

- (4) To enable the farmer to market his products at will;
- (5) To supply the household refrigerator;
- (6) To provide for home-made ice cream and other refreshing deserts;
- (7) For use in case of sickness.

The foregoing statements comprise the chief benefits of cold storage to our country and its people; and practical farmers cannot fail to see that they may have a large share in these benefits, if they will make use of it so far as it is possible on their farms, or by co-operative cold storages for the handling and marketing of their perishable products. Each year seems to introduce some new use or application of cold storage in commerce, but in connection with the farms of our country its use is not developing as rapidly as it should. It is believed, however, that it will become more general on the farm in the very near future, as its value is more generally and fully understood.

SOME PROPERTIES OF ICE.

Ice is a crystalline solid formed by the freezing of water. Absolutely pure and distilled water under standard atmospheric pressure freezes or solidifies at a temperature of 32 degrees Fahrenheit or Zero Centigrade. The freezing point of a substance is influenced by the presence of salts, by solids or any foreign matter, and also by pressure to a very slight degree. Common salt brine at its maximum density will not freeze until a temperature of 7 degrees below zero, Fahrenheit, is reached, and a certain strength of calcium chloride brine will not freeze even at 50 degrees below, Fahrenheit, and in the case of fruit juices the freezing point is about 5 degrees below 32, because these juices are not pure water, but a solution of substances in water. Ice always forms on the surface of a body of water and remains there because it is lighter than water. Its specific gravity is .92, that is, its weight is approximately 9-10 of water. Water in freezing expands about 1-10, therefore 1 cubic foot of water produces 1 1-10 cubic feet of ice. A cubic foot of water weighs 62 1-2 lbs.; a cubic foot of ice weighs 56 1-2, or about 58 lbs., and 1 ton of solid ice occupies 35 or 36 cubic feet of space; but as stored in the ice-house it is reckoned that 42 to 50 cubic feet are required for the storage of a ton. The temperature of ice in the very cold weather drops below the freezing point, and twice as rapidly as the water did before freezing, because the capacity of ice for heat is only one-half of what it is for water. As the temperature drops below zero, ice contracts, and this is why large bodies of ice crumple and crack in the very cold weather. As to the strength of ice, it is calculated by Hiles in his book, "The Ice Crop," that "two inches in thickness will usually bear a man, four inches a horse, and ice five inches thick is generally safe for a team of