The second part of the paper will comprehend an inquiry into the special character and properties of the two colourable principles, the Erythrogen and Xanthogen.

2. On Dyspnœa, and other Sensations experienced on the summit of Mont Blanc. By Martin Barry, M. D.
Communicated by Dr Alison.

Thirst and loss of appetite were the first symptoms experienced by Dr Barry at a height of about 14,000 feet; but it was not till he reached a height 1000 feet greater, that exhaustion and fatigue supervened. A tendency to fainting was felt, and a total indifference to the main object of the journey. After a few minutes of rest, these sensations disappeared, but were again perceived on proceeding a few steps. On the summit (15,666 feet above the sea; Barom. 17.052, Detached Therm. 30°) no particular lassitude was felt while the author performed his experiments. After the descent the author did not suffer from a state of collapse.

It was shewn, that of those who have ascended Mont Blanc and other high mountains, some have suffered more, others less,—that there have been differences in this respect, not only among individuals of the same party at the same time, but in the same person at different times; how far referrible to the condition of the system, and how far to atmospheric changes, is still uncertain.

Respiration, and even continued muscular exertion, which necessarily accelerates the breathing, are possible in very attenuated air, as among the inhabitants of lofty regions; but by any great and sudden change of density, whether of increase or diminution, this function becomes embarrassed.

There is reason to believe that the quantity of oxygen *absorbed* by the lungs does not always bear the same ratio to the quantity *received* into their cells. At least, if the evolution of animal heat is directly as the oxygen *absorbed*; for on this supposition the air at Chamoni having a density = 27, that on the summit of Mont Blanc = 17, and the temperature at the upper station being many degrees below that at the lower, the absorption of oxygen must have been, not relatively alone, but also absolutely greater, from the rarer than from the denser air.

The occurrence of hæmorrhages in the ascent of high mountains has been a frequent, but very variable phenomenon, and some

of these have probably been simply mechanical effects of the internal and external pressures not being at first in equilibrio.

3. Mr Smith of Jordanhill made a verbal communication regarding a change in the Relative Levels of the land and sea on the west coast of Scotland ; recent shells having been found even at the height of 70 feet.

4. Professor Forbes communicated the following memorandum respecting the Polarization of Heat.

“ I have recently ascertained the following facts respecting heat.

“ 1st, That heat polarized in any plane, and then reflected from the surface of a refracting medium, changes its plane of polarization in a manner similar to what obtains in the case of light. Thus, with a thick plate of mica, which polarized homogeneous red light most completely at an incidence of about 59° , the plane of polarization of reflected polarized heat remained on the *same* side of the plane of reflection when the incidence was *great*, and was on the *contrary side* when the incidence was *small*. The limiting angle of incidence was about 57° , which therefore should be the polarizing angle of dark heat for mica. This mode of observing the polarizing angle offers some advantages above more direct methods.

“ 2dly, Metals polarize heat extremely feebly by reflection. I have carried my experiments up to 85° from silver, yet even there but a small share is polarized. The effect is, however, distinctly recognizable through a considerable range of incidences. The effects are such as would indicate the maximum polarizing angle to be even much higher ; perhaps it never attains a maximum. This fact corresponds to that in the case of light, except that the maximum polarizing angle is 73° (Brewster). Did metals act on light like other bodies, we should conclude, from the polarizing angle being greater, that heat is more refrangible than light. An important remark of Sir D. Brewster's, however, shews the statement I have made to be in conformity with the views of the nature of heat which I have published. He finds the maximum polarizing angle to be *greatest* for the *least* refrangible rays.

“ 3dly, Heat polarized in a plane inclined 45° to the plane of subsequent reflection at silver, has its nature changed as in the case of light, and presents the conditions of elliptic polarization, though the