

which is connected an insulated wire. At or near the top of the vessel, and immersed in the solution, is placed a second copper plate or one of hard carbon, or metal unchanged by contact with zinc sulphate solution and less positive than metallic zinc; this is also connected with a wire. A current from a dynamo-electric machine is sent in the direction from the lower to the upper plate, the result being deposition of metallic zinc on the upper plate and the formation of a dense solution of copper sulphate overlying the under plate. The cell, after charging, constitutes a gravity cell, and continues a source of electrical current till re-conversion of all the copper sulphate into zinc sulphate, with deposition of copper on the lower plate and removal of zinc from the upper. The cells, in charging, may be arranged in multiple arc or in series, and differently from that in discharging, according to the object. The authors believe it possible to store and recover 50 per cent. or more of the 50 or 60 per cent. which good dynamo-electric machines realise in external work of the power used in driving them. Thus 25 per cent. of the original power may be given out secondarily as electric current. Assuming that in the best steam engines 20 per cent. of the heat energy of the coal may be utilised, then about 5 per cent. of the heat energy, it is thought, may be recovered after storage as current; but even with this small percentage the economy would be much superior to the use of zinc and other materials in the ordinary battery in production of current.

In a recent paper to the Vienna Academy, by Prof. Exner, on the theory of inconstant galvanic elements, proof is offered that there is no so-called galvanic polarisation in elements, but that the phenomena referred thereto are attributable to the oxygen dissolved in water. The electromotive force of an element with only one liquid appears accordingly as a constant which is in no way affected by any polarisation of the negative pole. It is further shown that the force of a Smee element is not altered when its platinum is replaced by some other metal, provided only this do not itself give rise to chemical processes.

#### GEOGRAPHICAL NOTES

DR. EMIL HOLUB will read a paper before the Royal Geographical Society next Monday evening on his journey from the Diamond Fields through South Central Africa to the upper waters of the Zambesi. Dr. Holub, we understand, has for some time been exhibiting at Prague a small museum of zoological and ethnographical curiosities collected during his various journeys in Southern Africa, which has attracted much attention, and he is coming to England to attend this meeting at the special invitation of the Council of the Geographical Society.

THE *Colonies and India* reports the return of Mr. Alexander Mitchinson after some years spent in Africa. He appears to have arrived on the Gambia in 1876, and to have journeyed with a small number of followers into various parts of Africa. Following the course of the Niger, he visited the waterfalls, and returning to the west coast, made excursions into the country in various directions. After a brief rest his travels were again resumed, and from the Gaboon coast Mr. Mitchinson made his way into Angola, and from Benguela proceeded *viâ* Bihe to Lake Ngami, returning to the coast at Walvisch Bay at the end of 1879. The notes which he made in the course of his travels, are said to contain much interesting matter.

IN the current number of the *Tour du Monde* M. Desire Charnay, the well-known archaeological explorer of Southern Mexico, Yucatan, and Madagascar, has commenced an account of what he saw during the six months he recently spent in Australia. His observations on the aborigines, their legends, customs, and traditions will no doubt be interesting, and his story will certainly be well illustrated. M. Charnay, who returned to Europe not long since, had, previously to his visit to Australia, spent some time in the East Indian Archipelago.

DR. BENJAMIN BRADSHAW, who was met by Major Serpa Pinto, during his famous journey near the Zambesi, and who was also with the late Mr. Frank Oates when he died near the Tati settlement on his way from the Victoria Falls, arrived in Capetown a short time ago, presumably to make another trial of the ways of civilisation. Dr. Bradshaw has spent a long time in the Matabele country and other parts of the Zambesi basin, living the life of the natives and making zoological collections for his own amusement and benefit. During his wanderings he has acquired a considerable amount of information respecting the less-known parts of the Zambesi and some of its tributaries,

which, we have reason to hope, may be made public before long.

A CORRESPONDENT in the *Glasgow Herald* advocates the formation of a geographical society in that great commercial centre, the second most populous city in the kingdom. We have on several occasions pointed out the advantages of the formation of such societies in our chief ports, by means of which much useful information might be tapped that otherwise would not see the light. No better field could be found for such a society than Glasgow.

PROF. NORDENSKJÖLD and his staff evidently do not consider that their work was finished when they got outside Behring's Strait in the *Vega*. During the brief stay of the ship at Galle they made excursions into the island to examine its mineralogy and natural history. Great preparations have been made for the reception of the *Vega* at Naples. The King of Sweden desires that the professor and the captain should visit Rome, Brussels, Paris, and London, and join the vessel again at Copenhagen, to be ultimately received at Stockholm.

DR. OTTO FINSCH left Honolulu on July 30 last, on board the barque *Hawaii*, and arrived at Dshaloot, on the island of Bonham (the principal island of the Marshall group) on August 21. He intended to investigate this island thoroughly, as it appears that this has never before been done in a scientific manner. From Bonham Dr. Finsch will proceed to the islands of the Radak group.

NEWS from Dr. Stecker, the well-known companion of Dr. Gerhard Rohlfs, stated that he was going to leave Benghazi at the beginning of the present month, in order to proceed to Bornu by way of Fezan.

A FRENCH Company intends to cut a canal through the Isthmus of Corinth. Steps have already been taken to obtain the permission of the Greek Government.

THE German residents of Sydney have founded a branch of the Berlin Central Union for Commercial Geography.

MR. IM THURN, of the Georgetown Museum, whose labours in British Guiana have been referred to in *NATURE*, arrived in England last week.

#### THE SIXTH CONGRESS OF RUSSIAN NATURALISTS

THE Sixth Congress of Russian naturalists began at St. Petersburg on January 1, by a public meeting in the great hall of the University. The number of members present was very large—1,200—of whom 500 were from the provinces, and thirty-eight were ladies. Prof. Kessler was unanimously elected President, but the bad state of his health not allowing him to fulfil this function, he was made honorary president, Prof. Beketoff being elected as the active one.

At the first public meeting, Prof. Wagner gave an interesting address on the "Means of Solution of the complicated Problems of Natural Science," and after a brilliant sketch of the methods of science, he drew the attention of naturalists to the necessity of the study of physiological chemistry, and especially of the problems connected with albuminous matters.

Two proposals were then discussed:—On the scientific exploration of Bulgaria, and on the necessity of making complete botanical collections of Russian plants.

The second public meeting of the Congress, held on January 7, was opened by an address by Prof. Timiriacheff, on the physiological significance of chlorophyll in the life of plants, on the absorption by it of solar rays, and on the limits of the productivity of the soil. After this the president proposed that the several projects of scientific inquiries approved by the Congress be transmitted to a special committee, which would remain as a permanent institution after the Congress, and see to the carrying out of these projects; the proposal was unanimously accepted by the Congress, and will be accomplished, if the Ministry of Public Instruction does not oppose, as it has done hitherto, the creation of a permanent scientific association of all Russian naturalists. Prof. Mendeleef proposed the publication of a popular description of Russian colonies, being a sketch of their climate, soil, flora, fauna, and economical conditions; the proposal was approved. Prof. Dobroslavine gave an address on the relations between natural sciences and hygiene. The latter has only one point in common with medicine—general pathology—whilst any progress in the department would be impossible if it were not for