

ON THE DISTRIBUTION OF RAIN (FROM TWENTY YEARS' OBSERVATIONS).

BY THE LATE DR. SMALLWOOD, OF MONTREAL.

The geographical distribution of rain over the surface of the globe may be said to be proportioned to temperature, its humidity, to the tides, or fluctuation in the atmosphere as indicated by the barometric variations, to changes of temperature, and to the configuration of the earth's surface. The conditions necessary to the formation of rain are the presence of clouds (although some observers have recorded rain falling from a cloudless sky), to that of the cirrus (or snow cloud) at a high elevation, and at a low temperature (some  $40^{\circ}$  below zero), together with the cumulus (or vapor cloud.) These, co-mingling by moist air currents, being forced into the higher region of the atmosphere by colder, less humid, and consequently heavier currents from beneath, form together the nimbus (or rain cloud). These induce a change in temperature and electrical action, conditions necessary to produce rain. This is carried by clouds and currents of wind, and distributed over the lands of our continents, thus watering the earth, supplying vegetation, and the various wants of mankind, and returning again by the rivers to the sea. From the surface of the ocean pure aqueous vapors are constantly ascending to supply the unceasing requirements of the organic and inorganic world.

Rain clouds are attracted to certain localities more than to others, for it was shown that at Ulleswater (England) the great flood of 1866 caused a great increase in the amount of rain, owing to its condensation by the mountains in that district. But beyond the formation of the surface of our globe, there are other conditions which supply natural conductors, such as the pointed extremities of the leaves of trees and of plants. May not our primeval forests have given rise to a different meteorological condition of a former world? The great coal formations may be taken as an example in illustration of this.

Many countries have been made sterile by cutting down indiscriminately the whole of the trees. Such, indeed, is actually the case in the recent deserts of Syria, Chaldea and Barbary. The oases of the desert are nothing more than a few trees purposely left as a shade for the weary traveller.

The value of several estates in the West Indies has been greatly diminished by the cutting down of the trees upon them, and the rain fall over large regions of our own continent is much diminishing, owing, no doubt, to the large and extensive clearances of our forests; while, on the other hand, the rain-fall in the Upper Province of Egypt has been increased tenfold by the planting of twenty millions of trees by Mehemet Ali.

Until two years ago, rain in that province was unknown; but in twelve months ending April last, there were actually fourteen days on which rain fell, and later there fell a heavy shower—a phenomenon

which  
ing to

In  
shores  
but no  
cans, t  
are on  
althoug  
the agr  
springs  
rapidly

Tho  
vapor  
watered  
these fa  
the dim  
the ext  
are reso  
and son

It w  
fact tha  
of the a  
to proo  
always  
showers  
are of n  
the baro  
in coun  
degree  
tendenc  
larities  
soil play  
concave  
exposed  
districts

It is  
the Rive  
Sahara  
and Chi

Days  
the regio  
ing to 2

The  
Hills, t  
annually  
real in o

These  
Below is