consists of eight luminous octants alternately polarized in a different manner; and observes, that if we knew in what way the halo is formed, there would probably be no difficulty in explaining these remarkable phenomena.

On an ebbing and flowing Stream discovered by boring in the Harbour of Bridlington. *By* John Storer, *M.D.* *Communicated by the Right Hon. Sir* Joseph Banks, *Bart. K.B. P.R.S.* Read January 19, 1815. [*Phil. Trans.* 1815, *p.* 54.]

In the year 1811, with a view to making certain improvements in the port of Bridlington, an examination was made of the depth of a stratum of clay, and another of gravel, at some distance below high-water mark. At low water the harbour is dry, and at high water it has from fifteen to seventeen feet of water in the deepest part. The spot fixed upon for boring, has about six feet of water in ordinary tides.

After boring through 28 feet of clay, and subsequently through a mixed stratum of chalk and gravel, the augur was found to strike against a solid rock, on which that instrument could make no impression, and the work was discontinued, without any appearance of water at that time rising in the bore. But in the course of an hour or two it was observed to be filled to the top with very limpid fresh water, which, after a short time, was projected some inches above the summit, in a stream equal to its calibre. As the water was found to be fit for washing, and all culinary purposes, the bore was first secured by an elm stock ten feet long, and perforated with a three-inch augur, through which was passed a copper tube of the same diameter, well tinned to the depth of 32 feet, and which thus reached from the bottom of the elm stock to the solid rock, in order to preserve a supply of water for the use of the town.

The stream, however, is found not to be constant, but to cease regularly when the tide has fallen to a certain distance, and not to flow again till the tide returns to the same level, its force increasing regularly as the tide advances; and it may be observed to be propelled with much force, even after the bore is overflowed by the tide. By attention to the height of the tide at the time that the water begins to flow, it is found to be very regularly 49 or 50 inches below the level of the top of the bore, excepting after any very unusual fall of rain, when the water has been known to flow even when the tide has fallen as much as eight feet below the top of the bore.

These appearances, says the author, seem not to admit of any satisfactory explanation, without supposing some subterraneous communication between the water of the sea and that of the spring; and Mr. Milne, under whose direction the work has been conducted, conceives the stratum of clay, through which the water issues, to extend over the whole bay in front of the harbour, as far as to Smithwick Sand, which is known to be supported by a ledge of rock that has an almost perpendicular face, and very deep water beyond it. It is

through the fissures of this rock that the water is supposed to issue, till overpowered by the increasing column of tide, which, by its greater specific gravity, will occasion it to find vent at a level which will be more above the point at which the two fluids meet in proportion to the difference of their densities.

In confirmation of this hypothesis it is further observed, that after very stormy weather, when there is an unusual swell upon that coast, the water is discharged with an evident undulation.

Dr. Storer, however, observes, that the relative altitude to which the spring is elevated after much rain, rather militates against its correctness; and he would expect the additional force of the column of spring water at such times to produce an opposite effect, by enabling it to overcome the same column of sea-water during a longer period in each tide.

As it seemed probable that the subject may be elucidated by an acquaintance with the peculiarities of the springs in the neighbourhood, the author remarks, that upon the Wolds behind Bridlington there is very little water during summer and autumn; but in the course of two or three weeks after the commencement of frost, the springs begin to run copiously, and in some instances even with considerable impetuosity.

On the Effects of simple Pressure in producing that Species of Crystallization which forms two oppositely polarized Images, and exhibits the complementary Colours by polarized Light. By David Brewster, *LL.D. F.R.S. Edin. and F.S.A. Edin. In a Letter addressed to the Right Hon. Sir* Joseph Banks, *Bart. K.B. P.R.S.* Read January 19, 1815. [*Phil. Trans.* 1815, *p.* 60.]

The author having, in former experiments on the depolarization of light by a mixture of resin and bees' wax, had reason to suppose that the effects were modified by pressure, now examines the effects of pressure on a class of substances which, from their elasticity, will restore themselves after removal of the force applied, and thence admit of greater variety in the repetition of the experiments. By employing animal jellies, he had an opportunity of giving them any degree of tenacity that might be wished.

A small cylinder of jelly being placed upright between two plates of glass, had at first no power of depolarization. By gradual drying at its circumference, it soon began to depolarize at that part; and as it became thereby more dense than at its centre, it had the power of a concave lens. At the end of three weeks it seemed dried to the centre, and had then lost both these properties; but by forcible pressure, which it could now bear without injury, it depolarized completely during the continuance of the pressure; but upon its removal, says Dr. Brewster, it resumed its uncrystallized state.

The author next employed isinglass jelly, brought nearly to the consistence of caoutchouc, which, after standing one day, had acquired the depolarizing power even when cut into thin slices; and