

be decided by actual examination of my published papers on symbolical logic, of which Prof. Jevons has very kindly given in NATURE a full and complete list. HUGH MACCOLL
73, Rue Siblequin, Boulogne-sur Mer, April 7

Agricultural Communism in Greece

THE article in NATURE, vol. xxiii. p. 525, on Aryan villages and other Asiatic communities reminds me of what I saw in 1843 in the course of a journey through Greece. On St. George's Day, a high festival with the Greek peasants, when crossing the range of Mount Cithæron between Thebes and Eleusis, I saw my companion, who was about half a mile ahead, surrounded by a number of men, and then pulled from his horse. The man we had engaged as interpreter, guide, and protector, the "dragoman," bolted as a matter of course, thinking we had fallen upon a nest of brigands; but when I reached the scene of action I was surprised to find that the yelling and uproar heard in the distance were not murderous nor at all malignant, but purely hilarious. I was dragged from my horse also, and surrounded by about twenty young fellows with shaven heads and long scalp locks, half stripped, half drunk, and very dirty, but perfectly good-humoured.

We were presently made to join in a wild dance, a survival of the Pyrrhic dance of antiquity, which we improved very successfully; my companion, C. M. Clayton, from Delaware, doing a nigger break-down and I the sailor's hornpipe.

On the final arrival of our dragoman we learned that the twenty young men were brothers, and that the old man with long white beard who sat gravely looking on and playing a sort of tom-tom to tune the dance was their father. On our expressing surprise at so large a family of sons being so nearly of the same age he explained that ἀδελφός did not always signify a blood relation, and that these were merely *agricultural* brethren. They were the united proprietors or renters (I do not remember which) of the adjoining farmhouse and the surrounding land, which they cultivated under the direction of the old man whom they had selected as their father, who was entrusted with the custody and division of their capital and profits, who arbitrated in cases of quarrels, and was otherwise obeyed in most things.

Here was a patriarchal form of communism that we afterwards met with in several other instances, but in this and the other cases it was limited to young unmarried men. There were no women in the dance and none visible on this farm, which was some miles distant from the nearest village, Platæa.

At that time the Klephts, or brigands, were united in similar communities, who sternly abjured all communication with the fair sex.

When we had finished our dance and paid for sufficient wine to go round the family circle we found that before going we must kiss all the brothers or give mortal and dangerous offence. Andrew, our dragoman, with the inventive facility of his nation, extricated us from this by solemnly stating that in England it was an established custom to show respect for a family by embracing the father only, and bowing separately to each of the sons.

I am unable to supply any further particulars concerning the internal economy of these communities, cannot say whether they prevail chiefly among the Greeks or the Albanians (the latter constitute a large proportion of the agricultural population of Greece), nor how they dissolve when the brothers become married or the father dies. I have met with no account of them in the course of my reading, but am not at all surprised at this, seeing how profound is our general ignorance of everything pertaining to Greece, an ignorance which is most glaringly displayed by political writers and others, who speak of Athens as though it were Greece, and of Athenian proceedings as though they were the action of the Greeks.

But for the accident of this rather startling festive encounter with these brethren on this particular holiday, we might have travelled for weeks without meeting any visible indications of such fraternities. We should have passed the brothers if they were working in the fields, and the patriarch had he been sitting alone at the farmhouse door, without special notice. It was only after our curiosity had been excited that we discovered other patriarchs and other brethren by special inquiry where their existence was vaguely indicated.

Among the readers of NATURE there may be some who have sufficient acquaintance with the Greek people, outside of Athens, to be able to supply interesting particulars concerning these

curious communities. They may be survivals of our ancient communism, or a modern device for mutual protection forced upon the rural population by the absence of any enforcement of law and social order by those who consume the taxes in Athens. W. MATTIEU WILLIAMS

Heat of Stellar Masses

I SEND you a working hypothesis which I think will well pay for its place in the world. It is as to the heat of large stellar masses; that the imperfect conduction of the kinetic force producing gravitation through large stellar masses causes heat in them.

The quantity of heat stored up may depend partly on the proportion of mass to radiating power, and partly, perhaps, on the condition of the mass for such conduction.

Washington, D. C., March 25 SAML. J. WALLACE

Shadows Cast by Venus

ON March 21 last, about 8 p.m., I was walking among some trees by a river's bank. The ground was covered with recently-fallen snow, and the shadows of the trees were unmistakably, though faintly, traceable on the white surface. The night was dark and the shadows were thrown by Venus, which was shining with unusual brilliancy. I believe this obvious form of the phenomenon is not a common one in our latitude.

CHAS. T. WHITMELL
31, Havelock Street, Sheffield, April 18

The Sparrow and Division of Labour

THE following curious fact may possibly interest your ornithological readers:—Last year and the year previous two pairs of swallows made their nests and successfully reared their broods under the eaves of my house. Within the past fortnight a brace of astute London sparrows have apparently recognised the principle of division of labour as applicable to their requirements in the art of nest-building. They have selected the largest and most substantial of the swallows' nests referred to; and, after devoting a day or two, on starting on their enterprise, to the enlargement of the entrance hole, which was probably too narrow for them, have constructed their bed within of bits of grass and feathers in the usual fashion. They are now enjoying their honeymoon in their new quarters.

G. C. WALLICH
3, Christchurch Road, Roupell Park, April 11

SIR PHILIP DE MALPAS GREY EGERTON M.P., F.R.S.

IN Sir Philip Egerton geologists have lost one of that band of workers who placed their science upon the footing which it now occupies in this country. Unfortunately that band has been of late years greatly diminished by death. Born in 1807, Sir Philip Egerton with his old friend and fellow-worker, Lord Cole (now the Earl of Enniskillen), while still at Oxford commenced the collection of fossils, and very soon their attention was especially directed to fossil fish, of which but very little was at that time known. As specimens of this group of organisms often occur in duplicate, the individuals breaking across so that two opposite slabs each contain one-half, the two friends agreed to share their spoils, and thus both collections were enriched. When in 1840 Agassiz visited this country, intent upon his great ichthyological memoirs, he found in the museums of Sir Philip Egerton and Lord Cole an abundance of materials ready to his hand. The specimens were carefully figured, and descriptions of them included in the several great works which Agassiz successively issued. The original drawings by Dinkel are now among the archives of the Geological Society. But Sir Philip Egerton was by no means merely a collector of fossils, he was a very diligent and successful student of ichthyology. Many valuable papers on fossil fishes were written by him at different times, and a series

of papers published in the decades of the Geological Survey of the United Kingdom are among the most valuable of the works issued by that body. An excellent man of business, Sir Philip took an active part in the administration of the British Museum, the London University, the Geological Society, and other institutions for the promotion of science. All who knew him will miss the kindly face and cheerful manners which distinguished him. Only two days before his death he was in his place in Parliament, but a chill caught during the lately prevalent east winds proved rapidly fatal. At the last meeting of the Geological Society the vice-president, Mr. J. Whitaker Hulke, F.R.S., made announcement of his death, and the sudden and unexpected tidings concerning one who was so widely known and so universally respected cast a sad gloom over the proceedings of the evening.

A correspondent sends us the following additional note on the late Sir Philip Egerton:—

The knowledge of the extinct species of fishes is one of the latest additions to palæontology, and the creator of this department of the science, Louis Agassiz, found the richest materials for his great work in the British Isles. In their acquisition he was greatly aided by Lord Cole, now Earl of Enniskillen, and by Sir Philip de Malpas Grey Egerton, Bart., M.P. Their gatherings resulted in most complete collections of fossil fishes, and science is much indebted to the catalogues drawn up and published by Sir P. Egerton of that preserved at Oulton Park. Besides the species named by Agassiz this collection includes many which have been subsequently determined and described by Sir P. Egerton, whose name will be ever associated with that of Agassiz in palichthyology. In his public career Sir Philip Egerton has been distinguished by his unremitting attention to his parliamentary duties in the long period since his election in 1830. The British Museum sustains a severe loss in a Trustee, elected in 1851, whose scientific knowledge, sound judgment, and administrative ability were of the greatest value, especially to the Natural History Departments. Sir Philip's last attendance at the Board was but a few days—apparently in his usual good health—before his lamented death.

THE SCIENTIFIC PRINCIPLES INVOLVED IN ELECTRIC LIGHTING

FOUR Cantor Lectures on this interesting subject have just been delivered at the Society of Arts by Prof. W. Grylls Adams, F.R.S.; the lectures will be published in full in the *Journal* of the Society of Arts, but we are able to give an abstract of them by Prof. Adams. In the first lecture, the discoveries of Ørsted, Ampère, Arago, and the early discoveries of Faraday on magnetic and current induction were considered in their relation to the principles of conservation and transformation of energy.

Lecture I.—Prof. Adams began by stating and illustrating the fact that important discoveries, after they are made, often pass through a stage of neglect or a stage of quiet development, then enter on the practical stage, when new facts and new inventions follow with great rapidity. The potential energy of the discoverer is transformed into energy of action in many directions with more or less efficiency, according to the retarding state of the medium through which that action takes place.

Electrical science has passed through these stages, whether we regard telegraphy from the work of Sir Francis Ronalds in 1816, who said, "Let us have electrical *conversazione* offices communicating with each other all over the kingdom," down to the establishment of telephonic exchanges, or whether we consider electric lighting from the grand experiment of Sir Humphry Davy in 1813 with a battery of 2000 cells, down to the

latest results obtained by means of the most recent magneto- or dynamo-electric machines.

In the year 1819 Ørsted observed the action of a current of electricity on a suspended magnetic needle, and in the year 1820 Ampère studied the laws of their mutual actions, and propounded his celebrated theory of magnets and of terrestrial magnetism, making magnetism the resultant action of electric currents. In the same year Arago discovered the magnetisation produced by electric currents, laying the foundation of the subject of electro-magnetism.

The discoveries of Ørsted, Ampère, and Arago were fully illustrated by experiments, and their connection with one another explained. In the same year, 1820, Schweigger invented the galvanometer, and in 1827 Ohm deduced his simple theory of the action of batteries from the principle of Volta.

The relation of the experiments of Ørsted, Ampère, and Arago to the principle of conservation of energy was then fully considered. Considering Ampère's experiment of the motion of wires towards one another when like parallel currents are flowing in them, it was shown that the currents must be diminished whilst they are actually approaching, and increased whilst they are separating, and so by supposing one of the original currents very small, the relation between Ampère's results and the induction of a current by moving a wire in the neighbourhood of another current was deduced.

The laws of induced currents were then explained and illustrated by some of the early experiments of Faraday, who discovered the induction of electric currents by magnets in 1831.

"In his first series of papers to the Royal Society entitled—(1) On the Induction of Electric Currents, (2) On the Evolution of Electricity from Magnetism, (3) On a New Electrical Condition of Matter, (4) On Arago's Magnetic Phenomena, Faraday unfolds step by step the laws of the induced current in a helix of wire B, placed near to another helix A, carrying a voltaic current.

"That as long as a steady current was maintained in A there was no current induced in B; that on making contact in A or on approaching the wires there was a momentary inverse current in B, and on breaking contact in A or on separating the wires, there was a direct induced current in B. That as this current was of the nature of an electric wave like the shock of a Leyden jar, it might magnetise a steel needle, although it produced slight effect on a galvanometer, and how this expectation was confirmed, and that the needle was magnetised opposite ways on making and on breaking contact." Then in his evolution of electricity from magnetism he gives an account of the greatly increased effects on introducing soft iron cores into his helices of wire, and shows that similar effects are obtained by using ordinary magnets in place of a helix carrying a battery current round an iron core, *i.e.*, in place of an electro-magnet. He then describes the experiment of introducing a magnet into a coil of wire, and shows that the same current is obtained whether the marked end of the magnet be introduced at one end of the coil or the unmarked end introduced at the other, and that a current is produced in the opposite direction to the former on withdrawing the magnet from either end. Then after describing the method of producing his induction spark and also muscular contractions of a frog by means of a loadstone and coil, and remarking that the intensity of the effect produced depends upon the rate of separation of the coil from the poles of the loadstone, he concludes this section thus: An agent which is conducted along metallic wires in the manner described; which, whilst so passing, possesses the peculiar magnetic action and force of a current of electricity; which can agitate and convulse the limbs of a frog, and which finally can produce a spark, can only be electricity.