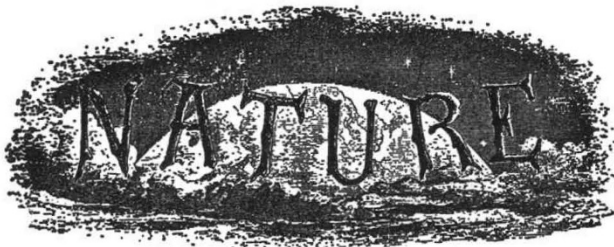


into its own affairs. High time is what people will say. But everything depends on how the inquiry is carried out. How much in the thrall of the existing hierarchy of committees and officials will it be? There is the strongest case for asking that the chairman of the inquiry should be an independent well-wisher from outside the immediate circle in which power is at present distributed. It is also essential that the inquiry should be quick. If by this time next year the association is not in better shape, there is a serious risk that it will bleed to death.

100 Years Ago



And looking back through the prodigious vista of the past, I find no record of the commencement of life, and therefore I am devoid of any means of forming a definite conclusion as to the conditions of its appearance. Belief, in the scientific sense of the word, is a serious matter, and needs strong foundations. To say, therefore, in the admitted absence of evidence, that I have any belief as to the mode in which the existing forms of life have originated, would be using words in a wrong sense. But expectation is permissible where belief is not; and if it were given me to look beyond the abyss of geologically recorded time to the still more remote period when the earth was passing through physical and chemical conditions, which it can no more see again than a man can recall his infancy, I should expect to be a witness of the evolution of living protoplasm from not living matter. I should expect to see it appear under forms of great simplicity, endowed, like existing fungi, with the power of determining the formation of new protoplasm from such matters as ammonium carbonates, oxalates and tartrates, alkaline and earthy phosphates, and water, without the aid of light. That is the expectation to which analogical reasoning leads me; but I beg you once more to recollect that I have no right to call my opinion anything but an act of philosophical faith.

As regards the second problem offered to us by Redi, whether Xenogenesis obtains, side by side with Homogenesis; whether, that is, there exist not only the ordinary living things, giving rise to offspring which run through the same cycle as themselves, but also others, producing offspring which are of a totally different character from themselves, the researches of two centuries have led to a different result. That the grubs found in galls are no product of the plants on which the galls grow, but are the result of the introduction of the eggs of insects into the substance of these plants, was made out by Vallisnieri, Reaumur, and others, before the end of the first half of the eighteenth century. The tapeworms, bladderworms, and flukes continued to be a stronghold of the advocates of Xenogenesis for a much longer period. Indeed, it is only within the last thirty years that the splendid patience of Von Siebold, Van Beneden, Leuckart, Küchenmeister, and other helminthologists, has succeeded in tracing every such parasite, often through the strangest wanderings and metamorphoses, to an egg derived from a parent, actually or potentially like itself; and the tendency of inquiries elsewhere has all been in the same direction. A plant may throw off bulbs, but these, sooner or later, give rise to seeds or spores, which develop into the original form. A polype may give rise to Medusæ, or a pluteus to an Echinoderm, but the Medusa and the Echinoderm give rise to eggs which produce polypes or plutei, and they are therefore only stages in the cycle of life of the species.

An extract from the opening address of T. H. Huxley to the 1870 meeting of the British Association, held at Liverpool. From Nature, 2, 404, September 15, 1870.

OLD WORLD

BLACK ARROW

Crisis of Confidence

THE failure of Black Arrow to launch a satellite last week has placed the Ministry of Technology in an embarrassing position. Should last week's firing be repeated, making further inroads into the stock of rockets on order, or should the programme go ahead as planned, in which case a £2 million satellite will be risked in a firing early next summer? The heart-searching behind this decision is one of the penalties to set against the shoe-string budget on which the Black Arrow is based—£3 million this year, gradually rising to £5 million during the next two years. Unsuccessful firings are now rapidly eroding the programme. In June last year the first Black Arrow with a dummy third stage went off course after fifty seconds of flight because of a fault in the control system and had to be destroyed. That meant that instead of the first orbital attempt in March this year there had to be a repeat of the earlier firing. Now the postponed orbital attempt has failed, apparently because of a fault in the pressurization of the second stage oxidant tank.

The chronology of the firing was as follows. First, a fault at the Gove tracking station, northern Australia, caused a postponement on September 1 in the last few minutes of the countdown. Gove is an ELDO tracking station that was due to be closed down now that launchings of the Europa rocket are to be from French Guiana, but was kept on for the Black Arrow launch. Although tracking by Gove is not essential, it gives a useful cross-check. The fault was in the computer that steers the aerial, and was discovered after the nominal flight path was fed in just before launch. Because the computer could not be put right within the duration of the launch window, the firing was postponed to the following day, and then delayed a further 2½ hours because of weather conditions. The faulty pressurization caused the second stage engines to stop thirteen seconds early, so that the spent stage crashed only 800 miles north of Woomera, 1,400 miles short of the expected impact point. Although the third stage subsequently seems to have worked perfectly, too much velocity was lost for the satellite to go into orbit.

To make matters worse, both failures of Black Arrow were due to faults in what were believed to be some of the soundest parts of the rocket. Basically a nitrogen bottle and a valve, the pressurization was thought to be simple and reliable. It now looks as if the scaling up of the highly successful Black Knight two-stage research rocket has not gone as well as the Ministry of Technology must have hoped when it earmarked only three Black Arrows for development firings. These are now spent, and there is no possibility of another development firing before next summer when the X3 satellite is due to be launched, chiefly to test new satellite instrumentation. It is too early yet to say what effect the failure will have on the ministry's hopes of selling Black Arrow rockets to ESRO, although they must be extracting some crumbs of comfort from the news that their competitor, the French Diamant rocket, is said to be running into trouble with excessive vibrations imposed on the payload.