Periscope.- Meteorology.

As soon as the sun aplasts longer than its maximum. proaches the horizon it again begins to advance, increases therefore, relatively greater than with the south winds; sensibly at the moment of sunset, goes on increasing during the difference of the two numbers obtained by Schubler and twilight, and attains a second maximum an hour and a half Hemmer are due to local circumstances and climacteric or two hours after sunset. Then vapours form in the lower conditions, which are not the same. To sum up: their regions of the air, damp increases, and the night-dew falls. This second maximum usually equals that of the morning, of the rains are positive, whilst they are neg-tive in anbut it continues a shorter time, and the electricity decreases slowly till the next morning."

"Electricity of Dew and Fogs .- When the vapour of water is precipitated into the atmosphere, a greater or less bler, Tralles, Volta, and others, explain the phenomenon by quantity of positive electricity becomes free. However, the evaporation of drops of water : when they traverse dry whether the augmentation of electric tension is due to the damp air permitting the more distant particles to act on the positive electricity, whilst the drop remains in the negative electrometer, or whether the electricity becomes free state. This hypothesis is confirmed by the fact of obserthrough the precipitation of vapours in the same manner as vation, that in the neighbourhood of cascades, where a great latent heat, is difficult to decide. very strong when the dew is deposited; if this is abundant, of negative electricity, more or less marked. Several exthen the maximum of the diurnal period takes place to-periments made by Belli render this hypothesis improbable. wards evening. The signs of electricity are also very If we insulate an artificial fountain, such as Hero's foun-marked during fog; all observers have acknowledged it, tain, and place it, in fine weather, in an open place, where and de Saussure affirms that he never saw a fog without a the atmospheric electricity is strong, the drops will be notable development of electricity. In general, it is posi-negative and the vase positive : if the experiment be retive and stronger in winter than in summer, according to newed in dry weather, on points where there are no signs Schubler's observations. The electricity is stronger as the of atmospheric electricity, there will be no electricity either fogs are thicker; they rarely give sizes of negative election the vase or the drops, although the evaporation is the tricity: yet these phenomena are too little known for me same: it is not then to evaporation, but to induction, as to be able to enter into further details.

during the formation of fogs, deserves to be submitted to it acts by induction ; the fountain is positively electrised new experiments. We must not forget that but few ex- below, and negatively above; but, as soon as the air is periments on atmospheric electricity exist. months, meteorologists do not observe the instruments. If ists, and there is no trace of electricity. It is the same a storm arises, or rather, if the straws of the electrometer with a cascade; it is negatively electrised above, positively diverge strongly, then they look at them and note their in-below; the vitreous electricity flows into the earth, the dications. But we cannot conclude from these indications other remains united to the liquid drops. whether the divergence was strong or weak relatively to the mean divergence. From my own observations at Halle, tive electricity in the drops which fall, the action by in-I should be tempted to believe that, during a log, the elec- duction is much more energetic : clouds have often a strong tricity is weaker than in clear, and damp weather. On the positive electricity, whilst that of the earth is negative. Alps, I have always found, under these circumstances, a if there are two strata of clouds in the sky, and the rain strong positive electricity; but as soon as clouds approached, falls principally from the lower, both are positively electriits intensity diminished, and it was almost null when I was sed; but the electric state of the lower is modified by that surrounded by clouds : at Halle, the same remarks. It is of the earth : it becomes positive in its lower surface, and for experiment to decide if these are exceptional facts, re- negative in its upper; the rain is then positive. Soon, not sulting from the fact that electricity easily flows into the only does the lower face of the cloud become neutral, but

" Electricity during Rain .- When rain or snow falls from the upper regions of the atmosphere, there is, at the same time, a production of a quantity of electricity, more or less strong: it is only during mild and continued rains that we observe no traces of it : in this case the electricity is sometimes positive, sometimes negative. According to Schu- hind once more that the drops of water are positively electbler's observations, there are, in South Germany, 100 posi- trised. tive for 155 negative rains: according to those of Hemmer, at Mannheim, 100 positive for 108 negative : in the two series, the latter are the more common. The direction of the wind is not without influence over these differences. If we designate by 100 the number of positive rains with each wind, we find the following numbers for the number state of the rain is easily deduced. of negative rains with the same winds :--

	SCHUBLER.	HEMMER.
N.	91	52
N.E.	109	75
E.	166	95
S.E.	175	95
S.	260	101
S.W	232	117
W.	145	106
N.W.	128	67

"With the north winds the number of positive rains is, observations prove that, during the course of one year, most other. Thus the annual results may be very different from the general mean.

"What is the origin of this negative electricity? Schuair, they partially change into vapours, which carry away the Indeed, electricity is many drops are thrown into the air, we always find traces Belli very well remarked, that the electricity is due. When "The received opinion, on the increase of electricity the fountain rises towards a clear sky positively electrised, For whole without electricity, the action by induction no longer ex-

" Thus, then, although evaporation may develope negaearth because air is damp, or if it is the normal and usual state. also the earth; thus, at the end of a certain time, not the slightest indication of electricity is found until, when under ti e influence of the upper cloud, the lower one becomes charged with a great quantity of free negative electricity. The drops which fall will then be negative : but, if a breeze condenses anew the vapour of water in the cloud, then we

" Every time I have been able to follow this phenomenon, I was assured of the action of the upper cloud upon the lower. In other cases, the cloud acts on the drops of rain themselves, and changes their electric state. This being well understood, the influence of the winds over the electric

" From what we have previously seen, the origin of rain from north and south winds is very different. If, in a clear sky, the temperature rises for several days, the barometer begins to sink, a few cirri form in the high regions, at the same time that the south wind becomes predominant; the cirri extend, the sky becomes whitish, and positive electricity increases in its lower strata. The barometer continuing to fall, cumuli are formed in the lower parts, and the rain begins. At the moment when they are produced, the cumulus and the rain are both positively electrised. Soon negative electricity accumulates at the upper part of the sumulus, and the rain itself finishes by becoming negative

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