in the excavations of the last season. From the contents it was evident that the settlers had been farmers, pasturing sheep and long-horned cattle, as well as practising agriculture. Their pottery showed that here in Wessex was a meeting place of the two strains of the neolithic in Britain, the western deriving from Brittany and the eastern from the Baltic. After a brief occupation by beaker folk from the Rhine, there followed a period extending over fifteen hundred years in which the site was abandoned.

Resettlement began in the eighth or seventh centuries; and by the fifth century B.C. settlers landing from north-east France had begun to raise the downland population to crowding point, necessitating organized defence behind the ramparts and entrenchments of the first Maiden Castle, concerning which recent excavation has revealed so much that is new in the elaborate limestone faced walls, the impressive double entrance, and the great ditch, 50 ft. wide and 25 ft. deep. Then comes the great enclosed city, covering forty-five acres, with a population of upward of four thousand—a city, however, primarily of farmers and industrially self-supporting, with few imports. Finally, in the first century B.C., there was the last and most ambitious enlargement, a monument of civic dignity, when spreading ramparts and ditches and high stone walls were added, with a provision of twenty thousand sling stones at the gates to ward off attack—walls which were to be laid low and finally abandoned save for a brief period, when Roman Dorchester was built.

Science News a Century Ago

Lyell and his Views on Geology

ON March 7, 1837, Lyell wrote a long letter to Whewell regarding the criticism with which some of his views had met. "As we had some conversation the other day," he said, "touching the extent to which I carried my doctrine of 'Uniformity' in the 'Principles of Geology' I wish to refer you to the first edition of that work . . . in order to show you that certain passages were somewhat unfairly seized upon by the critic, and not duly considered with and interpreted by others and by the context generally of the first volume. . . .

"It was impossible, I think, for anyone to read my work, and not to perceive that my notion of uniformity in the existing causes of change always implied that they must for ever produce an endless variety of effects, both in the animate and inanimate world. . . .

"In the review in the *British Critic* . . . you stated three formidable theses which I had undertaken to defend, in order to hear out my theoretical views. . . . I am sure that none of the propositions can now seem to you extravagant and visionary. . . . I allude to, first the adequacy of known causes as parts of one continuous progression to produce mechanical effects resembling in kind and magnitude those which we have to account for; secondly, to changes of climate; thirdly, the changes from one set of animal and vegetable species to another. . . .

"I was taught by Buckland the catastrophical or paroxysmal theory, but before I wrote my first volume, I had come round, after considerable observation and reading, to the belief that a bias towards the opposite system was more philosophical."

Geology of Suffolk

AT a meeting of the Geological Society held on March 8, 1837, the Rev. W. B. Clarke concluded the reading of his paper on Suffolk. The substratum of the whole of Suffolk, Norfolk and Essex, he said, is chalk overlaid with clay, sand and crag. While the crag still lay beneath the sea a violent catastrophe broke up many of the secondary strata from the chalk to the lias inclusive, and the debris thus caused, together with numerous masses of ancient rocks, was spread by a rush of water, over the surface of the tertiary formations and the chalk, in some places to a depth of 400 feet, constituting the beds of drift, clay, etc., which occupy so great an area in Suffolk. Afterwards a series of shocks elevated the whole district until the crag attained the height of nearly 100 feet above sea-level.

Shillibeer's Voltaic Battery

WRITING from the Grammar School, Oundle, on March 9, 1837, to William Sturgeon, the Rev. John Shillibeer gave a "Description of a new arrangement of the Voltaic Battery and Pole Director". "In the course of the last winter," he said, "when I was preparing a few lectures on experimental philosophy for the amusement of my scholars, I was struck with the complicated arrangement of the voltaic battery, and the difficulty which frequently occurred from the number of connexions, to get all the wires into so perfect a contact as to ensure success to the experiment." To get over the difficulty he experienced, Mr. Shillibeer had devised a battery consisting of a copper trough divided into five compartments by copper partitions, the trough being filled with a solution of copper sulphate. Into the compartments dipped five plates of zinc the tops of which were soldered to a copper bar which was fixed to a wooden cover to the trough. In a groove in the wooden cover were two sliding terminals by which contact could be made with the copper or the zinc. By means of these terminals the direction of the current in a wire could be easily reversed. In concluding his description, Mr. Shillibeer said, "I cannot but feel gratified at the success which has hitherto attended the career of my little instrument; and very glad shall I be if it may lead to other and more important improvements in aid of a science which, let us hope, may be ultimately applied to purposes of solid benefit to all mankind." (*Sturgeon's Annals*, 1, 224.)

Airy's Observations at Cambridge Observatory

ON March 10, 1837, Airy communicated to the Royal Astronomical Society the "Results of the Observations of the Sun, Moon and Planets, made at Cambridge Observatory in the Years 1833, 1834 and 1835". During those three years, he said, the sun, moon and planets were observed on the meridian at Cambridge Observatory with the transit and mural circle, with as much regularity as the limited personal establishment of the institution permitted. The instruments with which the observations were made were not, he thought, surpassed by any in the world. The immediate results of observation were systematically compared with the places given by tables, and the apparent error of the tabular place in right ascension and north polar distance was given in the *Cambridge Observations*. The series of apparent errors thus found was, he believed, one of the most complete that had been formed from observations over the same period.