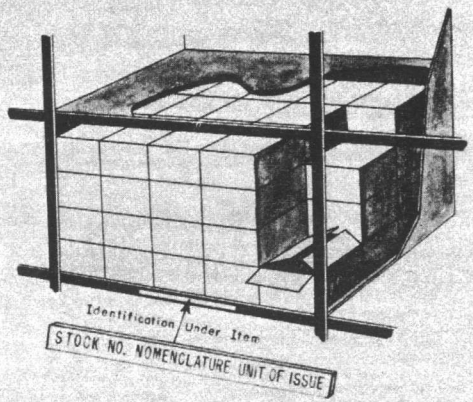
CONVENIENT STORAGE LOCATION

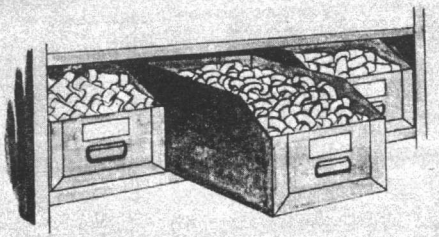
Popularity storage reaches down to all levels of planning where it becomes vertical as well as horizontal. Shelving sections should be erected to accommodate a variety of shelf boxes, so that items of all sizes within a popular group can be stored. By this arrangement 70 percent of the items are in a chest high position and thus help to eliminate stooping and climbing. In addition, adequate amounts of stock must be stored. For most operations, a 90 day stock level is desirable. In some cases this might require two shelf boxes, a shelf, or perhaps several shelves. Adequate retail stock reduces bulk to bin replenishments.

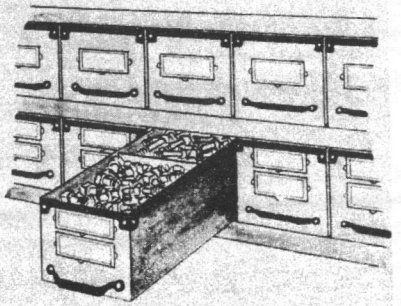
CONVENIENT STORAGE LOCATIONS



70% OF ITEMS IN CHEST HIGH POSITION





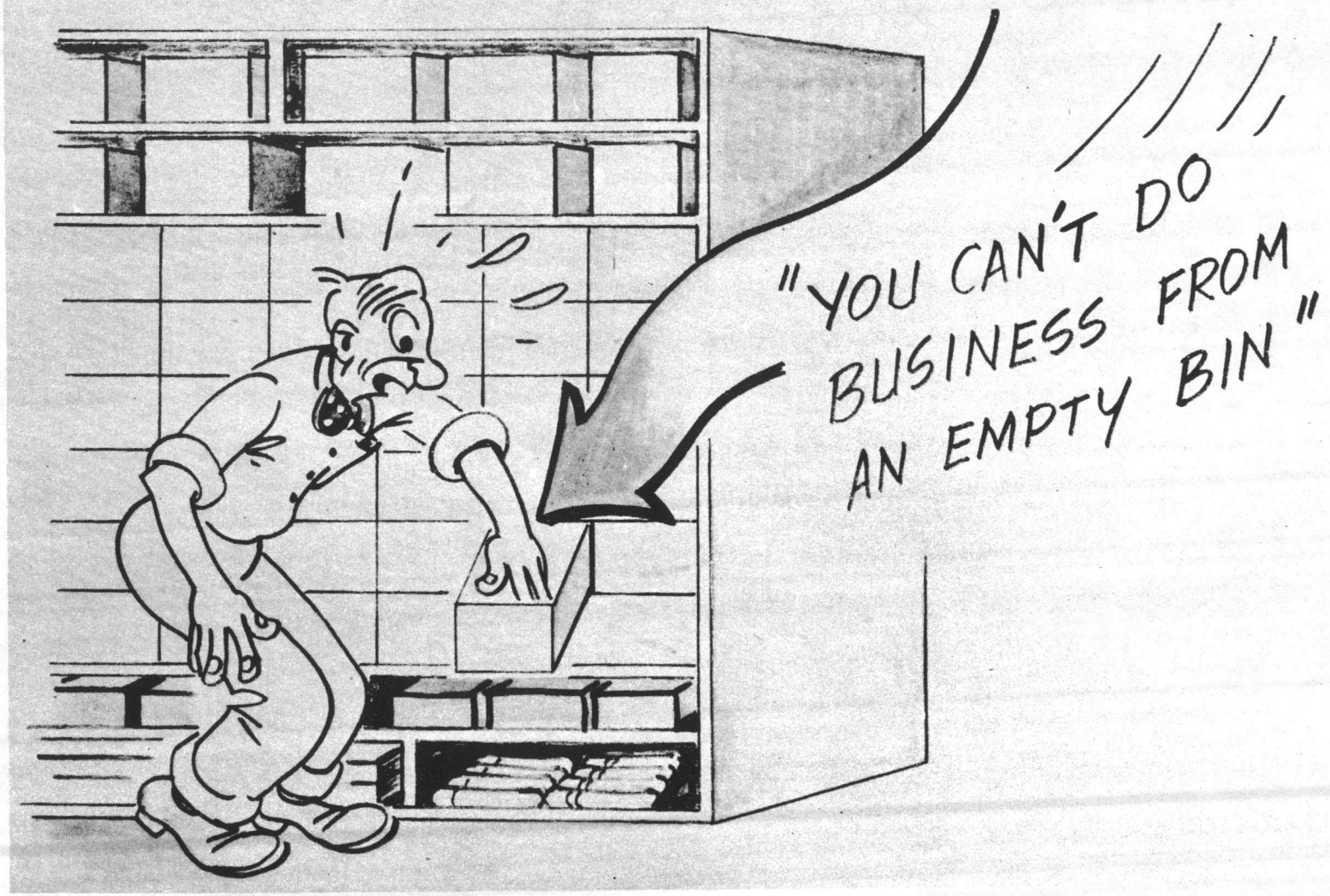


90 DAYS STOCK READY FOR ISSUE

RETAIL REPLENISHMENT

Adequate retail stock reduces bulk to bin replenishments which helps to accomplish rapid and timely issue. You can't do business from an empty bin. Replenishment continuity must be maintained on a routine basis and not an a "wait until empty" basis. Popularity storage provides an efficient retail replenishment procedure and further facilitates replenishment as back-up stocks are located in accordance with popularity.

PLANNED RETAIL REPLENISHMENT PREVENTS THIS



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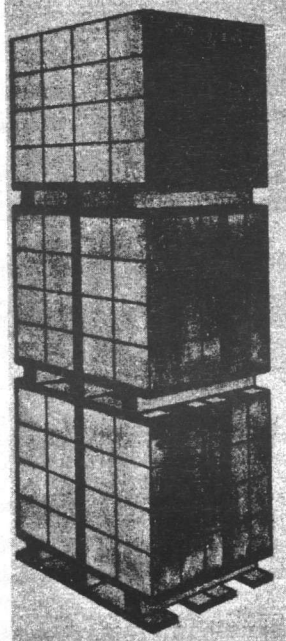
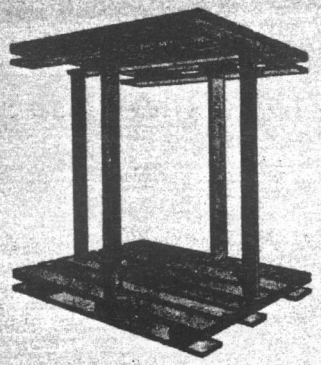
STORAGE AIDS

There are other considerations involved in storage which are more physical in their approach and are used to affect conservation of space, time, and effort. One of the best means to obtain these benefits is in the use of storage aids. Storage aids will permit fragile, unstable items to be stacked to maximum allowable heights. In addition, such aids will protect stock while in storage. Storage aids do not necessarily have to be purchased commercially. BuSandA suggests the storage aids described by function and application in the Storage and Materials Handling Handbook (NAVSANDA Publication 249).

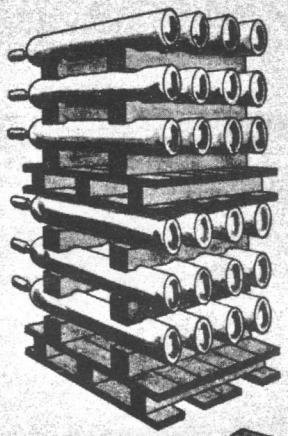
STORAGE AIDS

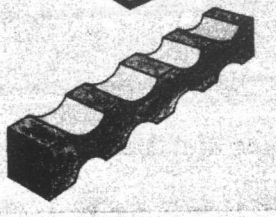
(FOR MAXIMUM SPACE UTILIZATION)

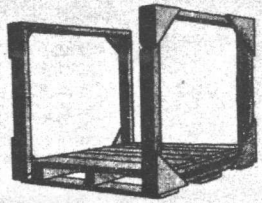




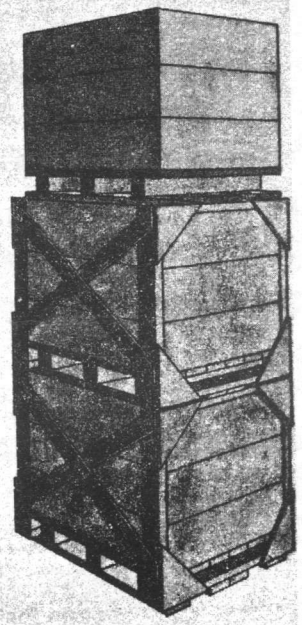
VERTICAL DUNNAGE







PICTURE FRAME



NOTCHED SPACERS FOR HORIZONTAL PALLETIZED STORAGE OF COMPRESSED GAS CYLINDERS

INCREASED CUBE
DECREASED COST

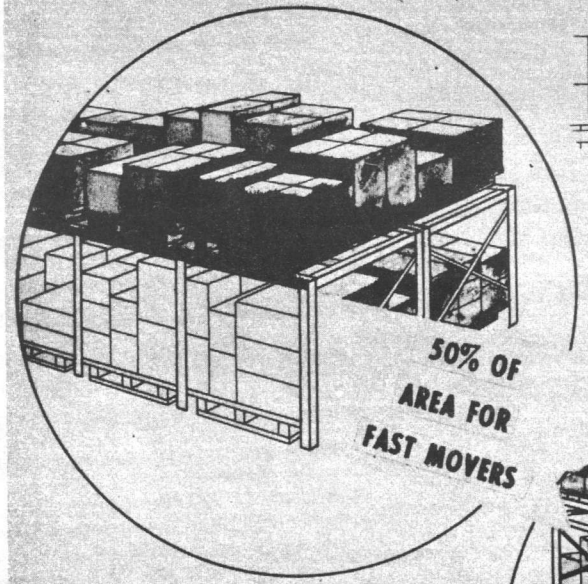
STORAGE AIDS (CONTINUED)
PALLET RACKS

Pallet rack storage is probably the most efficient method presently used for storage of small lot items from a materials handling viewpoint. Additionally, the technological advancements in narrow aisle equipment is increasing the value of this type of storage. Rack storage, where stock level is less than one stack, is unexcelled for speed of receipt and issue and the value of space lost is regained through efficiency of operation. In application, the popularity concept is carried into rack storage areas in the manner shown in the illustration. Ninety percent of the average issue activity is in 15 percent of the items. Rack storage is ideally suited for this rate of turnover as the bottom openings, where one stockpicker can use manual equipment, are utilized for fast moving stock and considerable savings in time, labor, and effort obtained. Popularity storage is vertical as well as horizontal; only slow movers should be in upper rack levels.

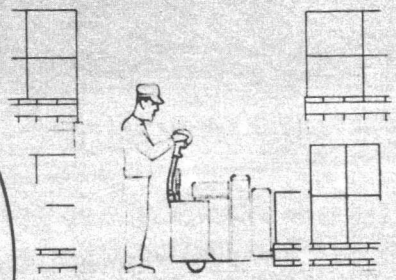
STORAGE AIDS

PALLET RACKS

GENERALLY 90% OF THE ACTIVITY
IS IN 15% OF THE ITEMS

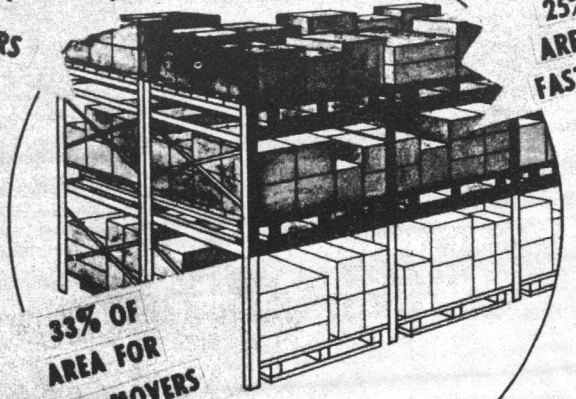


50% OF
AREA FOR
FAST MOVERS

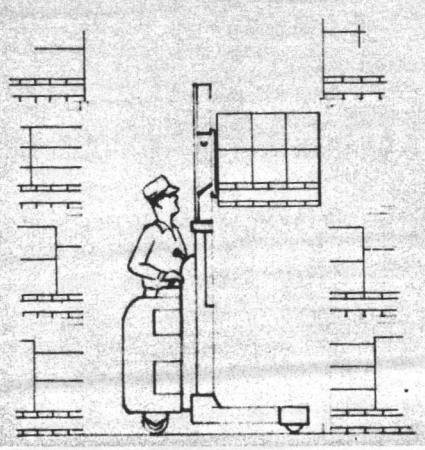


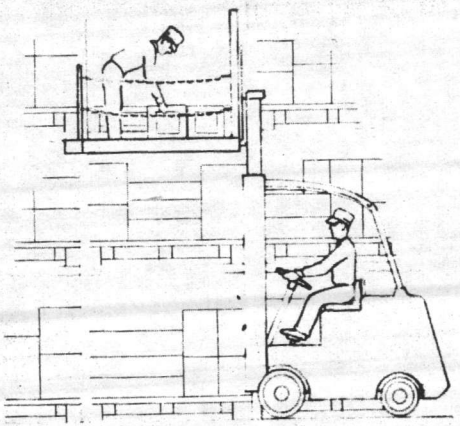
INCREASED CUBE WITH
MAXIMUM ACCESSIBILITY

25% OF
AREA FOR
FAST MOVERS



33% OF
AREA FOR
FAST MOVERS





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TYPICAL AISLE REQUIREMENTS

Here, graphically portrayed, is the relative (not necessarily minimum) aisle width requirements for various types of materials handling equipment. Proper selection of equipment is a matter of extreme importance as aisle widths must be maintained at a size required to accommodate their operation. The aisle widths specified herein, are not to be construed as the absolute limitation for all operations. Conversely, they represent the most conservative dimensions under which most operations may be conducted. In a fast moving operation, where the rate of production is of greater importance than the conservation of space, aisle widths, with the approval of the commanding officer, may be increased to that width necessary to meet operational requirements.

TYPICAL AISLE REQUIREMENTS