

pure, and the sky of the most beautiful azure! The drops are not very numerous, but they are larger than the greatest rain-drops in our climates. The fact is certain; we have the evidence of M. von Humbolt that he has observed the occurrence in the interior of continents, and Captain Beechey states that he has witnessed it in the open sea. With regard to the circumstances on which such a singular precipitation of water depends we are entirely ignorant. In Europe we sometimes see during the day, in cold and perfectly clear weather, small crystals of ice falling slowly from the air, their size increasing with every particle of humidity they congeal in their passage. Does not this approximation put us in the way of obtaining the desired explanation? Have not the large rain-drops been at first, in the higher regions of the atmosphere, small particles of ice excessively cold; then have they not become, as they descended, large ice-flakes by means of accumulation; and when lower still, have they not melted into drops of water? It will be readily understood that the only object with which these conjectures are brought forward in this place is, to show in what point of view the phenomenon may be studied, and to stimulate our young travellers, in particular, to observe carefully if, during these singular rains, the region of the sky from which they fall presents any traces of halo. If such traces are perceived, however slight they may be, the existence of crystals of ice in the higher regions of the air would be demonstrated.

In the present day there is scarcely any country where meteorologists are not to be found, but it must be confessed that their observations are usually made at hours selected without proper discernment, and with instruments either inaccurate in themselves, or improperly placed. It does not now appear difficult to deduce the mean temperature of the day from observations made at any hour; thus a meteorological table, whatever may be the hours of observation in it, may be possessed of value, by the mere condition that the instruments employed will admit of comparison with a standard barometer and thermometer.

Ibid.

On the Time of Rotation of Jupiter. By F. G. AIRY, Esq., *Astronomer Royal.*

Kepler inferred, from a presumed connexion between the time of the rotation and that of its first satellite, that Jupiter's time of rotation was less than 24 hours. Cassini was led from his own observations in 1664-5 to conclude that it was less than 14 hours. Subsequent observations in 1665 led him to the time of 9h 56m 0s. This is the period adopted by Laplace, and all subsequent writers.

In December, 1834, Professor Airy took advantage of one of the two remarkably black and well defined spots which appeared near the lower belt of the planet, to make a series of observations, with a view to the determination of the period of Jupiter's rotation with greater accuracy. These observations extend over the period from December 16th to March 19th following: and from them, by methods which he details, he finds that the true period corresponding to them is 9h 55m 21.3s, mean solar time.

This close approach (differing only 38.7 seconds) to the period determined by Cassini, will seem remarkable enough to those who estimate by numerical differences the degree of approximation, without considering the unit by which those differences are measured: but to those who are accustomed to look upon an inquiry in all its details, and under careful mathe-

mathematical discipline, it is obvious that this small quantity may be in reality a comparatively great one. It is so in the present case.

The time of the visibility is less than five hours; and the period of observation extending over 225 revolutions, from which Mr. Airy deduced his period, it would make 225×38.7 seconds, or 2h 25m 0.75s, or about half the period of the visibility of the spot itself. The period then assigned by Cassini is, as the author remarks, incompatible with the observations recorded and discussed in his communication.

Ibid.

Artificial Production of Metallic Sulphurets, &c.

The Geological Section of the "British Association for the Advancement of Science," having received as novelties some communications on this subject, we think it due to M. Becquerel to state, that he obtained by this means a very considerable number of substances, above seven years since. His apparatus consisted of a tube bent into a syphon shape U, the curved portion being filled with moistened clay, (argile bumectée,) and the legs with solutions of the substances of which combinations were sought, and connected by a wire. The *crystalline metallic* bodies which he obtained were,

Metallic copper.
Red oxide of copper.
Vitreous copper.
Grey copper (fahlertz.)
Metallic silver.
Vitreous silver.
Chloride of silver.
Sulphuret of lead.
Carbonate of lead.
Sulphate of lead.
Oxy-sulphuret of antimony (kermes.)

Besides a considerable number of alkaline sulphurets, chlorides, bromides, and many double sulphurets, salts, &c.

Full details will be found in M. Becquerel's work "de l'Electricite et du Magnetisme, Tome i., 332-350."

Rec. Gen. Sc.

Analysis of Tobacco. By. BERTHIER.

Equal weights of several different varieties of Tobacco, having been carefully dried and weighed by the Deputy Inspector, at the Royal Tobacco Factory, each portion was converted into ashes, and then put into the hands of M. Berthier for examination. The ashes were all perfectly white and contained neither iron nor manganese.

The relative quantities of soluble matters in the several roots were: Havana .382; Virginia .502; Maryland .600; Alsace .313; North of France .370; South of France .265.

Of alkaline salts in the different ashes the following were the proportions.

	Havana.	Virginia.	Maryland	N. France	S. France	Alsaco.
Carbonate of potash,	.610	.845	.860	.450	.000	.455
Sulphuret of potash,	.200	.047	.044	.181	.308	.455
Chloride of potassium,	.190	.108	.096	.369	.692	.090
	1.000	1.000	1.000	1.000	1.000	1.000