

on OC would have separated. But, at 15° C. this sodium sulphate which separates as decahydrate would actually have taken with it 1.27 times its weight of water and this would increase the concentration of the sodium chloride so that the composition of the liquid phase actually attained may be taken as D". On further concentration, Na₂SO₄ · 10H₂O could separate until point B' is attained but only cooling takes place in the eliminator pans and not solar evaporation. At D" therefore the brine is run off from the deposited Na₂SO₄ · 10H₂O into the crystallising pans. Here the temperature rises and, on the Na₂SO₄-NaCl curve at 37.5°, the point attained (assuming no separation of solid phase to have taken place) will be E on the line joining O to D" and produced to cut the curve AB.

The effect of this is that the solid phase in equilibrium with the solution, abruptly changes from Na₂SO₄ · 10H₂O to NaCl. Now solar evaporation can proceed, the concentration of the liquid phase increasing along the composition curve EB with deposition of sodium chloride until composition B is attained. At this point Na₂SO₄ would also separate. Before this happens, either more brine must be added from the eliminators or the mother liquor must be run away so that contamination of the salt crust may be obviated.

FORMATION OF ROHR

In the process as practised for many generations, much decahydrate obviously separated at the bottoms of the pans. The

temperature subsequently rose beyond that at which Na₂SO₄ · 10H₂O can exist and this salt lost water and became converted into anhydrous salt, assisted by the presence of the sodium chloride. The anhydrous sodium sulphate was left at the bottom of the pan and the sodium chloride which may have been deposited with the Glauber's salt passed into solution and diffused into the supernatant brine eventually adding its quota to the salt crust. The finely divided sodium sulphate slowly changed into the larger crystals obtained on excavation at a later stage. This process continues adding its quota to the bed annually, and the high percentage of sodium sulphate in the rohr, contaminated by wind-borne dust and sand, is accounted for on a scientific basis.

PAPRI

After crystallisation is over and the salt removed, the residual mother liquor is left in the pans to dry out and is recovered as "pan scale" or "papri", *vide* Table I.

Theoretically, the proportion of sodium chloride and sulphate in "papri" should correspond with that in the liquid phase at the transition point at the final temperature attained but, owing to the conditions including variable temperatures under which the drying out occurs, such a theoretical composition for papri cannot be expected and the widely differing compositions recorded are not anomalous.

1. *Records of the Geological Survey of India* (in the press). 2. I. B. Audea, B. C. Gupta, P. C. Roy and Mehdi Hussain, *Ann. Geol. Surv. Ind.*, 1942, 77, 36; 42.

OBITUARY

Prof. Richard Willstatter

READERS of *Current Science* will note with regret the death of Prof. Willstatter, one of the great masters of organic chemistry, on August 3, 1942, in Switzerland, a few days before his seventieth birthday, and three years after narrowly escaping a concentration camp when he was at Munich.

Starting with his brilliant work on alkaloids, he passed on to a variety of problems on catalysis, etc., and thence to intensive studies of natural colouring

matters, principally chlorophyll, carotenes, and anthocyanins. The last phase of his work was another series of intensive investigations on the isolation, reactions and constitutions of enzymes, carried out with a brilliant band of collaborators. Willstatter was the first to develop the technique of selective adsorption in the preparation and separation enzymes. He was awarded the Nobel Prize in 1920.