pointed out, none of these can be considered satisfactory. Bobrovinokoff's conjecture that the sun captured comets when it was passing through diffuse clouds of obscuring matter less than a million years ago would appear to be mere speculation, and great difficulties arise when we inquire how bodies of such diverse sizes as are found in the nuclei of comets should appear in diffuse clouds of obscuring matter. The whole subject is full of difficulties, and Dr. Davidson contented himself with expressing the hope that posterity would be able to solve the problem. At the close of his address, he presented the Walter Goodacre Gold Medal and Gift to Dr. A. C. D. Crommelin, whom the Council selected this year for this award, in consideration of the very valuable work that he has done for the Association, more especially in connexion with comets and minor planets, on which he is a recognized authority.

Easton Park Nature Sanctuary

EASTON PARK, Dunmow, Essex, which Frances, Countess of Warwick, has recently willed under terms to the Essex County Council to assure its future as a Nature reserve, covers a thousand acres of mixed wood and parkland, and has long been preserved as a wild-life sanctuary, with no shooting and only the rabbits killed. Although a little short of water except for the dewponds, the estate is rich in wild-life: there are considerable numbers of jackdaws, green and spotted woodpeckers, goldfinches and long-tailed tits; goldcrests, hawfinches, kestrels, the three common owls, nuthatches and many jays nest in the woods. In a recent autumn study of the bird sanctuaries there, by invitation of Lady Warwick, Mr. Eric Hardy noted fifty species of bird, including a roosting flock of 195 jackdaws. There are a few red squirrels in the park, but no grey squirrels and no nesting carrion-crows. Wild pheasants and partridge are numerous, and there are two large duck ponds where Lady Warwick intends to introduce ornamental waterfowl. A large four-acre wood around Stone Hall on the south side of the estate is permanently fenced and padlocked and kept as a specially secluded sanctuary for woodland nesters.

IN the grounds of Easton Lodge, Lady Warwick has had erected a number of large aviaries, and converted old conservatories to heated aviaries, totalling eight aviaries in all, the largest, as high as the big aviary at the London Zoo, enclosing a full-grown yew tree. The collection comprises some 17 species and about four hundred specimens, chiefly of foreign finches, and is also used as a 'flying school' for injured or rescued British birds before their release. The aviaries are in the charge of Mr. Gilbert, formerly a keeper of aviaries under Mr. D. Seth-Smith at the London Zoo. The park also contains large herds of red and fallow deer, a herd of Highland cattle, some 700 Shetland sheep, including four-horned rams, a number of Shetland ponies, and some very outstanding trees, including some of the country's best specimens of cedar, wych-elm, oak, maiden-hair, palm and *Ailanthus* or tree of heaven.

Electron Diffraction and Surface Structure

THE thirty-ninth Bedson Lecture was delivered on October 25 in King's College, Newcastle-on-Tyne, by Prof. G. I. Finch, on "Electron Diffraction and Surface Structure". Prof. Finch stated that patterns are obtained on a photographic plate placed in the path of an electron stream which has been allowed to graze the surface of a solid body, and from these diffraction patterns an accurate indication of the surface structure is obtained. The diffraction patterns tend more and more towards well-defined rings with decreasing crystal size and more random orientation, until eventually an effect similar to the Debye-Scherrer pattern is obtained. Experiments with thin films of nickel deposited on a copper surface show that the nickel crystals follow, up to a certain thickness, the orientation and size of the original copper crystals. As the thickness of the nickel film increases to about 30,000 A., the crystals orient themselves in directions independent of the original copper crystals, although ordinary microscopic examination indicates a continuance of the original orientation. Electron diffraction experiments have also been used for determining the chemical composition of thin surface films, where ordinary chemical analysis has failed; for example, the composition of the blue film on tempered steel razor-blades was successfully determined in this manner. Sir George Beilby's theory of surface liquefaction of solids during polishing has received experimental proof from electron diffraction experiments on polished surfaces, and extremely important work is being carried out in this field in connexion with the 'running-in' of machinery.

Pottery in the Palæolithic Period

FURTHER evidence on the disputed question of the occurrence of pottery in the later phases of the palæolithic period was brought forward by Mr. J. P. T. Burchell at a meeting of the Society of Antiquaries held on October 28. Pottery has now been found by him on several sites in the Thames Valley in circumstances which, he maintains, warrant a dating in Upper Palæolithic times. At a site in the Bean Valley, Kent, which he has excavated recently, pottery occurs between the fourth and the fifth of a series of seven separate deposits of windborne loams. Of these deposits the lowest and oldest is linked with the glacial deposit on which it lies. The first four deposits in the series contain no sign of man, but with the pottery between the fourth and fifth deposits were bones and implements. It has been suggested that the pottery belongs to the bronze age, but Mr. Burchell maintains that the absence of any evidence of a mesolithic culture in the lower beds precludes that view. He relies further on the evidence of the occurrence of the extinct shell *Helicella striata* in beds 2–4. This shell has not been recognized as occurring after the Upper Palæolithic period. Collateral evidence which possibly may appear more convincing was obtained at Springhead, in the Ebbsfleet Valley, Kent. Here implements similar to those found in the Bean Valley, as well as