

## PART IV

### ENGINEERING GEOLOGY

#### CHAPTER XIX

#### WATER SUPPLY

FRESH water is one of the most essential of human needs. The people on some South Sea Islands have no means of catching rain, the wells are brackish, coco-nut milk is the usual drink, and, according to Admiral Wharton, they enjoy the luxury of fresh water only when it can be skimmed off the lagoons after heavy rain. As a rule fresh water is a primary need, and as people become more fastidious as to its quality and extravagant as to quantity, competition is keen for the unappropriated supplies.

THE THREE SOURCES OF WATER—METEORIC—Most fresh water is provided by rain and is therefore said to be meteoric. Rain is mainly due to evaporation from the sea. The moisture in the air is condensed and either falls as rain or is deposited on cool surfaces as dew. The pre-historic dew-ponds of the South of England were attributed to dew—"Only the dew-pond on the height, unfed, which never fails"—but they are fed by rain-water which is protected from percolation and evaporation by the structure of the pond (E. A. Martin, *Dew-ponds*, 1915). The average annual rainfall of the British Isles is estimated by Dr. H. R. Mill at about 40 inches; and as 1 inch of rain provides 22,622 gallons per acre, 40 inches on an acre amounts to 900,000 gallons. The area of the British Isles being 77,683,084 acres, and the population about 44 million, the rain supplies each inhabitant with  $1\frac{1}{2}$  million gallons a year, or 4000 gallons a day.

Rain, as a product of distillation, might be expected to be chemically pure; but it washes from the air dust, dirt,