

trally and approximating them dorso-anteriorly. Compensation takes place, however, by the development of a third adductor muscle, which occurs at the lower angle of the pallial sinus. This adductor muscle is in fact composed of pallial muscles diverted to this use. Such a muscle occurs in *Zirphæa* and *Teredo* and another *Piddock* which I have examined, said to have been brought in ballast from Panama.

By means of muscles arranged with respect to the point of contact, as these are, the valves of the shell can be moved mutually in any plane excepting a dorso-ventral one. The antero-ventral margin of the shell of the working form is armed with teeth, which are constantly renewed by shell accretion, forming a good rasp. Certain scratches in the wall of the burrow show that this rasp has been used in enlarging the hole, the anterior mantle pad and foot being used as fulcrum. There are, however, other scratches at the apex of the burrow which indicate that the foot armed with sand serves also as a drill, but all attempts to watch the operation have so far been futile.

Specimens of this form have been found by the writer showing all degrees of degeneracy.

FRANCIS E. LLOYD.

PACIFIC UNIVERSITY,  
FOREST GROVE, OREGON.

#### SIR JOSEPH PRESTWICH.

THE Nestor of English geologists—Sir Joseph Prestwich—late professor of geology at Oxford, died on the 23d of June, last, at the ripe age of 84 years. The life of Prof. Prestwich covers the most eventful period in the past of geology. The problem whose solution has established the principles of the new science all arose during his lifetime, and of these all he could say with truth

“quæque ipse vidi  
Et quorum pars magna fui.”

Born near London on March 12, 1812,

he received his early education partly in England and partly in France, becoming later a student of University College, where his attention was chiefly turned to chemistry and natural philosophy, geological study not being then a recognized part of any course. While there he founded among his fellow students the Zetetical Society, composed of about 14 young men who arranged to lecture to one another for the purpose of mutual improvement.

Necessity, rather than inclination, turned his course into business, in which he was closely occupied for nearly 40 years, but during this long time his thought and his holidays were employed in his favorite topic, geology. It was his enthusiasm and stern earnestness that enabled him to accomplish so much in hours that most men would have devoted to mere amusement. The necessary books and travel were obtained by the strictest self-denial in personal expense, sometimes, perhaps, to an excessive degree, but the results became manifest in a series of investigations that rapidly brought him to the front, and resulted in his appointment to the chair at Oxford in 1874.

To enumerate the successive publications that came from his pen would scarcely befit this notice. A glance at the many problems that engaged his attention and which were in part or altogether solved by his efforts will prove more instructive and interesting. One of his earliest papers appeared in the transactions of the Geological Society of London in 1836, and contains an investigation of the Coalbrookdale coal field, but his attention was soon directed to the English and French Tertiary strata and their correlation, and from these he passed to the younger or quaternary deposit on which most of his later work was done.

In several years reports had been current of the occurrence of human relics in the form of flint implements in gravels of very

early date in France, but geologists on both sides of the channel received them with incredulity.

In vain did the discoverer, M. Boercher de Perthes lay the evidence before them. So firmly were they fixed in their traditional belief in the late date of the appearance of man that all his efforts failed to move them until Dr. Falconer visited the region, saw and was convinced. At his suggestion, Prestwich, Godwin, Austen and others went to Amiens, and the former in his paper before the Royal Society gained over his English brethren to the new faith which he had himself adopted on seeing the evidence presented in the valley of the Somme.

He even extended the limit of time which the French geologist had demanded by proving that the gravels were of at least two ages, and that the high level or older beds had been deposited before the valley itself had been excavated by the river.

In the same time was the report on the Brixham Cave in 1872, where new evidence of the vast antiquity of the human race was adduced and previous conclusions were more than supported. Those who can look back to the time can well recall the conditions and realize the boldness of the few who dared to stand for the new truth and face the storm of 'odium theologicum,' which set in at once and beat on their reputation. Years passed by before it began to blow over, and only disappointment, loss and mental suffering were the reward of many who read and believed and acknowledged their faith. It is hard now to understand the effort it cost twenty-five or thirty years ago.

Prof. Prestwich has taken an active part in the efforts to find coal in the southeast of England; in the discussion relative to the channel tunnel, in the investigation of deep sea temperatures and in the water supply of London, "*nihil tetigit quod non ornavit.*"

His large work on geology, in two vol-

umes, appeared in 1886 and 1888 with a geological map of Europe, and contains the matured results of his life's work. His energy continued almost to the last; papers on quaternary geology and the antiquity of man have been read or written as late as the year 1893.

Honors flowed in on the veteran geologist from all sides. He received the Wollaston medal in 1849, a royal medal from the Royal Society in 1865; he was President of the Geological Society of London from 1870 to 1872, Vice-President of the Royal Society in 1870 and 1871. He received the Telford medal from the Institute of Civil Engineers in 1874, was President at the reunion of the Geological Society of France, in 1880, and was elected a corresponding member of the 'Institute' in 1885. A short time only before his death he received from Her Majesty the honor of knighthood.

His later years have been spent at Darent Hulme, near Sevenoaks, Kent, a home after his own taste, as those who have had the pleasure of visiting him well know. Geology is worked into every feature and adorns every corner and panel. It stands in the beautiful chalk downs, overlooking the valley of the Weald, where he delighted to ramble and where his life was shared by Mrs. Prestwich, niece of Hugh Falconer, herself attached to the pursuits of her husband, whose latterly feeble health she guarded with loving care.

E. W. C.

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#### CURRENT NOTES ON ANTHROPOLOGY.

##### RESEARCHES IN MEXICO.

THE rich soil of Mexico and Central America is never scratched but it yields a harvest. How much there is in that land of promise for the ethnographer and antiquary is well illustrated in the brief description of his journey from Mexico City to Guatemala, contributed by Prof. Starr to the *Chicago University Record*, for May 22,