combination of the dissociated elements and the condensation of the compounds formed from them possible at a much higher temperature.*

At such a temperature the previously molten rock had become rigid, and of course the condensed compounds would be deposited on its surface, and when refusion of the rockcrust occurred, as it must have done over large areas, large quantities of the deposited compounds would be diffused through the superficial crust. When the cooling of the atmosphere and globe progressed until the temperature of the former was 370°C, the first condensation of water took place on the rock surface. The atmospheric pressure, according to Joly,† must have been about 270 times what it is now. According to Clarke's‡ estimate of the relative values of water and carbon dioxide to that of the solid portion of the globe, the atmospheric pressure before the first condensation took place, was about 247 times what it is at present. Joly affirms that at 370°C a pressure of 190 atmospheres would produce a condensation of water, and, as the pressure was much higher, condensation would go on till the pressure fell below 190 atmospheres. This would entail rapid evaporation, for at many points the temperature of the rock surface would be so high that the water would condense only to boil away immediately. This would collect the salts deposited on the surface in masses, and it would, as in the case of the chlorides of magnesium, iron and aluminium, convert these into oxides of these metals and free chlorine, which, uniting with hydrogen, would form free hydrochloric acid. The other chlorides, namely, those of sodium, potassium and calcium would be unaffected. The ferric chloride would in some cases be volatilized but to be recondensed.

This condensation of the water vapour, and the re-evaporation would occur a countless number of times before there would obtain a permanent body of water on the globe. Where such first occurred there would be a lower temperature than elsewhere, and in consequence further condensation of water vapour would occur there also. The result would be the first ocean basin, the weight of the body of water acting on the

* The volatilization points of potassium, sodium and magesium are 667°C, 742°C, and 1100°C respectively. The melting points of calcium and aluminium are unknown. The melting points of certain sodium and potassium compounds are, according to V. Meyer & Riddle (Ber. d. d. Chem. Gesell. Vol. 27, p. 2,443,) as follows:

Na Cl ..... 851°C.	K Cl ..... 766°C.
Na Br ..... 727°C.	K Br ..... 715°C.
Na I ..... 650°C.	K I ..... 623°C.
Na_2CO_3 ..... 1098°C.	K_2CO_3 ..... 1045°C.
Na_2SO_4 ..... 843°C.	K_2SO_4 ..... 1073°C.

† *Op. cit.*

‡ F. W. Clarke, The Relative Abundance of the Chemical Elements. Bulletin U. S. Geol. Survey No. 78, 1891.