and though the man-made forests may lack the beauty and grandeur of the wild woods, they are still an important factor in civilization.

Absence of Carbonate of Lime Deposits from deep Ocean Basins.

With reference to the remarks on this subject by Prof. Molengraaff in his paper on the 'East Indian Archipelago' in the *Journal* for February (vol. 57, pp. 98–99), Mr. F. F. Southby has written to suggest as a possible explanation the capacity of water at high pressures to dissolve substances insoluble under ordinary conditions. In the deep basins of the Archipelago, he thinks, under the enormous pressure of 700 atmospheres, $CaCO_3$ may be soluble at 3° C., and at a lesser depth in the warmer waters. He suggests that the matter might be tested by experiment considering the great pressures now obtainable artificially. We referred this suggestion to Prof. Molengraaff, who discusses the question in a letter sent in reply. He says that the possible effect of pressure had suggested itself to him, and that experiments are at present being made at Utrecht by his colleague Prof. Cohen. Even if it should be demonstrated that great pressure should materially increase the solubility of $CaCO_3$ in pure water (*i.e.* free from CO_2, the absence of which is considered to reduce the solubility under ordinary pressure from 1 : 1000 to 1 : 10,000 or less), the difficulty is not entirely removed. Dr. Molengraaff points out that the bottom water in enclosed deep basins is generally supposed to be completely stagnant (in the Black Sea it is even putrid for this reason), so that the layers adjacent to the bottom would soon become saturated, rendering further solution impossible. He puts forward a tentative solution of the difficulty as follows : Below the deep basins the geo-isotherms are closer together than in the surrounding areas, so that the heat of the Earth's interior will flow off more rapidly at the centre than at the margins. This may, he thinks, set in motion a very weak and slow but continuous convection current, the slightly warmer water ascending at the centre of the basins and being replaced by colder water from the sides. This latter will contain oxygen in solution, and will thus be able to oxidize organic matter and generate CO_2, by which fresh amounts of $CaCO_3$ will be continuously dissolved. The suggestion is ingenious, but at present can hardly be regarded as more than an hypothesis. It may be asked, *e.g.*, whether the supposed temperature difference would not be detected by the delicate instruments now in use for oceanographic research.

Permanent Committee on Geographical Names.

With the present number is included the first list of names published by the Permanent Committee : a general list of European place-names, mostly of towns. It is the present intention of the Council to insert such lists loose in the *Journal*, in order that they may be collected for easy reference. Additional copies of the lists will be on sale by the agents for the sale of the *Geographical Journal*.

OBITUARY

Prince Kropotkin.

THE announcement of the death of Prince Peter Alexeivich Kropotkin on 8 February, in a small town near Moscow, where he was virtually interned, will have been received with regret by a wide circle of all classes and all creeds. He had left England, which had been his home for many years, for Russia in

1917, after the revolution had broken out, no doubt with the hope that his "anarchist" aspirations would be realized on a large scale. It need hardly be said that he was grievously disappointed. But this is not the place to deal in detail with Kropotkin's political views, except to express regret that his absorption in these seriously diminished the services which otherwise he might have rendered to Geography.

Prince Kropotkin, descended from one of the oldest princely houses in Russia, was born in the "Old Equerries' Quarter" in Moscow on 8 December 1842, so that when he died he had entered on his seventy-ninth year. In this aristocratic quarter, surrounded by troops of serfs, he spent his first fifteen years. He and his brother Alexander, who were devoted to each other, received a somewhat irregular education from private tutors—French, German, and Russian. The education was mainly literary and historical. So keenly interested in literature was Kropotkin even then (aged thirteen) that he started a review which continued for two years, till he had to leave for St. Petersburg. His father had determined that his sons should enter the Army, and at the age of fifteen Kropotkin, much against his wishes, was admitted to the Cadet Corps, or Corps of Pages, which received only 150 boys, mostly children of the nobility belonging to the Court. Those who passed the final examination could enter any regiment of the Guards or of the Army they chose, while a certain number were attached as pages to members of the Imperial Family. After all, Kropotkin became reconciled to the School, and spent quite an interesting and useful five years going through the various forms. He at first found the lessons so easy that he had plenty of time for private reading. In time, he took up various sciences, Physics, Chemistry, Mathematics, Geography, Cartography, and both in classes and by himself he made considerable progress in this direction.

When in 1863 he had passed his final examinations, in which he took high rank, he had to decide what regiment he wished to enter, it being expected that, like his fellow cadets, he would choose one of the most select—some regiment attached to the Court. But to the consternation of his father and his comrades he decided to join the Mounted Cossacks of the Amur, a new and undistinguished regiment. He had long been interested in Siberia and its geographical problems, especially those connected with the Amur and the Usuri. By selecting a Siberian regiment he would have ample scope for exploration in little-known Eastern Siberia. During his five years in Siberia he had opportunities for carrying out exploring and survey work on the Amur and in Manchuria, the maps of which abounded in blanks and errors. Later still, he explored the Western Sayans, and caught a glimpse of the Siberian Highlands. Finally, he undertook a long journey to discover a direct communication between the gold-mines of the Yakutsk province and Transbaikalia. All this proved of great service to Kropotkin when, after his return to Europe, he took up the difficult problem of the structure of Northern Asia.

In time, Kropotkin and his brother Alexander, who was stationed at Irkutsk, became more and more interested in the revolutionary movements which were developing in Russia and other European countries. They decided to leave the Army and return to St. Petersburg; this they did early in 1867. Kropotkin entered the University, where he worked hard for five years mainly on scientific subjects, devoting special attention to geography. He became intimately associated with the Imperial Geographical Society in his capacity of secretary to its section of physical geography. But his main geographical interest at this time was the vast problem of the Orography of Northern Asia,

the maps of which he considered were "mostly fantastic." This led him in time to extend his investigations into Central Asia. He not only made use of the results of his own travels in Siberia, but with infinite labour collected all the barometrical, geological, and physical observations that had been recorded by other travellers. This preparatory work took him more than two years; followed by months of intense thought to bring order out of what seemed a "bewildering chaos." Suddenly the solution flashed upon him. The structural lines of Asia, he was convinced, did not run north and south or east and west, as Humboldt represented them, but from north-east to south-west. This work he considered his chief contribution to science. A summary of this investigation, which he gave to our Society some years later, was published in the *Geographical Journal*, February and March 1904, as well as another on the Desiccation of Asia, *Geographical Journal*, June 1904.

The next important geographical work undertaken by Kropotkin at the request of the Imperial Geographical Society was a journey through Finland in 1871–72 to study the glaciology of the country. He returned with a mass of most interesting observations. After a visit to Western Europe, Kropotkin returned to St. Petersburg, and in 1874 presented his report on Finland. This he did at a meeting of the Geographical Society, where it was keenly discussed. A day or two later he was arrested, and finally imprisoned in the terrible fortress of St. Peter and St. Paul, but was permitted to finish his work on the Glacial Period in Finland and in Central Europe, which with his *magnum opus* on the Orography of Asia was published after his escape, while he was residing in England under the name of Levashoff. In April 1876 he had been transferred to another prison, and in a few days placed in the military hospital. The romantic story of his escape from this hospital is well known. He had no difficulty in passing through Finland and Sweden to Christiania, where in a British steamer he crossed to England, landing in Hull, and going on to Edinburgh. As he had to work for his living he began to send, in his assumed name, notes, mainly geographical, to *The Times* and *Nature*. He ultimately moved to London, between which and France and Switzerland he migrated, until, after two years' imprisonment in France, he finally settled down in London, where he remained with few intermissions till his unfortunate return to Russia in 1917. He soon formed literary connections in England in addition to *The Times* and *Nature*. He wrote largely for the *Nineteenth Century*, through which he ran his two well-known books, 'Fields, Factories and Workshops,' and 'Mutual Aid among Animals.' To the eleventh edition of the *Britannica* he contributed most of the Russian geographical articles. Of course he soon made himself at home at our Society, and was a valued contributor to the *Journal*. Among his contributions to the *Nineteenth Century* was an article in December 1885, entitled, "What Geography ought to Be," which is well worth reading. It is based on the Report on Geographical Education issued by the Society in that year, and gives a comprehensive view of what he considers the field of geography ought to be, its value from the scientific and practical standpoint, and the place it ought to hold in education. "Surely," he says, "there is scarcely another science which might be rendered as attractive for the child as geography, and as powerful an instrument for the general development of the mind, for familiarizing the scholar with the true method of scientific reasoning, and for awakening the taste for natural science altogether."

Unfortunately, Kropotkin had never again an opportunity of doing active work in the field of scientific exploration. He became more and more absorbed

in the promotion of his socialistic or rather anarchist views, and suffered more and more from the consequences of the hardships he had to endure in prison. In his later years he became almost a chronic invalid, wheeled in a bath chair about Brighton, where he lived for the last few years. His main contributions to geography are the records of his explorations in Eastern Siberia and the discussion of the great problems which they suggested to him, and his investigations into the Glaciology of Finland. He was a keen observer, with a well-trained intellect, familiar with all the sciences bearing on his subject; and although his conclusions may not be universally accepted, there is no doubt that his contributions to geographical science are of the highest value. He made many friends in England. He had a singularly attractive personality, sympathetic nature, a warm but perhaps too tender heart, and a wide knowledge in literature, science, and art. J. S. K.

Arthur John Charles Molyneux, F.G.S.

Mr. A. J. C. Molyneux was one of those cultured frontiersmen whose influence is so valuable in a new country. He inherited a bent for science from his father, a well-known geologist and coal-mining expert, and was himself trained as a mining geologist. One of a numerous family, he was born in the Midlands about fifty-five years ago, and was still young when the family migrated to Natal, where the father died soon afterwards. The son was in the adventurous band who entered Matabeleland in the early '90's, and he participated in the exciting after-search for Eldorado. He remained a staunch Rhodesian for the rest of his life, making Bulawayo his home or headquarters; and by many exploring trips, both north and south of the Zambezi, he acquired a wide knowledge of the shape and structure of the whole region. He had a keen eye for the physiographical aspects and problems of the country, as well as for its stratigraphical features, and his papers communicated to the Geological Society in 1903 and 1909, the first on Southern, the second on Northern, Rhodesia, contain much of geographical import. His memorable paper on "The Physical History of the Victoria Falls," contributed to the *Geographical Journal* (January 1905), was not only a vivid and accurate description of the wonderful spectacle, but also gave for the first time a scientific account of the surroundings and an adequate explanation of the origin of the Falls. Several other papers were published by him in South African scientific journals, mainly in the *Proceedings* of the Rhodesia Scientific Association. Of this society he was one of the founders and mainstays, serving at one time as its president, and continuously in other offices. He was also active in promoting the establishment and aiding in the management of the Rhodesia Museum at Bulawayo. During the last few years of his life he was attached as Geologist to the Geological Survey of Southern Rhodesia, and was the author of some of its recent reports. His services to geology were recognized in the award to him of the Wollaston Fund of the Geological Society in 1909.

Through all the hardships and vicissitudes of a pioneer's life, his placid and kindly disposition remained unimpaired, and gained him friends everywhere. He rejoiced in the rise and growth of the country of his adoption, and was proud to rank as one of its "old-timers."

Failing health induced him to undertake a short visit to the home-land last autumn with the hope of benefiting from the voyage. But the benefit was transient. He died suddenly on December 28th last, almost immediately upon his return to Bulawayo, and his last resting-place is among old comrades there. G. W. L.