

3.—*Tier*: A horizontal section of a column, generally of bins, piled directly above unit areas. Each bin would be located in a certain tier and would be identified in addition to the unit over which it was placed. (see Figure 2).

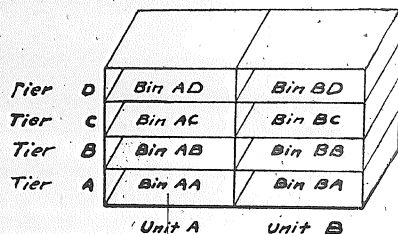


FIGURE 2

Two columns of bins four tiers high.

4.—*Row*: A straight line of bins of units. A row is generally limited on the ends by the limits of the section, and on the sides by an aisle or an adjoining row or the border of the section. Rows may be cut at right angles by aisles. (see Figure 3).

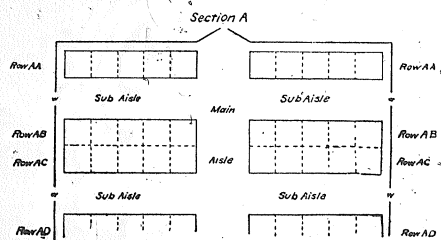


FIGURE 3

Rows (AA, AB, etc.) at the end of a section (A) and cut by a main aisle. Dotted lines mark units.

5.—*Sections*: A group of generally parallel rows. Generally, difference in direction (see Figure 4), or in uniformity of rows (see Figure 5) will determine different sections. A section may be bounded by walls, aisles or only imaginary lines, but its separate identity will be kept clear and distinct.

6.—*Series*: A line of two or more sections. The separate identity of each series like that of each section will be kept clear, preferably by some natural boundary such as a wide main aisle in

a building, or a roadway out of doors. It may be compared to a line of squares on a checker board, if each square represented a "section."

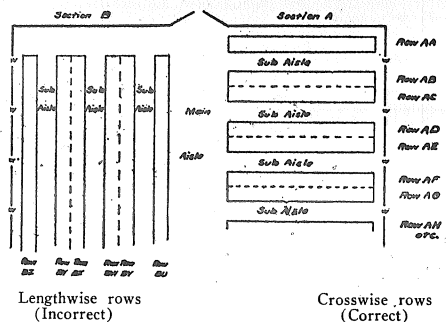


FIGURE 4

Separate sections in one room due to difference in direction of rows. This figure also contrasts the incorrect lengthwise arrangement with the correct crosswise arrangement of rows. (See III, B, 2).

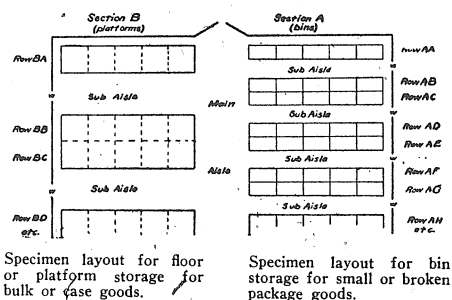


FIGURE 5

Separate sections in one room due to lack of uniformity of rows.

7.—*Field*: A group of generally parallel series. A field corresponds on a larger scale to a section. The separate identity of each of several fields will be kept clear whether by natural or artificial boundaries, or by conspicuous signs. A field may be compared to a whole checkerboard, composed of several "series" of "sections."

8.—*Range*: A straight line or row of fields. A range corresponds on a larger scale to a series of

sections or a row of units. Its boundaries should be well defined so that its identity may be kept distinct.

9.—*Tract*: A group of generally parallel ranges. A tract corresponds on a larger scale to a field or section. Its boundaries should be clearly defined so that its identity may be kept distinct.

10.—*Location Symbol*: A combination of letters or figures indicating a particular location.

#### General Example.

On the basis of a unit of 1 square yard:

A row of 20 such units would comprise 20 sq. yds. A section of 20 such rows would approximate 800 sq. yds. or 1-6 acre (including aisles).

A series of 20 such sections would approximate 31-3 acres.

A field of 20 such series would approximate 66 acres or 1-10 sq. mile.

A range of 20 such fields would approximate 2 sq. miles.

A tract of 20 such ranges would approximate 40 sq. miles. 20 such tracts would approximate 800 sq. miles.

Any particular square yard of storage space in an area of 800 square miles can then be designated by seven letters. Thus, the symbol BLANKET would indicate tract B, range L, field A, series N, section K, row E, unit T. A particular tier in a column of bins over a unit would be indicated by the addition of another letter.

## II. FUNDAMENTALS

### I. MARKING

1.—*Consistency*: the building up of the marking system scheme so logically that the process of locating any one item will be consistent with that of locating any other.

2.—*Standard base lines or points of reference* from which to begin any series of location symbols. These should be reasonably permanent. As a corollary to this the boundary lines of all divisions of storage space should be clearly marked.

3.—*Standard directions* in which to build up any series of location symbols.

4.—*Standard unit storage area*, preferably rectangular, and capable of definite designation by a location symbol.

5.—*A location symbol for each unit area*. The symbol should be short, easily understood and remembered, and in itself a guide to the location designated.

6.—*Permanence*. Location symbolizing should be done in such a way that in case of expansion the existing symbols will be subject to the least change.

### 2. LAYOUT

1.—*Standard unit storage area*—the basis for entire layout. In planning areas, fractional parts of the standard unit are to be avoided, except where bins are used. Bins are frequently smaller than the standard unit (preferably an even fraction of it), and space for them will have to be planned accordingly. Standard units afford flexibility.

2.—*Crosswise rows* rather than lengthwise are preferable in oblong sections. In an approximately square section, the rows should generally be at right angles to the direction of greatest traffic.

3.—*Parallel rows* in any given section. Rows in different directions, as at right angles to each other, or lining all four walls, are to be avoided as far as possible.

4.—*Straight lines and right turns* for aisles and rows—city block scheme. Uniformity of plan will increase economy of space.

5.—*Aisles*, width, location and arrangement, governed by necessities of use. Consideration will be given to proper width of main aisles for two-way passing and sub-aisles for one-way passing. Where possible, floor space along a wall should be planned for storage rather than for aisles.

6.—*Expansion*—direction of normal and most advantageous expansion is to be considered in planning layout.