

COLD STORAGE PLANT.



HE experiments with cold storage were made in New York eighteen years ago, and developed into a commercial industry three years later, says Garden and Forest. Since then the knowledge of scientists and inventors has been combined with the practical experience and capital of warehousemen, until now the business of cold storage and freezing is a considerable factor in the market supply of the world. At first cold air for refrigerators on the ground floor was forced to storerooms above, but this plan was soon given up for the system, still in limited use, of massing ice at the top of the building, so that a current of cold air is drawn by gravity through shafts to the lower floors. By this system only cold storage at 38 degrees and above is possible, while actual freezing is necessary for many classes of goods.

One of the nine large cold storage warehouses in New York uses a system of metal pipes ten inches in diameter, which encircle storage rooms. These begin below the "charging floor," the upper story of the building. Here ice is broken by hand power, the sectional trap doors are lifted, and the pipes set close beside each other and extending down on the floors below, are closely packed with ice and salt. The drainage from these, which is collected on the second floor, is utilized to cool rooms on the ground floor to a temperature of 40 degrees. This method of cold storage is especially adapted for holding comparatively small amounts of perishable goods, without the cost of expensive machinery.

The system most generally in use, however, is that of producing intense cold by the evaporation of ammonia, and one of the largest and best-equipped cold warehouses uses the so called "direct expansion" system, which it is not necessary here to explain. In this immense establishment which comprises in two warehouses 1,500,000 cubic feet of cold storage and freezing space, eight boilers, each of 75 horse power, are used in the smaller building alone.

The engines, compressors, and all parts of the machinery are in duplicate, so that if one set is disabled the other set of machinery may be started and the requisite temperature throughout the building steadily maintained. Whatever method used, the effect aimed at is the reverse of steam heating, that is to grasp and carry heat out of the rooms which it is desired to refrigerate. The brine which is produced by the ammoniacal gas process, and conveyed throughout the building in main pipes and smaller coils, leaves the manufacturing room in the basement at zero and returns from the circuit only five degrees higher. All this apparatus is especially constructed: buildings cost money, and at the present time more than \$4,000,000 are invested in cold storage in New York alone.

The first floor of these great buildings is usually occupied by offices and