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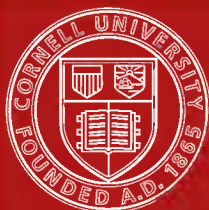
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# PRESENTATION

## OF THE

# ROYAL AWARDS

TO ELISHA KENT KANE, M.D.; TO HEINRICH BARTH, PH.D.,  
AND TO CORPORAL CHURCH, *of the Royal Sappers and Miners.*

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HIS EXCELLENCY G. M. DALLAS, Minister of the United States of America, having consented to receive the Gold Medal awarded to Dr. Kane, the President addressed him as follows:—

“ Sir,—The Founder’s Gold Medal, the highest honour this Society has in its power to bestow, has been awarded to Dr. Kane, of the United States of America, for his distinguished services and important discoveries in the Polar regions, while in charge of the expedition fitted out in America to search for Sir John Franklin; and for his valuable Memoir and Charts, communicated through the Admiralty.

“ In the absence of Dr. Kane himself, I could desire no greater privilege than that of confiding the award, Dr. Kane has so justly deserved, to the hands of the distinguished representative of the nation to which he belongs; in order that the feeling of this Society, and I may say of the country at large, may go forth in its fullest extent to the land which enrols the name of Dr. Kane among her citizens. Sir, I cannot discharge this duty without passing a remark on the peculiarity of the circumstances attending this occasion.

“ It seldom happens that nations so distantly situated, spontaneously unite in such acts of humanity as those which have characterized the late search for Sir J. Franklin. More rarely still do we find the sympathies of individuals so enlisted in the fate of foreigners, as to manifest themselves in acts of philanthropy of such a truly liberal and substantial character as have here occurred; and this act of the United States, together with the names of Grinnell and Peabody, will long be remembered in this country, even after the spirit of Arctic enterprise shall have passed away. But, Sir, if the feelings of *nations* have been deeply enlisted in this search, how much more so must have been the feelings of *individuals*, who enjoyed the friendship of the object of it? Sir, there are persons now present who were early associated with our lamented countryman, who shared with him his first perilous encounter with that icy element which was afterwards to become his tomb, and who enjoyed his friendship through life.

“As one of these, you may imagine that it is with no small degree of interest that I find myself now, in my official capacity, conveying this award of the Society, to the officer who so strenuously endeavoured to determine the fate of him, whom we all so deeply deplore.

“These sympathies, however, have had no share in the decision of the Council. Dr. Kane’s merits alone, have won for him this testimony of the Society; and I trust that these reciprocal acts of good feeling between nations and individuals may tend to bind in lasting ties of amity these two great nations, whose sympathies have been shown to be so closely identified.”

His Excellency the American Minister, having received the Medal, replied :—

“Mr. President,—On behalf of my fellow-citizen, Dr. Elisha Kent Kane, I receive, with equal pride and pleasure, this testimonial, awarded by your learned body, to his ability and services in that branch of human knowledge, to which you are specially devoted.

“His country also, even now engaged in expressing her high sense of his deserts, will be gratified to learn that her judgment, which might, possibly, be ascribed to partiality, has been thus sanctioned.

“Young as he yet is, and fairly entitled to count upon many years of zealous intellectual activity, he can never achieve a prouder recognition, considered in all its aspects, than this Medal of the Royal Geographical Society of London.

“Dr. Kane, as is personally known to me, entered upon his career of Arctic exploration under the influence of sentiments which were strengthened, rather than shaken, by its depicted terrors. In the medical department of the navy of the United States, on a remote station, his Government scarcely intimated a disposition to join in the search for Sir John Franklin, before he hurried forward to volunteer an enlistment for that noble purpose. There was a voice upon the breeze that had caught his ear; an ardent fondness for scientific studies impelled him to a fresh field of research; a daring and irrepressible spirit of enterprise co-operated with much experience and peculiar attainments. He went—he went twice; and, though he vainly offered his own life to rescue another’s, he brought back with him observations, verifications, discoveries, and delineations, worthy to be accepted by the masters of geographical science. If, as I believe was the case, he penetrated to and actually beheld the ice-encircled yet open sea, whose existence had been predicated of the periodical northern flight of aquatic birds, of certain currents, and of other *indicia*, he may justly feel that the practical solution of an interesting problem has earned the honour of your approbation.

“I do not wish, Mr. President, to eulogise my countryman. You are far more competent than myself to appreciate the exact value of what he has effected. Your Council have affixed to his record this their Great Seal; and at your invitation, and with alacrity, I assume the grateful task of transmitting it safely to his hands.”

The President then addressed Dr. Barth, who was present, in the following words :—

“ Sir,—The Patron’s Gold Medal of this Society has been awarded to you ‘for your successful and extensive explorations in Central Africa, your numerous excursions about Lake Chád, your discovery of the great river Binue, and for your hazardous and adventurous journey to and from Timbuctú,’ by which you have afforded to us the first really authentic information respecting that important locality.

“ In conveying to you this testimony of the high sense entertained by this Society of the merit of your performances, I cannot overlook the important fact that it is just thirty-three years since I found assembled upon the shores of Africa, whence you started, the distinguished but lamented travellers Oudney, Clapperton, Denham, and Tyrwhitt, all bent upon the same great enterprise of opening out the interior of that continent; and although Laing, one of our countrymen, did afterwards succeed in reaching the famed Timbuctú, yet of all this party, and of those who attempted that great exploit, you alone stand upon our shores as the successful accomplisher of the enterprise.

“ If, Sir, the service performed be measured by the difficulty of accomplishment, evidenced by the lapse of time and by the loss of life that has occurred in this adventurous attempt, the award of the Medal must be acknowledged to be justly merited. But you have other performances to strengthen your claim; for we are informed that your labours have been so extensive, that the account of them will reach over five volumes of matter, which, collected in such a country, must prove of the highest import.

“ Sir, I congratulate you on the successful accomplishment of your undertaking, and trust that this high tribute will stimulate you to future enterprises.”

Dr. Barth replied:—

“ Mr. President,—It is with great pride and satisfaction that I am here to receive, at your hands, the Medal which the Council of the Royal Geographical Society has awarded to me; for nothing can be more gratifying to a man who, from love of science, has thrown himself into a dangerous and adventurous career, like that of a traveller in the inhospitable and turbulent regions of Central Africa, than the acknowledgment of such a distinguished body of learned and eminent men as the Council of the Royal Geographical Society. But it is not alone on my own behalf that I thank you; as a member of a foreign nation, who will be honoured by the distinction which to-day you have conferred upon me, I offer you also their acknowledgments as well as my own grateful thanks.

“ I shall say nothing on the extent and purport of my discoveries, which have been fully appreciated by competent men, and will shortly be laid before the public in a full account of my Travels. May I only be allowed to express the hope that, after a great and

practicable high road into the heart of Africa has been found at length, with the sacrifice of the lives of so many noble, eminent, and daring men, and after it has been proved to be such by the successful voyage of Mr. Laird's steamer 'Pleiad,' and after a considerable advance has been made in the knowledge of the interior of the continent, which shows it to be of a far richer character than has ever been supposed, Her Majesty's Government will not allow the opportunity to pass by, to establish, in a vigorous manner, legitimate commerce with those unfortunate regions, and thus hold out to the natives a humane and lawful way in which they may be able to supply their wants of foreign produce, without bringing, by slave-hunts and slave-trade, misery and desolation over wide and fertile districts.

"The present moment is the more important for such exertions, as, by the abolition of the slave-trade in the regency of Tripoli and in Fezzan, the trade of the interior has just been brought to a great crisis, and the people are obliged to look most anxiously about for a new channel by which they may supply their wants. The last news received from Dr. Vogel gives a new proof how extremely anxious the chiefs along the river Chadda or Binue are to enter into friendly relations with the English, but how continually they are disappointed. Certainly the commercial relations of the great western branch of that immense river, the so-called Niger, principally between Timbuctú and Sansandi, are far more developed; but the difficulties which attend the navigation of the lower part of that river, as well between the towns of Bousa and Yauri, as higher up the river between Tosaye and Kendaji, are considerable, although with the means which human genius has made available, they appear by no means insurmountable.

"I conclude, Mr. President, by repeating to you my grateful thanks for the distinguished honour conferred upon me this day."

Corporal Church having requested that Lieutenant-General Sir John Burgoyne would kindly do him the honour to receive the award of the Society on his behalf, the President addressed him as follows :—

"Sir John Burgoyne,—The Royal Geographical Society have awarded to Corporal Church this watch and chain, in acknowledgment of his meritorious and intelligent services while employed upon the African expedition under Dr. Vogel. It is the wish of the Society, especially to mark with approbation, his diligence in conducting a long series of meteorological observations at Kuka, and his ability in assisting Dr. Vogel in those observations, by which he has determined astronomically so many positions on his route.

"It will be satisfactory to you, Sir John, to learn that Corporal Church has amply sustained the high reputation of that excellent corps of Sappers and Miners, whose unassuming labours have so materially contributed to render the detail of the topographical survey of this country so perfect, and have so largely contributed towards the suc-



cess of other geographical undertakings. If anything can enhance the pleasure which I feel in the discharge of this duty, it is that of delivering this acknowledgment of the merits of a zealous and faithful soldier into the hands of so distinguished an ornament of the army, one whose high scientific knowledge and military experience have contributed so largely to the glory of this nation."

Lieutenant-General Sir John Burgoyne, accompanied by Corporal Church, after the delivery of the honorary award, said :—

" Mr. President,—I have not been prepared to take any part in this proceeding ; but although unexpectedly called upon, I cannot refrain from expressing the gratification I feel, that any member of the corps to which I have the honour to belong, should be thought worthy of so flattering a mark of distinction as that now conferred. I can assure the Meeting, that the corps of Royal Engineers and Sappers are as ready to devote themselves to scientific enterprise, as they are for military service in the field.

" With regard to Corporal Church, I believe him to be a zealous, good soldier, a man of intelligence, and one who would be always anxious to carry out the orders or wishes of his superiors ; and that he would never bring discredit on the marks of favour thus shown to him, by so distinguished a body as the Royal Geographical Society."

A D D R E S S  
TO THE  
ROYAL GEOGRAPHICAL SOCIETY  
OF LONDON;

*Delivered at the Anniversary Meeting on the 26th May, 1856,*

BY REAR-ADMIRAL F. W. BEECHEY,  
V.P.R.S., F.R.A.S., &c.

PRESIDENT.

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GENTLEMEN,—Before I address you upon the subject of the progress and condition of that science which we more immediately cultivate, I desire to convey to the Vice-Presidents and Members of the Council for the past year, my acknowledgment of the great assistance I have invariably received from them, especially during a long and serious illness. To them, and to the unremitting attention of our Secretary, is owing entirely the satisfactory conduct of the business of the Society during that period. How well your interests have been attended to, is manifest by the Report of the Council, in which you will find that, whilst the sphere of usefulness of the Society has been enlarged, its permanent fund has been increased, and the list of Members has been extended. You will have learned also that our map-room and library have been enriched by the receipt of the valuable collection of maps and books bequeathed to the Society by Mr. Greenough; to whose memory the Council have directed a marble bust to be executed and placed in a suitable part of the building, as a justly merited testimony of the high regard and respect the Society entertain for this eminent geographer. This extensive collection has been arranged for ready access, and embodied in the general catalogue, under the judicious management of the map-committee and our curator, Mr. Saunders.

You will have been made aware, by the receipt of the ‘Proceedings,’ that the Council have carried into effect their determi-

nation, conveyed to you at an evening meeting during the session, to issue this publication. They considered that such a work would be acceptable to the Members, and beneficial to the interests of the Society, as a means of conveying early notices of the papers read at the evening meetings, and of the discussions upon them; also as an additional means of readily disseminating geographical information to the Public, who are at liberty to purchase the numbers; and our thanks are due to Mr. Galton, and the Rev. Messrs. Clark and Nicolay, and to our Secretary, for the readiness with which they have undertaken the compilation and editorship. In starting a publication of this description, the Council have been careful to put on record, the restrictions under which this work is to be published, that it may be kept within due control, and strictly confined to the object for which it was intended. I conclude this notice of our household matters with recording the gratifying fact that the obelisk to the gallant Bellot has been erected at Greenwich, and the fund distributed; and thus a great national testimonial has been raised to the memory of that devoted individual, and a benefit bestowed upon his family.

## OBITUARY.

It is my painful duty to inform you that, during the past year, the list of Members who have passed away is unusually large. Among them are many names well known to science and to the world at large, of whose merits I can give little more than a very limited sketch.

In alphabetical order I have first to mention,

ADAMSON, John, Esq., one of the earliest Fellows of this Society, and a relative of the celebrated traveller, Sir Robert Ker Porter. Mr. Adamson was the last surviving son of Lieut. Cuthbert Adamson, R.N., who accompanied the Hon. Capt. Phipps, afterwards Lord Mulgrave, in 1773, as 2nd Lieutenant of the 'Racehorse,' in his voyage of discovery towards the North Pole. He was born September 13th, 1787, at Gateshead, and was sent at an early age to Lisbon. From his youth he was devotedly attached to the pursuits of literature, became a member of the Literary and Philosophical Society of Newcastle in 1811, and one of its secretaries in 1825, remaining in office up to the period of his death. Mr. Adamson's brief visit to Portugal in 1803 had left impressions on his mind which were never effaced, and gave him that taste for Portuguese literature which he retained during the remainder of his life. In 1820

appeared the work on which his fame chiefly rests—the *Memoirs of the Life and Writings of Camoens*, the merits of which have been appreciated at home and abroad. In 1836 he printed for private circulation, under the title of '*Bibliotheca Lusitana*,' a catalogue of the books in his library relating to Portugal—an interesting piece of bibliography.

Mr. Adamson's last literary work was a labour of love. He ushered into the world the first five cantos of the '*Lusiad*,' translated by his friend Mr. Quillinan, whose lamented death prevented him from completing the task he had imposed upon himself. He was also the editor of several of the publications issued by the Typographical Society of Newcastle. His literary correspondence extends over half a century, and includes letters from geographers, antiquaries, numismatists, naturalists, poets, men of letters and science, and other distinguished persons in various parts of the world. He was a corresponding member of the Royal Society of Northern Antiquaries at Copenhagen, of the Literary Society of Iceland, of the Royal Academy of Inscriptions, Belles Lettres, &c., at Stockholm, of the Royal Society of Literature of Courland, of the Royal Academy of Sciences of Lisbon, of the Archæological Academy of Madrid, a member of the British Association for the Advancement of Science, as well as a Fellow of the Royal Geographical, the Linnean, and the Antiquarian Societies.

BARCLAY, Charles, Esq., F.S.A., formerly of Bury Hill, was the head of the world-known firm of Barclay, Perkins, and Co.

In 1815 Mr. Barclay was elected a member of Parliament for the borough of Southwark. He possessed a liberal and enlightened mind and a benevolent disposition. He was an active and intelligent magistrate for the county of Surrey, and a generous promoter of education. His death was occasioned by a fall from his horse.

BUCKINGHAM, James Silk, Esq., was born near Falmouth, in 1786. In his youth, he passed several years at sea, and also in a variety of occupations on shore; among which, his working as a compositor in printing offices proved of most influence on his career through life. He first became known in public affairs, by his attempts to open up the journalism of India. Mr. Buckingham first went to Calcutta about the year 1815, and always retained much interest in Indian affairs, and hailed with warm satisfaction the removal of the restrictions on the press in India, which the wise and liberal policy of Lords Metcalfe and William Bentinck at length effected. In 1825 he established in London a paper, the '*Oriental Herald*,' the pre-

cursor of the 'Athenæum,' and of various other journals. On his way to and from India, Mr. Buckingham travelled through different countries, and afterwards published narratives of his travels. In 1822 appeared 'Travels in Palestine;' in 1825, 'Arabia;' in 1827, 'Mesopotamia and adjacent Countries;' and in 1830, 'Assyria and Media.' At a later period, he made tours in various parts of Europe and North America, his account of the latter occupying no fewer than ten volumes, three devoted to the Northern States of the Union, three to the Slave States, three to the Eastern and Western States, and one to Canada, Nova Scotia, and New Brunswick. The European travels are described in two volumes on Belgium, the Rhine, and Switzerland. All these contain much valuable descriptive and statistical matter, the author having paid more attention than is usual with tourists, to the social condition of the countries which he visited. Mr. Buckingham was one of the most pleasing and instructive popular lecturers, especially in describing places which he had visited. In 1832, he was elected M.P. for Sheffield in the first reformed Parliament, and retained his seat till 1837. In his political life, he chiefly took an active part in questions affecting social reforms; and the temperance movement had in him a zealous advocate. In 1849, he published a volume, entitled 'National Evils and Practical Remedies,' in which he expounded his views on a variety of topics of public interest. Mr. Buckingham died on the 30th of June last, aged 69. His last work, published a few months before his death, was his 'Autobiography.'

CARR, Commander Washington, entered the navy in 1811, and in May, 1843, was appointed to the command, in the West Indies, of the 'Hermes' steam-sloop. Commander Carr was known as an amiable man and a sincere friend.

CHATTERTON, Sir William A., Bart., an early Fellow of this Society, died in August last, at Rolls Park, Essex. He was born in 1787, and was the second Baronet, a Deputy-Lieutenant of the county of Cork, a Vice-President of the Royal Literary Fund, a Fellow of the Zoological Society, and a member of the Imperial Academy of Sciences of St. Petersburg.

COLQUHOUN, the Chevalier James de, LL.D., &c., one of the earliest Fellows of this Society, was the only son of Dr. Patrick Colquhoun, late Lord Provost of Glasgow, one of the first who applied himself to the development of the statistics of the British empire. He founded and carried out the present system of Thames Police, whereby the mercantile interest is now so efficiently protected; and

suggested in his work on the Metropolitan Police, the adoption of an improved system for the protection of public property and of personal safety, subsequently carried out by the late Sir Robert Peel.

In 1800, he became the private secretary of Mr. Dundas, then the Secretary of State for the War Department; three years later, he received the appointment of Deputy Agent-General for the payment of volunteers. In 1817, the Hanseatic republics constituted him their representative here, and the legislatures of St. Vincent, Dominica, St. Christopher, Tortola, Tobago, Nevis, and the Virgin Islands, at different times nominated him to watch over their interests. In 1827, he was appointed Consul-General of the King of Saxony; and in 1848, his Royal Highness the late Grand Duke of Oldenburg appointed him his *Chargé d'Affaires*. He was Knight Commander of the first class of the Royal Saxon Order of Civil Merit. On the signature by Reshid Pasha, of a treaty of recognition between the Hanseatic republics, as their Plenipotentiary he received the Order of *Iftihar* of the first class from the Sultan; and the Hanseatic republics conferred on him the honorary diploma of citizenship, to which the Senate of Lübeck and Hamburg added their honorary medal. The University of Glasgow also conferred on him the honorary degree of LL.D.; and the Royal Antiquarian Society of Athens constituted him an honorary fellow. As Hanseatic Plenipotentiary he signed the commercial treaties with Great Britain, the Ottoman Porte, Mexico, and Liberia; and he also signed a treaty, as Saxon Plenipotentiary, with Mexico. He died on the 23rd of July, 1855, in the 76th year of his age.

ESTCOURT, Major-General J. B. Bucknall, died before Sebastopol last June, of that disease—cholera—which carried off so many of our brave countrymen, in his 53rd year.

General Estcourt, educated at Harrow, entered the army as an ensign, and served in the expedition to the River Euphrates from 1836 to 1837; he went out in 1854 on the staff of Lord Raglan; and served as Adjutant-General of the Forces, from the first landing in the Crimea, sharing the glories and dangers of Alma, Balaclava, and Inkermann. In 1848 he was elected a member of parliament for Devizes.

FRASER, James Baillie, Esq., of Reelick, Inverness, a Deputy-Lieutenant of that county, died in January last, in his seventy-second year. He was born in June, 1783, and was the eldest of four brothers, all remarkable men, sons of the late Edward S. Fraser. James Baillie went early in life to the West Indies; but

after a short residence there he resolved, like his brothers, to proceed to the East, whence he returned to this country, about the year 1822. Mr. Fraser again went to India, and was employed in a diplomatic mission, in the course of which he rode on horseback from Constantinople to Ispahán, the fatigues and hardships of which gave the first shock to his vigorous constitution. When the Persian princes visited this country, he was requested by Government to accompany and take charge of them; and on their return, he went with them as far as Constantinople. Latterly, Mr. Fraser became a zealous improver of his Highland estate, which is almost unequalled for its magnificent woods and romantic burn scenery.

In 1820, Mr. Fraser published a 'Tour through the Snowy Range of the Himalaya Mountains;' in 1825, a 'Narrative of a Journey into Khorasan in the Years 1821 and 1822, including an Account of the Countries to the North-East of Persia;' and in 1826, 'Travels and Adventures in the Persian Provinces.' In 1838, appeared his work, 'A Winter Journey from Constantinople to Tehrán, with Travels through various parts of Persia.' He wrote also a History of Persia, contributed various pieces to the *Annals*, and ventured once more into the regions of fiction by a Scottish story, 'The Highland Smugglers.' His last work was a military memoir of Colonel Skinner, a distinguished Indian officer, who died at Delhi in 1841, and was buried by the side of his friend William Fraser.

Mr. Fraser was as accomplished as an artist, as he was as an author. He was an exquisite painter in water-colours, and several of his drawings of Eastern scenes have been engraved.

HALL, Dr. George, was well known as an accomplished traveller. Elected, in 1822, a Radcliffe Travelling Fellow of Oxford, he went abroad, and, after visiting the greater part of Europe, joined the Count Alexander de la Borde, who, with his son Count Léon and the Duke de Richelieu, were about to travel in the East. Dr. Hall accompanied that distinguished party throughout the whole of their well-known journey through Egypt and Asia Minor, which gave him opportunities of visiting some parts of those countries then little known.

Whilst at Jericho he made an excursion to the ruins of the cities of Geraza and Amman, in the country E. of the Jordan, of which he printed an account in 1851, for private circulation. It is to be regretted that with the exception of a description of Azani, which appears in Colonel Keppel's 'Journey across the Balkan,' no other portions of his travels have as yet been published.

His varied and extensive knowledge and a most amiable disposition made his society always much sought after, and endeared him to a large circle of friends who will long deplore his loss.

HAMMOND, William, Esq., was elected a Fellow in the year 1838.

HARRIS, Captain Fortescue William, was born in 1821, educated at the Royal Naval School, and afterwards entered the merchant service. After many voyages to China, the East and West Indies, he was appointed to the command of the 'Madagascar' in 1852; went to Calcutta and back, and sailed on the 6th of March, 1853, for Melbourne, Victoria. He left Melbourne homeward-bound on the 12th of August the same year, since which time nothing has been heard of the crew or ship, which is supposed to have foundered while coming round Cape Horn.

IRVING, Edward George, M.D., R.N., was born 1st April, 1816, in the parish of Hoddam, Dumfriesshire, where he commenced his education and continued his studies for several years. He then went to the University of Edinburgh, and remained there until he obtained the degree of M.D. In 1840, he entered her Majesty's navy, and joined H.M.S. 'Britannia.' On the 14th October, 1840, he was appointed to H.M.S. 'Bellerophon,' Captain C. Austen, and was present at the siege of Acre. In August, 1841, he joined H.M.S. 'Isis,' Captain Sir John Marshall, on the Cape of Good Hope station, and remained in her three years. His next appointment was in 1845, to H.M.S. 'Tortoise,' for service on the Island of Ascension. He continued on the African coast until June, 1848, during which time fever prevailed to a great extent, and his own health suffered severely. He remained in England until May, 1850, when he again returned to the West Coast of Africa in H.M. steam-sloop 'Prometheus,' Captain Henry Foote: that officer having been ordered to proceed on a mission to Abbeokuta, Dr. Irving accompanied him thither; and on his return to England, in January, 1853, he wrote an account of their journey, which was published in the 'Church Missionary Intelligencer.'\*

The testimony of Captain Foote and Dr. Irving proved that the natives of Abbeokuta and the Yoruba tribe generally, are an enterprising, industrious, and tractable people, and that the effect of missionary labour had been, to turn their thoughts from war and kidnapping to peace and the pursuits of lawful commerce. They

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\* Vide 'Church Missionary Intelligencer,' June, August, and October, 1853.  
—ED.



had also entered into treaty with the English Government, and friendly relations had been established with the British consuls on the coast, as well as with her Majesty's cruisers engaged in the suppression of the slave trade.

In this state of things the missionaries were the only persons able to give the natives advice upon their political and commercial affairs; yet it was obviously desirable that, as religious teachers, they should be relieved as far as possible from such temporal cares; and for this purpose the Committee of the Church Missionary Society determined to send out a lay agent, who, while on friendly and confidential terms with the missionaries, might also be authorised to communicate with the Consul and naval officers, as well as with the Home Government, upon matters which may tend to promote British interests and commercial relations with the native tribes.

Dr. Irving's experience of nine years upon the West Africa coast, and the interest which he had taken in native civilisation and Christianity, pointed him out as a most eligible person for such an office. It was, therefore, proposed to him to go out for three years on this mission, and he readily acceded to the proposal. The Lords Commissioners of the Admiralty having granted the leave of absence, Lord Clarendon, as her Majesty's Secretary for Foreign Affairs, gave his sanction to the arrangement, and furnished Dr. Irving with letters of introduction to the consuls. Furnished by the Hydrographic Office and by this Society with instruments, with the use of which he had made himself perfectly acquainted, Dr. Irving proceeded to Africa in January, 1854, and diligently improved every opportunity for gaining the confidence of the natives, for promoting internal peace, and for inducing the chiefs to open and protect roads from various towns in the interior, to the coast. His period of labour was very short. He fell a victim to the climate after fifteen months' residence, and his death was deplored by all the native chiefs as a national calamity. His botanical collections have been sent to our learned associate, Sir William Hooker, at Kew.

KING, Philip Parker, Rear-Admiral of the Blue, F.R.S.—Admiral King, the son of Philip Gidley King, Esq., Post-Captain in the Royal Navy, was born at Norfolk Island on the 13th of December, 1793, and was consequently in the 63rd year of his age. In early life, when only in his sixteenth year, his gallant conduct in boat actions, had obtained the favourable notice of the officers in command. In later years, he conducted a survey of the coasts of Australia, and subse-

quently of the southern coasts of America. In February, 1817, he was entrusted with the conduct of an expedition having for its object a survey of the coasts of Australia, a service on which he continued employed in the 'Mermaid,' cutter, and 'Bathurst,' sloop—to the command of which he was promoted by commission, dated 17th July, 1821—until his return to England in 1823. The results of the undertaking are contained in a Narrative of the Survey of the Inter-tropical and Western Coasts of Australia, and in an Atlas, both compiled by Captain King, and published, the former by Murray, and the latter by the Hydrographic Office of the Admiralty. In September, 1825, from the feeling of confidence with which he had impressed the Admiralty, in the discharge of his late duties, he was appointed to the 'Adventure,' sloop, and ordered to survey the southern coast of America, from the entrance of the Rio de la Plata round to Chiloe, and that of Tierra del Fuego. He was paid off on his arrival in England, 16th November, 1830, and has not been since employed. His post commission bears date 25th February, 1830.

In 1832, Captain King published, as the partial fruit of his recent voyage, a volume entitled, 'Sailing Directions to the Coasts of Eastern and Western Patagonia, including the Straits of Magellan, and the Sea Coast of Tierra del Fuego.'

On his retirement from active service, Captain King returned to Australia, and shortly after his arrival, succeeded Sir Edward Parry as manager of the affairs of the Australian Agricultural Society, the duties of which office he discharged with characteristic and exemplary ability and attention for several years. He was appointed a nominee member of the Legislative Council by the governor, Sir Charles FitzRoy; but latterly he held his seat in the House in the more honourable capacity of a representative member, having, at the general elections of 1851, offered himself as a candidate for the constituency of Gloucester and Macquarie, and on that occasion was returned by a large majority over his opponent, Mr. Joseph Simmons. During the last session of Council, he strongly supported, in particular, the proposition for the establishment of a nautical school. For some time past he held the office of chairman of the Denominational Board of Education, and was consequently regarded as the representative of that body in the Council.

His was the first instance of a native of Australia rising to so distinguished a rank in the British navy, and every one must feel a deep regret that his enjoyment of the honour was for so brief a period.

Both in public and in private life, Admiral King merited, as he obtained, the cordial regard and high respect of all to whom he was known, whether personally or by repute.

LAWRENCE, the Hon. Abbott, who died at the age of 63, was the fifth son of Samuel Lawrence, and was born in Groton, Massachusetts, became a member of the Common Council of Boston in 1831, and in 1834 was elected to Congress, and served the term. He declined a re-election, but consented in 1839 to be a candidate to fill the vacancy caused by the resignation of Richard Fletcher, was elected, and took his seat in the House in December of that year. Upon his entrance into Congress he was put on the Committee of Ways and Means.

Mr. Lawrence, in 1842, was appointed a commissioner on the part of Massachusetts, to arrange the North-Eastern Boundary Question, and rendered most efficient service. In 1849, he was invited by General Taylor to take a seat in his Cabinet. He declined the offer, but accepted the appointment of Minister to Great Britain, the duties of which office he performed honourably to himself, satisfactorily to this, and advantageously to his own country. Mr. Lawrence was public spirited, liberal, charitable, and benevolent. In all schemes of public improvement he took a deep interest, and aided them with his hand and purse. His foundation of the Lawrence Scientific School, at Cambridge, by a gift of 50,000 dollars, and the bequest of an additional 50,000 dollars in his will, his establishing prizes for the deserving scholars of the public schools, and the aid always generously given by him to churches and to religious and charitable associations, are well known.

LOCH, James, Esq., died last July at his residence in Albemarle-street, aged 75. He was an Advocate and Barrister-at-Law, and Fellow of the Royal Geographical, Geological, Statistical, and Zoological Societies of London; formerly M.P. for the Kirkwall and Wick district of burghs.

Mr. Loch was the author of a 'Memoir of George Granville, late Duke of Sutherland,' 4to. 1834; and his second son was the late Captain G. G. Loch, R.N., F.R.G.S., Surveyor of the River San Juan de Nicaragua, and author of 'The Closing Events of the Campaign in China,' 1843, 8vo.

MITCHELL, Colonel Sir Thomas L., D.C.L., F.R.S., Surveyor-General of New South Wales, and one of the earliest members of this Society, died in October last, aged 63. He joined the army in the Peninsula when only sixteen, served on Wellington's staff to the close of

the war, and was subsequently sent back to survey the battle-fields of the Peninsula. His model of the Lower Pyrenees is in the United Service Museum. In 1827, he was sent to survey Eastern Australia, having the appointment of Deputy Surveyor-General. A report of all his surveys is to be published by the Australian Legislature. Sir T. Mitchell made several exploring expeditions into the interior of the country, of which valuable narratives have been published.

In Australia, the name of Sir Thomas Mitchell will be remembered with respect, as one of the earliest and most useful explorers of these rapidly-rising colonies.

MOLESWORTH, the Right Hon. Sir William, Bart., M.P., F.R.S., died in October last, at his residence in Eaton-place, in his forty-sixth year. Sir William was the eighth baronet of Pencarrow, Cornwall, her Majesty's principal Secretary of State for the Colonies, and M.P. for Southwark, a deputy-lieutenant and magistrate of Cornwall, &c.

On his entry into public life, Sir William joined with that section of philosophical Radicals, who were for a period united by subscription to the doctrines of Bentham; he contributed to the 'Westminster Review,' and published at his own cost an elaborate edition of the works of Hobbes. He took office, with a seat in the Cabinet, some three years ago; and, last spring, was raised to that particular office, the Colonial Secretaryship, for which universal consent pronounced him to be so eminently fitted. Sir William, on the recommendation of Sir Roderick Murchison, appointed our Associate, Dr. C. P. Sutherland, who had previously accompanied Captain Penny and Captain Inglefield to the Arctic regions, as Government Geologist and Surveyor at Port Natal, a post for which his abilities eminently qualified him.

NEELD, Joseph, Esq., M.P., F.S.A., F.L.S., died, at his residence in Grosvenor-square, last March, aged 67. Mr. Neeld was a Deputy-Lieutenant of Wiltshire, M.P. for Chippenham, and High Steward of Malmesbury.

OUTRAM, Sir Benjamin Fonseca, M.D., R.N., C.B., F.R.S., also one of the earlier Fellows of this Society, died at Brighton in February last, aged 82. He was the son of Captain W. Outram, was first employed in the medical naval service in 1794, and rose to the rank of surgeon in 1796. He graduated at the University of Edinburgh in 1809, became a licentiate of the College of Physicians in 1810, and was a few years since elected a Fellow. During the long war he was actively engaged in his professional duties, and received

a medal and clasps for the actions in the 'Nymphe,' the 'Boadicea,' and the 'Superb.' He was appointed Inspector of Fleets and Hospitals in 1841, and in 1850 nominated a Companion of the Bath and a Knight Bachelor. Sir Benjamin took a lively interest in the pursuits of this Society, and constantly attended its evening meetings. He was a true friend and a kindhearted man, and in his will bequeathed various sums to several charitable institutions.

PARRY, Rear-Admiral Sir William Edward, Kt., D.C.L., F.R.S., &c. &c.—It is now my melancholy duty to pay a tribute of respect and regard to our great Arctic navigator, Sir Edward Parry, whose memory will ever be coupled with the records of Arctic adventure of the nineteenth century. Early associated with Sir E. Parry as a messmate, afterwards his first lieutenant during the memorable voyage to Melville Island, and his friend through life, I shall, I am sure, be excused for dwelling on his distinguished career. He was born at Bath in the year 1790, and entered the Royal Navy at the age of twelve, under the patronage of Lord Cornwallis. Zealous in his profession, intelligent and ambitious, Parry soon recommended himself to notice, and in January, 1810, he was promoted to the rank of Lieutenant and appointed to the 'Alexander,' employed in protecting the Spitzbergen whale fishery. It was here that he first became acquainted with that frozen ocean, amidst whose dangers and difficulties he was destined to earn celebrity. Subsequently serving in the 'Hogue,' he assisted in destroying twenty-seven of the enemy's vessels, three of which were heavy privateers. This, and a few skirmishes with the Danish gunboats, are the only actions with the enemy which fell to his lot.

On his return to England in 1817, the extraordinary changes reported to have taken place in the state of the Polar Sea, determined the Government to equip an expedition for Arctic discovery. Then was the turning-point in Parry's life. Like most men of enterprise, he seized the occasion and determined to devote himself to Arctic adventure. There are but few who have not, at some time, the chance of distinction, and Parry took advantage of his. We accordingly find him in command of the 'Alexander,' and, under the orders of Sir John Ross, leaving England in quest of the North-West Passage, by way of Davis Strait; the result of this expedition, it is well known, was the restoration to our map of the outline of Baffin Bay, and the re-discovery of the famed Lancaster Sound.

Dissatisfied, however, with the account which had been given of

the result of this voyage, and anxious to remove an erroneous impression conveyed by Sir John Ross on the subject of Lancaster Sound, he made such representations to the Admiralty as induced Government to send another expedition to the same place. Of this expedition Sir E. Parry was appointed chief. During the voyage, an opportunity occurred for displaying that vigour and determination in overcoming difficulties, which, though they might daunt the generality of men, were unable to turn him from his purpose. In the upper part of Baffin Bay there presented itself what appeared to be an impenetrable barrier of ice; undismayed by the dangers that threatened, he dashed into the midst of it, accomplished his purpose, and entering Lancaster Sound in safety, succeeded in passing over that imaginary chain of mountains with which Ross had closed the strait.

The demolition of these phantom mountains, and the discovery of the opening into the Polar Sea on the west, of Prince Regent Inlet on the south, and of Wellington Channel on the north, together with Parry Islands (the Ultima Thule of Arctic discovery) and Banks Land, the terminating points of Sir E. Parry's and Sir R. M'Clure's explorations from opposite directions, were the consequences of the first summer of this expedition. Having passed the meridian  $110^{\circ}$  W., the Commander and his associates became entitled to the award of 5000*l.* offered by Government for the encouragement of Arctic enterprise. The winter they were destined to pass in this dreary region afforded another opportunity for Parry to display those qualities which so eminently fitted him for the work he had selected, since, by his admirable arrangements for the health, comfort, and amusement of his men, he was enabled to keep the crews in vigour, mental and bodily, while, by the vast number of observations he carried on, he determined his geographical position with a precision worthy of a better object.

In the following spring, by an overland journey, he discovered Liddon Gulf, where his broken cart remained to be seen by M'Clintock, thirty years afterwards. Finding any farther advance with his ship impossible, he determined in the latter part of the summer of 1820 to return to England, where he arrived in safety, and received, on all sides, a most enthusiastic greeting. He had but little rest, however, for in the May following he was again appointed to command another expedition, which was to proceed by way of Hudson Strait and Sir T. Rowe's Welcome. Although this voyage, like the last, failed in its main object, much valuable geographical know-

ledge resulted from it, and considerable information as to the Esquimaux tribes of that region was obtained. On returning to England Parry was promoted to the rank of Captain, and in another year found himself once more on his way to the frozen North, in order, if possible, to co-operate with an overland expedition under Franklin. This was the last of Parry's North-Western voyages. The subject of our memoir was now confirmed in the office of Hydrographer to the Admiralty, which had before been temporarily held by him; still, however, directing his attention to Arctic research, he offered to carry out a scheme, which had been proposed in 1818 by Franklin and myself: namely, to attempt reaching a high northern latitude by travelling over the Spitzbergen ice. He accordingly sailed in 1827 for Hammerfest, and doubtless would have succeeded in his object, but that an unexpected impediment presented itself; for the ice over which he travelled was found to move southward at almost the same rate he advanced northward, and he was most unwillingly compelled to retrace his journey, having proceeded to  $82^{\circ} 45' N.$  lat.—farther towards the Pole than any of his predecessors.

In 1829, Parry was appointed Commissioner for the management of the affairs of the Australian Agricultural Company, and, in pursuance of the duties of the office, took up his residence at Port Stephen, 60 miles to the north of Sydney. Before leaving England, he received the order of knighthood, and was created D.C.L. of Oxford.

Returning once more to England, after an absence of five years, he was made Poor Law Commissioner in the county of Norfolk, but did not long hold an appointment which was uncongenial to his tastes. Soon after this, Sir E. Parry was selected to organize and conduct a newly-created department of the Admiralty, under the title of Comptroller of Steam Machinery, and it was during the time that he remained in this office, that the screw-propeller, now indispensable to our fleets, was introduced into the navy.

In 1847, in consequence of failing health from over-work, he resigned this also, and became Captain-Superintendent of Haslar Hospital; and, in 1853, the Lieutenant-Governorship of Greenwich Hospital falling vacant, he accepted it.

Disease, however, had begun its ravages, and, under the direction of his medical advisers, he determined to try the waters of Ems. On his way to these baths he was detained by exhaustion at Coblenz, and only reached Ems to die.

Thus ended the career of one of the most distinguished officers of his age, who had spent his days in active usefulness, and whose life

was remarkable not only for its varied character, but also for the genuine and unaffected piety which pervaded it.

Among the works which Sir E. Parry left behind him, we may enumerate a small volume on 'Astronomy by Night,' another on the 'Parental Character of God,' and an 'Address to the Sailor,' besides the narrative of his voyages, which, in value, compete almost with those of Cook. We find him also associated with three papers in the Transactions of the Royal Society.

PHILLIMORE, Joseph, Esq., D.C.L., was the eldest son of the Rev. Joseph Phillimore. He graduated in Civil Law, becoming B.C.L. in 1800, and D.C.L. in 1804. He had been distinguished for his scholarship, and especially for the talent for composition which he displayed, as well at Westminster, as after his removal to Christ Church, where he gained the College prize for Latin verse. In 1798 he obtained also the University prize, which was adjudged to his English essay on 'Chivalry.' After some residence in foreign parts, he settled in London, and was admitted an advocate in Doctors' Commons 1804. On the death of Dr. Lawrence, in 1809, he was nominated judge of the Cinque Ports by Lord Hawkesbury; Chancellor of the Diocese of Oxford by Bishop Moss; and Regius Professor of Civil Law at Oxford—an office upon the reputation of which his classical taste and language have shed additional lustre.

On the installation of the Marquis Camden as Chancellor of the University of Cambridge in 1834, Dr. Phillimore was invited to Cambridge, to receive an honorary degree from the sister University.

PUSEY, Philip, Esq., D.C.L., F.R.S., of Pusey Park, Berkshire, died July last, at his brother's residence in Christ Church, Oxford, aged 56. He succeeded to the family estates on the death of his father in 1828, and entered parliament in 1830, as one of the members for Chippenham.

As a practical agriculturist, Mr. Pusey was highly distinguished. He was the President of the Royal Agricultural Society in 1853, and he edited and largely contributed to the Journal of that Society. He was universally beloved, for there was a natural frankness and warm-heartedness with him, that developed themselves in every relation of life; and among his tenantry it was impossible for any one to be more highly esteemed.

SANTAREM, le Vicomte de, Manoel Francisco de Barros e Sousa da Mosquita de Macedo, Leitao e Carvalhaza, Corresponding member of this Society.

This learned Portuguese, born at Lisbon in 1792, was a member



of one of the most ancient and illustrious families of Portugal. After having received an excellent education, he was sent as minister of Portugal to the Court of Denmark; recalled after the revolution of 1820, he was appointed, in 1823, keeper of the archives of the realm, having already, in 1821, during a sojourn in Paris, collected numerous documents bearing upon the history of Portugal from among the MSS. in the 'Bibliothèque Royale.' In 1827, he was appointed Minister of Foreign Affairs, but shortly afterwards, upon his retirement, he proceeded to Paris, where he joined the Geographical Society in 1835, and was afterwards elected Vice-President. The library of our Society is enriched with numerous works from his pen; and it was but last year that my predecessor in this chair directed the attention of the world to his beautiful work on the 'Discoveries of the Portuguese,' and other labours, which have been so suddenly interrupted by his death, which took place in February, 1856.

•SYMONDS, Rear-Admiral Sir William, K.H., C.B., F.R.S.—late Surveyor of the Navy—died in March, on his voyage from Malta to Marseilles, aged 74. Sir William entered the navy at an early age, and, during the early part of his career, was much engaged in active service on the coasts of France, Spain, and in the West Indies. He obtained post rank in 1827; and in 1831, Capt. Symonds was enabled, through the munificence of the Duke of Portland, to build the 10-gun brig 'Pantaloön,' the triumph of which vessel led to the construction, under his superintendence, of the 'Vernon,' 50; 'Vestal,' 26; 'Snake,' 16, and others. On June 9th, 1832, he was offered, and accepted, the appointment of Surveyor of the Navy, which he continued to fill until 1847.

Sir William Symonds received the honour of knighthood for his services, and the thanks of the Admiralty in 1830 for a memoir containing 'Sailing Directions for the Adriatic Sea;' and again, in 1837, for "the valuable qualities of his several ships, and for improvements introduced by him into the navy." He was elected a F.R.S., 1835, and nominated a C.B. on the Civil division, 1848. In 1854 he became a Rear-Admiral on the retired list.

URCULLU, Don José de, was born in Hamburg on the 8th April, 1787. His father, D. Manuel de Urcullu, the Spanish Consul in that city, brought him, at an early age, to Bilboa, where he had possessions. On the death of his father, he was sent to be educated to the college of São José de Calasan, in Saragossa, where he graduated in the faculty of Philosophy. In 1807, having

completed his studies, and being then little more than 20 years of age, he entered the regiment of Saragossa, and was made prisoner by the French in 1808. He continued in the military profession till the year 1820, when he left it, having attained the rank of Captain, and dedicated himself, with all the ardour of a studious mind and a lively imagination, to the pursuit of literature; writing and translating various works in prose and verse. These works gained for him the distinction of being nominated a Corresponding member of this Society; of the Geographical Society of Paris; and of Rio Janeiro. In the year 1822, when secretary to the Captain-General, he married the eldest daughter of Mr. Richard Allen, the English Consul at Corunna; and the Consul dying soon after, he proceeded with his wife and family to establish himself in the city of Oporto, but was obliged to emigrate to England in the following year in consequence of political disturbances. He returned to Oporto in 1827, and was appointed manager of the Fiscal Department of the Royal Tobacco Contract, and subsequently Administrator of the Commercial Press of Oporto. In the same year he was appointed Consul of the Republic of Peru at Oporto. In 1847 he returned to Oporto from Puerto de Sta. Maria; and in 1850, at the request of a private friend, resident in Bilboa, he went to that city to open and direct a college for superior education, which undertaking he carried out with the most praiseworthy success. Finding, however, himself in ill health, he returned in 1851 to the bosom of his family, and, after long and severe suffering, he died, much lamented by his relatives and friends, by whom he had been always esteemed for his many virtues and high character. He was buried in the cemetery of Nostra Señhora da Lapa, in the city of Oporto.

WHARNCLIFFE, John Stuart, Lord, F.R.S., second Baron Wharncliffe of Wortley, county of York, died in October last, at his residence, Wortley, Sheffield, at the age of 54.

His Lordship was greatly attached to agriculture, seeking all the newest modes to improve the culture of the land. He addressed a letter to Philip Pusey, Esq., on Drainage, published in the Journal of the Royal Agricultural Society.

WIDDRINGTON, Captain Samuel E., R.N., F.R.S., died January last, at his residence, Newton Hall, near Felton, Northumberland. He was the eldest son of the Rev. Joseph Cook, M.A., of Newton. In October, 1829, Captain Cook went to Spain, and having subsequently resided for three years in that country, he published, in 1834, in two volumes octavo, 'Sketches in Spain during the years 1829-30-31

and 32, containing Notices of some Districts very little known; of the Manners of the People, Government, recent Changes, Commerce, Fine Arts, and Natural History.' This work, which was dedicated to Lord Prudhoe (afterwards Duke of Northumberland), was the most complete account in our language.

In 1843 (having then assumed the name of Widdrington) he repaired to Spain again, and, in the following year, published another book, entitled 'Spain and the Spaniards in 1843,' in 2 vols.; also dedicated to the Duke of Northumberland.

Captain Widdrington was a magistrate and deputy-lieutenant of Northumberland.

WIELHORSKI, the Count de, who died in the Crimea, whither he had been despatched by the Empress of Russia upon a charitable mission of relief to the sick and wounded of the Russian army. This amiable young nobleman was well known to this Society in connection with his kind services in procuring the necessary letters of introduction to the governors of Russian America for various Arctic commanders, as well as for his presentation to our library of the 'Agricultural and Statistical Atlas of European Russia,' with a translation into good English, made by himself at the request of our Secretary.

YATES, Joseph Brook, Esq., F.S.A., the last name on our list, and one of the earlier Fellows of this Society, died in December last at Liverpool, aged 75.

Mr. Yates was educated at Eton, and subsequently became actively engaged in commercial pursuits, which however in no wise diminished his taste for literary and scientific subjects. In 1812, he and Dr. Traill, now of Edinburgh, mainly contributed to the foundation of the Literary and Philosophical Society of Liverpool.

In 1839, Mr. Yates drew attention to a subject of great local importance—the rapid changes which take place in the mouth of the Mersey; and noticed the possible difficulties which might hereafter be experienced in the commerce of the port. These had attracted the attention of the marine surveyor and of many ordinary observers, but it was not easy to discover a cure for an admitted evil. At the meeting of the British Association at Liverpool in 1854, Mr. Yates, in a paper read before the Geographical section, again directed attention to the subject, and a committee was appointed to inquire into the whole matter, which has held its sittings in the house of the Royal Geographical Society, and which is still pursuing its labours.

In the pursuits of geographers and travellers he took a deep interest, and he possessed some curious mediæval maps and charts.

In February, 1838, he read a paper on the State of Geographical Knowledge and the Construction of Maps in the Dark Ages, with an account of their revival in the sixteenth century. He was a Fellow of this, of the Antiquarian, and of several other learned Societies.

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#### GEOGRAPHICAL PROGRESS.

The great military events in which the country has been engaged during the past year, and the objects to which the energies of the nation have necessarily been directed, may naturally be supposed to have diverted attention from those pursuits of science which are not of a military character. Although this may be true in some respects, yet much has been accomplished in the branch of science which we cultivate, and but few of the meetings of the Society have passed without some addition to our store of geographical knowledge.

#### EUROPE.

*Great Britain—Ordnance Survey.*—The present year will be marked as a great epoch in the history of the geography of our own country. The Trigonometrical Survey, which commenced, in 1784, under General Roy, R.E., has just been brought to a close under Lieut.-Colonel James, R.E., the present zealous superintendent of the Ordnance Survey. The principal object which the Government had in view when the Trigonometrical Survey was commenced, was the determination of the difference of longitude between the observatories of Greenwich and Paris; and for this purpose a base line was measured on Hounslow Heath, from which a series of triangles, including the Observatory of Greenwich as one of the points, was carried to Dover and the opposite coast of France. The French geometricians at the same time extended their operations also to the coast, and the connection between the triangulations of the two kingdoms was made by conjoint simultaneous observations.

This chain of triangles from Hounslow to Dover was then made the basis of the Topographical Survey, which was also in progress at that time under the Master-General of the Ordnance; and from Hounslow as a starting point, the triangulation has been carried over the whole extent of the United Kingdom. Lieut.-Colonel James has recently communicated to the Royal Society the principal results of the Trigonometrical Survey, in a paper on the Figure,

Dimensions, and Mean Density of the Earth, as derived from the Ordnance Survey.' In this communication, he states that now that the observed angles have been corrected by the most refined methods of mathematical science, the triangulation is rendered perfectly symmetrical and consistent in itself, so that, any side being taken as a base, the same length will be reproduced when it is calculated through the whole or any part of the triangulation. This, as regards the angular measurements, leaves nothing to be desired; and when the five measured bases are incorporated in the triangulation, although some of them are 400 miles apart, and from 5 to 7 miles in length, the greatest difference between the measured and computed lengths of the bases does not amount to 3 inches; and it may be safely affirmed that such a degree of accuracy was never before attained in so extensive a triangulation.

Astronomical observations have been taken at numerous trigonometrical stations for the purposes of determining their latitudes, and by comparing the amplitudes of the astronomical with the geodetical arcs, the figure and dimensions of the Earth have been determined. In determining the most probable spheroid from all the observed amplitudes, continues this talented officer, it was evident that the plumb-line was deflected from the true direction of the zenith at several points, and that this was the case at the Royal Observatory of Edinburgh and Arthur's Seat near it, to the extent of 27" to the south. The configuration of the ground—the great valley of the Frith of Forth being on the north, and the range of the Pentland Hills on the south—presented a tangible cause for the deflection; but as the contoured plans of this district were published, and Colonel James was himself personally acquainted with the geological structure of the country, he had observations made on the summit and on the north and south flanks of Arthur's Seat, with the view of determining the amount of the attraction of its mass, and from thence deducing the mean specific gravity of the Earth. The computed deflection of the plumb-line due to the configuration of the ground, accounted in great measure for the observed anomaly in the amplitudes of the arcs of the meridian. The longest arc of meridian which has been computed in Great Britain, extends from Dunnose in the Isle of Wight, to Saxaford in the Shetland Islands, and is  $10^{\circ}$  in length. The Polar diameter of the Earth, as determined by the Ordnance Survey = 7,900 miles; the Equatorial = 7,926; the compression =  $\frac{1}{298.3}$ ; the mean density = 5.316.

These great geodetical operations have now been brought to a

close, and a full detailed account of them is in the press, and will be shortly published. The latitudes and longitudes are now being engraved on the marginal lines of all the first published sheets of the Survey of Great Britain. The progress of the detailed Survey of Scotland and the northern counties of England has frequently been brought to the notice of this Society, and much dissatisfaction has been expressed at the slow progress which has been made. Since 1851, when the Committee of the House of Commons, of which Lord Elio was chairman, reported upon the subject, the question as to the scale upon which the MS. plans should be drawn may be said to have been under constant discussion; and for two years of this period, the officers engaged in the survey, in consequence of the frequent change of orders and the long period during which they were without any orders whatever, made scarcely any progress at all. Another Committee of the House of Commons has recently reported upon the subject. They had before them, the written opinions of the most able professional and scientific men in the kingdom; and, continues Col. James, it is to be hoped that the recommendations of that Committee will now be finally adopted for the future guidance of the officers on the survey. They are, as nearly as possible, having reference to the difference in the standards of measure in the two countries, conformable to the instructions for the survey of France, viz.—

1. For the *cultivated districts* the original plans are to be drawn on the scale of  $\frac{1}{25334}$  of the linear measure of the ground, or 25.334 inches to a mile, which is sensibly the same as one square inch to one acre.

2. The *uncultivated districts* are to be drawn on the scale of 6 inches to a mile, and the 25-inch plans are also to be reduced to this scale, previous to the whole being reduced to the scale of one inch to a mile, to complete the general map of the kingdom on that scale.\* The object which the Government now has in view is, to make the National Survey the basis for the valuation and registration of the sales of property, to facilitate the transfer of property, and for all general or local engineering purposes, including the Hydrographical and Geological Surveys, and every purpose for which an accurate, authentic plan or map is required. This gives an importance to the survey which it never before possessed; and with the ample funds which the Government appear disposed to grant, it is expected that

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\* An arrangement which will, I am sure, be gratifying to our excellent *ci-devant* President, Sir R. Murchison, who so strenuously advocated it in his last Address to this Society.—See Vol. XXIII.

the whole of Scotland will be finished, as well as the north of England, within ten years.

The system of registering the levels by means of horizontal contours, has been for some time generally adopted on the Ordnance Survey, and their great value is now very generally acknowledged. The contours, when reduced to the one-inch scale, form the most perfect basis for the hill-sketching; and the plans now produced are the most perfect in all respects which were ever made. In England, the counties of Lancaster, York, and Durham have been surveyed for the large scales. In Scotland, the shires of Wigton, Kirkcudbright, Edinburgh, Haddington, Linlithgow, Fife, Kinross, Ayr, Dumfries, Peebles, with the Isle of Lewis, have been surveyed. Eight of the above counties have already been published, and the remainder are in course of publication, whilst the survey is now proceeding in Berwick, Lanark, Roxburgh, and Selkirk-shires.

The one-inch general Map proceeds *pari passu* with the surveys on the larger scales.

The whole of Ireland has been published on the 6-inch scale, and the 1-inch map is rapidly progressing, and several of the sheets are published.

While the subject of our Trigonometrical Surveys is under consideration, I may mention, on the authority of Col. James, that the Surveys of our Colonies are proceeding in the following places, under officers of the Royal Engineers, having, in most places, men of the Royal Sappers and Miners under them:—Australia, Tasmania, Ceylon, Mauritius.

*Admiralty Surveys.*—To a maritime nation like Great Britain, the importance of detailed nautical charts, with ample sailing directions for the guidance of the mariner, is too obvious to render any excuse necessary for entering with some minuteness into the state of the survey of our own shores. A rapid reconnaissance of a coast might have been tolerated half a century ago; but such a survey of any shore, much less of our own shores, cannot now be accepted. The Ordnance large-scale survey, with its almost mathematical exactness (within certain limits), and the labours of the civil engineer, with his accurate lines of levels extending across the island from sea to sea, have shown us that greater accuracy in our coast surveys has become requisite. Hence the necessity, among other considerations, of determining the tide levels with the greatest care in our estuaries and rivers. This has lately

been done by Commander Alldridge, whom I have the pleasure to acknowledge as a pupil of my own, in the river Dee, and in other places; by Mr. E. K. Calver in the Orwell and Tyne; and by Captain Williams in the Fal; while at the same time the progress of the tide wave, marked by the successive times of high water, has been carefully recorded, and the results have been of much assistance to the civil engineer.

*England.*—I learn from our able and zealous hydrographer, Capt. Washington, R.N., that on the south of England, Lieutenant Cox and Mr. Osborne have mapped the coast from the Bill of Portland westward to Golden Head, including the remarkable shingle beaches of Abbotsbury and the Chesil Bank, and have made a detailed plan of the harbour of Bridport. They have now begun a careful examination of Plymouth Sound, the result of which must be looked forward to with much interest, as it will show what effect the breakwater has had upon that anchorage, during the forty years that have elapsed since the stone of that structure first raised its head above the level of low water.

In Cornwall, Captain G. Williams and Mr. Wells have completed the thirty miles of coast between Fowey and Falmouth, with plans on a large scale of the harbours of Pentuan and Mevagissey, the latter so valuable to our pilchard fishery.

In the Bristol Channel, Commander Alldridge and Mr. D. Hall have produced an excellent plan of the rivers Taw and Torridge, leading up to Barnstaple and Bideford on the north coast of Devon. Their last year's work, namely, the plans of Milford Haven, with Pembroke Reach, on the scales, respectively, of 4 inches and 12 inches to a mile, have been published at the Admiralty.

Farther north the channels and shoals at the entrance of the Solway Firth have been re-examined, and the charts have been corrected for the material changes, which have occurred during the last twenty years, since this Firth was originally surveyed.

A new edition of Part I. of the Channel Pilot, comprising the entrance of the Channel and the coast of England as far as the Downs, has been compiled by Mr. J. W. King, Master R.N., and published at the Admiralty. Part II., which will contain the north coast of France, from Grisnez to Ushant, is well advanced.

*Scotland.*—The remarkably broken outline and indented shores of the Western Highlands of Scotland, embracing picturesque fiords and lochs, afford constant occupation for a large force of surveyors. Commanders Bedford and Creyke are employed in Argyllshire; and



parts of Jura, of Loch Spelve in Mull, and Loch Feochan, have been mapped during the past season.

More to the north Commander Wood, and Messrs. Jeffery and Taylor, are engaged on the shores of Skye, and have recently examined its northern coast from Loch Sligachan to Kyle Akin and Kyle Rhea. The nautical survey of these coasts, however, can only proceed slowly, as the coast surveyors have to do not alone their own legitimate work, but that of the Ordnance also, as the land survey has not yet reached the Western Highlands and islands of Scotland.

With the exception of part of the isle of Lewis, the Hebrides are yet unsurveyed; but a strong force, under Captain Otter, has again broken ground there, and there is reason to believe that this outlying portion of the realm of Scotland will not much longer remain the opprobrium of our maps and charts.

The Orkneys and Shetland have been revisited, during the past summer, by Mr. E. K. Calver, in order to revise and prepare for immediate publication the sailing directions of those intricate groups. This work has been very satisfactorily executed, and the Directions are now passing through the press.

In the Firth of Forth, Lieutenant Thomas and his assistants have examined the coast of Fife as far as Fifeness; they have filled in the deep-water soundings to the eastward of the isle of May; and if the season prove favourable, they will this year complete the survey of the Firth of Forth as far as St. Abb's Head, its natural southern limit.

*Ireland.*—Captain Washington, continuing his report, observes, in the county of Antrim, on the north-eastern shore of Ireland, Messrs. Hoskyn, Aird, and Yule have mapped the coast from Carrick-a-Rede southwards to Garron Point, a distance of about 40 miles; they have also connected by soundings Rathlin Island with the Main. The same party is now employed in recording the remarkable improvements that public spirit and good engineering have within the last few years effected in the harbour of Belfast.

On the coast of Donegal Captain Bedford and Lieutenant Horner have completed an elaborate and admirable plan of Lough Swilly, which shows all the striking features of that fine inlet of the sea, which has often proved a harbour of refuge to the toil-worn mariner in the hour of need.

On the south-west coast of Ireland, in the county of Kerry, Commanders Beechey and Edye, with Mr. W. B. Calver, have made a beautiful plan of Castlemaine harbour and bay, and are now ad-

vancing along the northern shore of the peninsula which forms the southern limit of Tralee Bay.

A little farther to the southward, on the same coast, Commander Church and Lieutenant Veitch have mapped the shore of Kerry, from Ballinskelligs Bay to Port Magee, and for the first time laid down correctly and given us the soundings around those striking schistose rocks, the Skelligs, which rise, almost precipitously, to a height of 700 feet above the level of the water, and on which bursts the whole force of the Atlantic ocean swell. This was a labour of no common kind, and required for its accomplishment a combination of skill, seamanship, and persevering energy that falls to the lot of few.\*

*Baltic.*—A time of warfare, at first sight, would not seem favourable to the advancement of hydrographical knowledge, or at least to the more peaceful branches of science, yet, observes Captain Washington, we are enabled to state that at the close of the struggle now happily terminated our acquaintance with the Baltic, and the Gulfs of Finland and Bothnia, is considerably in advance of what it was when the campaign opened; but it is to the Danish, Swedish, and Russian charts of those seas that we owe the fact of our ships being enabled to pass the Kattegat, the Belts, and the Sound without hesitation, and to navigate the inner gulfs of the Baltic without danger. Notwithstanding all the vague assertions to the contrary, it does not admit of a question, that no fleet ever left the shores of Great Britain so well provided with charts as the Baltic fleet. It is but an act of justice to the eminent hydrographers of Denmark, Sweden, Norway, and Russia (with whose charts the fleet was furnished), that their fame should be vindicated. The names of Zahrtmann, Klint, Vibe, and Lütke are of European reputation, and afford ample guarantee for the accuracy of the charts published under their superintendence. That opportunities have since been afforded for making additions to them is only what might

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\* It is with extreme regret that I have to add that this was the last labour of Commander Church. On his way to Ireland, after depositing his charts at the Admiralty, he was suddenly taken ill at Bristol, and in three days was no more. His worn-out frame, which had toiled for many years under an African sun, and had bravely buffeted with the Atlantic surge while mapping the coasts of Cork and Kerry, sunk under the attack, and thus deprived H.M. service of one of the best of its surveyors. Skilful, energetic, zealous, of unbending integrity, and a thorough seaman, he combined all the qualities of an accomplished surveyor; and so long as the Fastnet Rock and Cape Clear continue to be the landfall of vessels crossing the Atlantic from America, the mariner will have cause to bless the skilful hand that, by accurately defining the dangers of that iron-bound coast, has converted them into friendly landmarks for which the sailor may safely steer.

have been expected. A fleet numbering occasionally 100 sail could not be cruising for two summers in a narrow sea without taking soundings; and it is highly to the credit of the masters of that fleet generally that they availed themselves of every occasion of adding to the charts all the information they obtained. Our special surveyors, Captains Sullivan and Otter, and their assistants, Commanders Cudlip, Creyke, and Burstal, and Lieutenant Ward, R.N., were enabled to make plans of Led Sound in the Åland Isles, and the approaches to Bomarsund; of Barö and Häst Sounds, with the southern access to Sweaborg; of Wormsö Sound on the south side of the Gulf of Finland, with various tracks as far as Torneå and Haparanda, at the head of the Gulf of Bothnia.

It is worthy of special remark that the magnetic variation throughout these seas was found to be sensibly decreasing; indeed such proves to be the case all over the North Sea, the Irish Sea, and the Channel, and probably extends throughout the greater part of Europe; and the mariner cannot be too much on his guard against the amount of variation he finds marked on charts professing to be corrected up to the present year. The westerly variation in the British Isles appears to have reached its maximum in the year 1836, since which time it has been decreasing at an average rate of about six minutes yearly.

*Black Sea.*—As in the Baltic, so in the Black Sea, our cruisers have added materially to the charts. To Manganari's atlas of that sea, completed in 1836, several details have been added by Captain Spratt, R.N., C.B., and the surveying staff under his directions, Lieutenants Mansell, Wilkinson, and Brooker, who have discovered several rocks, especially near the Strait of Kertch, and off Anápa on the Circassian coast, which had escaped former examinations. They have also sounded around Kinburn Spit and the estuary of the Dnieper and Bug, leading up to the towns of Khersón and Nicolaief, charts of which rivers, on a large scale, have been published. An elaborate and beautiful plan of the Khersonese peninsula, including Kazach and Kamiesh Bays, and showing the position of the Allied camps and batteries, has been completed by Lieutenant Wilkinson, and is a work that does him the highest credit.

Captain Spratt's reconnaissance of the country between Kustenji and the Danube at Chernavoda, a sketch of much interest in the discussion of the various projects, either of a railway or a canal, to unite the Danube and the Black Sea, has just been published, as also his chart of the Narrows of the Dardanelles, which includes the

site of the new hospital at Aren-kieui, in Asia Minor, a few miles from the Plain of Troy.

On the coast of Egypt, Commander Mansell, in the 'Tartarus,' has commenced the examination of the north shore, from the Damietta mouth of the Nile eastwards, with a view to ascertain whether it affords a suitable site for the entrance of a ship-canal, which has been proposed to connect the Mediterranean and Red Sea by the Isthmus of Suez.

*South Africa.*—The survey of the shores of the Cape Colony advances slowly; yet, notwithstanding the scanty means placed at the disposal of Lieutenants Dayman and Simpson, the officers employed in the survey, they have been enabled to map the coast from Hangklip to Cape Agulhas and the intermediate dangers, on the scale of one inch to a mile, which will be immediately published for the benefit of the mariner. They have also surveyed Algoa Bay and Port Natal. Whatever has been done has been carefully done, and is based on the triangulation carried on by Mr. Maclear, Astronomer at the Cape, from the Observatory as far as Cape Agulhas. Much, however, remains to be effected. Both the land survey of the colony and that of the coasts ought to be pressed forward; every year that they are delayed bars the progress of the settlers, hinders the development of the resources of the district, and is attended with loss to the colonial exchequer.

The Cape Colony has the advantage of possessing a number of accurately fixed points, extending over a surface of more than 400 miles on its western seaboard, and comprising the whole country between Cape Agulhas and the mouth of the Orange River; these were obtained, at the expense of the Home Treasury, in the measurement of an arc of the meridian by Mr. Maclear, her Majesty's astronomer at the Cape of Good Hope; and the only use to which they have yet been put in improving the defective geographic and hydrographic knowledge of this part of the world, has been in the construction of the chart before noticed, of about 70 miles of coastline between Capes Hangklip and Agulhas, by Lieutenant Dayman of the Royal Navy.

We owe this small contribution to hydrography to a catastrophe which will not soon be forgotten—the loss of H. M. troopship 'Birkenhead' and 656 lives, near Point Danger.

Algoa Bay has been lately surveyed by the same officer on a large scale, but the existing chart of the intermediate line of coast westward to Cape Agulhas is most unsatisfactory. This may be quickly re-

medied, and at small expense, by extending Mr. Maclear's arc of meridian triangles (the last of which terminates near the Breede River) along the coast to Cape Recife, and it is to be hoped that the colony, under the rule of its present enlightened Governor, Sir George Grey, will perform this necessary duty for its own benefit. A surveying vessel might then find ample field for laborious, but highly useful, employment in these seas.

*Indian Ocean.*—A chart of the Indian Ocean in two sheets has been recently published by the Admiralty, in which the curves of equal variation have been carefully laid down for the year 1855, by Mr. Frederick J. Evans, chief of the Compass Observatory. It forms a valuable contribution to physical geography. A similar chart of the Pacific Ocean is in progress.

*Siam.*—A tolerably accurate chart of the Gulf of Siam has lately been published by the Admiralty, in which some of the grosser errors of former maps and charts are corrected. It is still, however, very imperfect; but Messrs. Richards and Inskip, surveying officers on the China station, have been despatched to Siam; and there seems ground for hope, not only from their labours, but from the facilities offered by the present enlightened King of that country, that in the course of the present year the chart of the Gulf will be rendered sufficiently accurate for all the common purposes of navigation.

*Japan.*—The accidents of the late war have led to a slight improvement in our acquaintance with the coasts of the islands of Nippon and Yesso, and especially as to the Strait of Matsumae, or Tsugar (hitherto improperly named Sangar in all our maps and charts), which lies between them. This Strait has been examined by Mr. Richards, as well as a portion of the west coast of Nippon; which proves to be laid down in all our charts some 10 miles to the eastward of its true position.

*Tartary.*—Farther north, in the Gulf of Tartary—a quarter not visited by any ship of war since Broughton, in 1797—our cruisers have, during the last year, partially traced the western shore of the island of Saghalin, where coal *in situ* and fallen timber, from the wooded land above, are to be found in abundance along the shores. They have examined Castries Bay on the mainland, and traced a deep-water channel, carrying 3 fathoms throughout, towards, but not into the mouth of the Amúr. Farther to the south-west, in the parallel of 43° N., bays, harbours, and gulfs, which have received the names of Victoria, Eugénie, Napoléon, and D'Anville, have been explored and surveyed by the officers of the Allied squadrons, and

especially by MM. Bouchez, Hill, Wilder, Johnson, and May, who have completed a chart which is highly creditable to these young officers. Some useful information has also been obtained respecting the great river Amúr, and of the harbour of Aian and other points in the Sea of Okhotsk.

*China.*—A slight break has been made in our ignorance of the Gulfs of Pecheli and Leotung, by the visit of Captain Edward Vansittart, R.N., who, in H. M. S. 'Bittern,' chased a fleet of Chinese pirates to the head of the Gulf, where the greater part of them were destroyed. In this dashing affair he boldly took his ship into waters hitherto unexplored, obtained numerous soundings, and corrected approximatively the outline of the eastern shore of the Gulf.

The chart of the island of Paláwan and its off-lying reefs, the result of the elaborate survey of Commander Bate, in the 'Royalist,' between the years 1851-5, has just been published at the Admiralty, accompanied by full sailing-directions. We understand that this skilful officer has returned to China to take command of a ship; may we hope that he will be employed on some service better adapted to his abilities than the usual routine of cruising or carrying despatches. There is "ample room and verge enough" in that region for the labours of several surveyors; large tracts of coast are yet unexplored, and dangerous reefs yet unexamined; and of this latter class perhaps none calling more loudly for immediate examination and marking, both by beacons by day and a light by night, than the extensive coral lagoon-reef of the *Pratas*, barely rising above the level of the sea, lying only 60 leagues to the E.S.E. of our own colony at Hong Kong, and directly bordering on the track of vessels approaching Canton in that direction, either by Dampier Strait or the Gillolo Passage.

*New Zealand.*—A general chart of this group, comprising the whole of the recent surveys under Captains Stokes and Drury, on the scale of  $\frac{1}{100000}$  of an inch to a mile, or  $\frac{1}{25000000}$  of the natural scale, has recently been published at the Admiralty, together with plans of Cook Strait and Port Nicholson, which are important features of the group, as they include the settlements of Wellington and Nelson. The whole is accompanied by a complete set of sailing-directions, compiled by Captain George Richards and Mr. F. J. Evans, R.N. (both assistants on the survey), from the various Admiralty surveys which have been carried on since the year 1848, and are now brought to a close by the return to England of the 'Pandora,' Commander Drury, who brings away with him gratifying

testimonials from the colony as to the value of his services in those regions, increased by the promptitude with which he made them available to the navigator, by furnishing accurate accounts of the result of his surveys through the medium of the 'New Zealand Gazette.'

*Pacific Ocean.*—Capt. Denham still pursues his useful labours in the Western Pacific. Within the past year he has surveyed and fixed the position of Norfolk Island, to which place much interest attaches in consequence of some of the Pitcairn islanders being in course of removal to that spot, as their future dwelling. He has determined the position of Conway Reef, an extensive sandbank only 6 feet above the level of high water, and has planted cocoanuts upon it, with a view to render it more conspicuous hereafter, a practice which all navigators will do well to follow for the general benefit of the mariner. On his route to the Fiji Islands, Capt. Denham obtained soundings and brought up bottom from a depth of 1020 fathoms, containing thirty distinct genera of *foraminifera*, most of which belong to existing forms in the Pacific, though only traceable as fossils in the northern hemisphere. Plans of Levuka harbour and island and of the Embau waters in the Fiji group complete his work for the past season.

Farther to the east, in the North Pacific, Fanning Island has been visited by Capt. Morshead, and its true position found to be in lat.  $3^{\circ} 49' N.$ , long.  $159^{\circ} 19'$ , or 32 miles to the westward of that usually assigned to it in our charts.

*Nova Scotia.*—Plans of Halifax harbour and of the coast to the eastward as far as Shut-in-Island, resulting from the surveys of Capt. Bayfield and his party, have been published at the Admiralty during the past year on the respective scales of three inches and one inch to a mile. Their recent labours during the past season have comprised a detailed survey of the coast and harbours from Cape Canso westward to Country Harbour—a laborious and very creditable work.

In the Bay of Fundy, Commander Shortland has completed the survey of the Grand Manan islands at the entrance of the Bay, and a portion of the south-western coast of Nova Scotia. Both the above-named officers are now lending their aid and pointing out the best track for laying the submarine cable that is to connect Cape Ray, the south-west point of Newfoundland, with the island of Cape Breton, a strait only 60 miles in width with a depth of about 200 fathoms. When this connexion is made, there will, we believe, be uninterrupted communication by electric telegraph from New Orleans

on the Mississippi to St. John's, Newfoundland, a distance of about 2000 miles.

*West Indies.*—A plan of Port Escocés and Caledonia harbour, surveyed by Messrs. Parsons and Dillon, has been published by the Admiralty during the past year. These officers have recently been engaged in the examination of the islands of Santa Cruz and St. Lucia, the former of which is finished and the latter far advanced.

*South America.*—On the coast of Brazil the dangerous shoal known by the Portuguese name of *As Roccas*, lying about 120 miles west of Tristan d'Acunha, has been visited by Lieut. Parish, in H.M.S. 'Sharpshooter,' and, at the suggestion of the British Consul at Pernambuco, cocoa-nuts have been planted in the sand, with the hope that at no distant day they may by their growth serve to warn the mariner of his approach to a danger on which doubtless many a vessel has met its fate.

*Rio de la Plata.*—In this river, above Buenos Ayres, Lieut. Sidney, with slight means at his command, has re-examined the approach to the river Paraná, and re-sounded the shoals in the vicinity of Martin Garcia. The whole of this vast estuary requires a careful survey. During the past year a sketch-chart of the river Paraguay from Corrientes upwards to Asuncion, by Lieut. Day, R.N., on the scale of one inch to a mile, has been published by the Admiralty; and, on a much smaller scale, the upper part of the river as high as Coimbra, from Portuguese authorities.

In the Falkland Islands a plan of Port Egmont, one of the many safe harbours in that group, surveyed by Capt. Sullivan, C.B., in 1849, has recently been published on a large scale, and may prove useful to the numerous whalers and other vessels which occasionally resort to those islands.

*France.*—I learn from my zealous and intelligent correspondent, Mr. J. B. Pentland, that the Dépôt Général de la Guerre has continued the publication of its great Map of France, 9 sheets of which have been published during the past year. This magnificent work will consist of 258 sheets, of which 175 have been already engraved. The geodesic operations of this work being concluded, it is proposed to determine astronomically the longitudes or meridian distances of the several trigonometrical stations by means of the electric telegraph; a body of officers appointed for that purpose, under Commandant Roget, are now engaged in the preliminary researches at the Imperial Observatory of Paris.



The beautiful survey, by the officers of the French *Etat-Major*, of the environs of Rome has been completed, but only one sheet has as yet been published; the remaining ones will, however, shortly be in the hands of the public.

*French Maritime Surveys.*—The maritime surveyors of France have conducted their surveys along the coasts of Italy and of the Strait of Gibraltar. M. Darondeau has completed the remainder of the survey of Western Liguria; and the whole coast of Italy may now, be said to be completed from the Var to the mouths of the Tiber, and is in course of publication. M. Darondeau is now occupied in conducting operations in the Neapolitan dominions, and has already connected the islands of the Ponza group, with his triangulation of the continent.

The hydrographic expedition despatched by the French Government to survey the Strait of Gibraltar and the adjoining coasts of Morocco and Spain, has most satisfactorily completed its laborious task, thanks to the zeal of Captain Kerhallet, well known by his works on the Currents of the Atlantic and Pacific Oceans, and of M. Vincendon Dumoulin, one of the most eminent of the corps of *Ingénieurs Hydrographes* of France. The survey, based on an accurate triangulation, extends from Cape St. Lucar on one side, and Cape Spartel on the other, to Gibraltar, and on the northern coast of Morocco as far east as the Zafarina Islands. This excellent survey, I am told, is now in the hands of the engravers. The most important results of the operations of MM. Kerhallet and Dumoulin are the discovery of several new shoals off the Spanish coast; of an extensive rocky plateau, from 15 to 18 miles in length, off Cape Trafalgar; and the correction of various dangerous reefs between Cape Trafalgar and Cadiz. But by no means the least important part of this survey, is the determination of the depth of the Strait of Gibraltar, in olden times supposed to be unfathomable, and continued so until the assumption was dispelled by our able Mediterranean surveyor, Admiral Smyth. The depth of this Strait has been considerably overrated in the Spanish and English surveys, as it has been found in many parts to average from 380 to 490 fathoms only; the greatest depth being 503 fathoms (1010 mètres) about mid-channel, at one mile east of the line extending from Europa Point to Almina, at Ceuta. Numerous observations were made on the set of the currents in the Strait and on the temperature of the sea at different depths, which dispel the belief in an undercurrent setting out of the Strait. We must acknowledge with gratitude to MM. Kerhallet and Vincendon Dumoulin this great addition to our store of improved hydrography and physical geography.

In the catalogue published by the Dépôt de la Marine will be found many new charts of great interest and importance; amongst others, surveys of the French establishments on the coasts of New Caledonia.

*Spain.*—The Spanish Government has caused a survey of that kingdom to be commenced upon an uniform system, and a part of the preliminary triangulation has been completed. A series of triangles, in a meridional direction, has been carried on from Pico, E. of Malaga, on the coast of the Mediterranean, to Santander, on the Bay of Biscay, and on the direction of the parallels from the Portuguese frontier to Aragon, where it has been connected with the operations of MM. Biot and Arago for the measure of the arc of the meridian between Dunkirk and Formentera. An important addition to Spanish geography has appeared in a work entitled ‘Atlas de España y sus Posesiones Ultramar,’ of which 25 sheets have already been published, constructed by our much-esteemed Corresponding member, Colonel Coello. These comprise Cuba, Porto Rico, the Philippine, Marian, and Balearic Isles, the Canaries, African possessions, and part of her continental provinces. In addition to these separate maps of the departments of Spain and of her foreign possessions, the Atlas contains enlarged plans of the principal cities and towns, and notices of the statistics, administration, and history of each division, contributed by another of our distinguished Corresponding members, occupying an eminent position as both statesman and geographer, Don Pascual de Madoz.

M. de Verneuil, the eminent French geologist, whose name has often been alluded to by my predecessors, has continued, during the past year, his geological survey of Spain and his barometric levellings. His late researches have extended over the desolate province of La Mancha, where he has fixed the height above the sea of several hundred points.

*Italy.*—The Piedmontese Government has continued the publication of the map of its continental possessions, on a scale of  $\frac{1}{250,000}$ , and it is expected that the whole will be completed next year.

The Abbé Poncet has published the number of 360 measured heights in Northern Savoy—an interesting addition to those already given by De Candolle and Professors Chaix and Favre. Mr. Borson has contributed an extract of the geometrical measurements of the Sardinian Staff, which adds the positions and heights of sixty more places to the above.

The Austrian Geographical Institute of Vienna has given the public the last sheets of its great Map of Central Italy, alluded to in previous Addresses of the Presidents of this Society. The map is now accompanied by statistical data of considerable interest concerning Tuscany and the Papal States, and the work, as a whole, is a most useful and important contribution to geographical science.

As to Naples, I am not aware that any progress has been made in the publication of the survey commenced by the late General Visconti, often alluded to by my predecessors.

*Switzerland.*—From our Corresponding member, M. J. Ziegler, we learn that the geodetical and topographical operations of Switzerland have been continued in the north of the Canton of Tessin and in the chain of the Alps, crossed by the passes of Lukmanier, of Bernhardin, and Splugen. The principal labours which have been executed in the past season were commenced chiefly in a geological point of view, such as that by Dr. Heusser in Valais, which was undertaken in order to make some observations in the environs of Visp, the centre of commotion of the destructive earthquakes which, even to this day, make themselves felt.

Professor Heusser, of the University of Zürich, has visited these places, and has given the results of his personal observations in a little work which the Society of Natural History at Zürich has published. M. Riou has published an account of the earthquakes which were felt in 1855, in the months of July and November. Meteorological observations have also been made during the past winter throughout the whole extent of the central Alps.

By the uninterrupted railway works throughout Switzerland the number of hypsometrical data is increasing, and the interest in hypsometry is becoming greater. Hypsometrical charts are more numerous, and the use of them is becoming general in proportion as we can compare with exactitude the elevation of different countries. I may particularly allude to Mr. Ziegler's Hypsometrical Atlas, in course of publication.

Our learned Associate, Professor Chaix, of Geneva, informs us of the expected return of Messrs. H. de Saussure and H. Peyrot from their journey to Mexico, and that Professor De Candolle has published, in two volumes, a comprehensive treatise on Botanical Geography. From the same high authority our Secretary has just received an interesting communication on the Hydrography of the

Valley of the Arve, which will be laid before the Society at an early period.

*Norway.*—Our Associate, Professor Munch, of Christiania, has enriched our collection with several recent maps and charts of the Coast Survey of Northern Norway, forming a series, beginning about the 64th parallel and extending to the Russian frontier.

The Coast Survey Charts of Southern Norway have also been received, as well as Professor Munch's Map of Southern Norway, Northern Norway with Finmarken, 1852, and Norway, published at Christiania in 1854; also the Amt Maps, by Captains Ramm and Murthe.

Major Vibe, of the Norwegian Engineers, informs our Secretary that, in addition to the Coast Surveys already mentioned as having been lately published, others, by Munch, Giessing, &c., are in course of preparation.

*Denmark.*—The Royal Society of Northern Antiquaries has just held its anniversary meeting at the Palace of Christiansborg; its President, Frederick the Seventh, King of Denmark, in the chair. Prof. Ch. Rafn, our Associate, communicated an account of the proceedings of the Society during the past year, and exhibited the new volume of the 'Annales' of Northern Archæology and History; the new number of the Society's Review, and of the 'Mémoires des Antiquaires du Nord.' He also laid before the Society the second part of the 'Lexicon Poëticum' of the Icelandic language, compiled by Sveinjörn. Among the articles in the 'Annales' may be especially noticed 'King Oswald hin Helligés (the holy) Saga,' with a preface by Jon Sigurdsson, and translations by Thorl. G. Repp; also a notice on Virdaland's Ancient History, by Prof. A. Cronholm, of Lund; and a Grammar of the Faerøe Language, by the Rev. V. U. Hammershaimb, of North Stræamey. In the Antiquarian 'Tidsskrift' are found papers on the *Old-English* and *Old-Norsk*, by Gisle Brynjulfsson; on the Ancient Languages of the North, by G. E. Lund; *Old-Norsk* Remains among the Orkneys, by G. Petrie, Esq., of Kirkwall; Antiquarian Contributions from Slavie Lands and Monuments of the Bosphorus, by Edwin M. Thorson; Report on the Cabinet of American Antiquities, by Ch. Rafn. In the number just published of the 'Mémoires' are papers on Runic Inscriptions in Sodor and Man, with a Geographical elucidation of the Irish and Scotch names occurring in the Sagas, by

P. A. Munch. The Saga of St. Edward the King, with an Introduction by Rafn and Sigurdsson ; Remarks on a Danish Runic Stone from the *Eleventh* Century, lately discovered in the centre of London, with Runic inscriptions, alluding to the Western Countries, by Rafn ; and, finally, one by Brynjulfsson, entitled ' De l'Ancien Roman François et de l'Influence exercée sur son Développement par les Normands.' The King communicated to the Meeting the results of the researches which he had carried out among the ancient royal sepulchres at the Cathedral at Ringsted in Seeland ; upon which the Vice-President, C. F. Wegener, read a Memoir on the Tombs of King Waldemar the Great, and his Queen Sophia, daughter of Valodimir of Russia. The Secretary read a statement of the progress made during the last year in deciphering the Runic inscriptions so numerous in Scandinavia,—an account of which he is preparing for publication.

*Portugal.*—We have received, through the polite attention of Count Lavradio, several numbers of a periodical, published by the Portuguese Government, entitled ' Boletim e Annaes do Conselho Ultramarino,' which contains rich contributions to African geography.

*Germany.*—It is with great pleasure I have to notice the establishment of a Geographical Society at Vienna.

We continue to receive Herr Gumprecht's valuable ' Geographical Journal,' containing the proceedings of the Berlin Geographical Society, in addition to other material.

*Hungary.*—The ethnographical studies, by M. Valerio, of the various races forming the population of Hungary, have been published, with numerous illustrations.

*Greece.*—A work on the Peloponnesus, by M. Beulé, appears to form an excellent guide to the Morea, and is worthy of being translated.

#### ARCTIC.

At the opening of the Address of last year by my noble predecessor, the return of Dr. Rae was announced, bearing with him evidence of the fate of the long missing expedition under the lamented Sir John Franklin ; and I have now to notice amongst the papers read at the meetings of the Society, the expedition consequent upon the information furnished by him. You will remember that Mr. Anderson, who conducted this expedition, pursued his route down the river Back,

bearing testimony to the great accuracy with which the distinguished navigator, from whom it derives its name, had described and laid down the features of that dangerous river. Among much valuable information which Mr. Anderson collected, will be found the deeply interesting fact of his having discovered upon Montreal Island the remains of a boat, upon part of which was cut the word 'Terror,' and upon the frame of a snow shoe the name of 'Stanley,' the surgeon of the 'Erebus,' leaving no doubt as to the fate of those unfortunate vessels, viz. that they had either been wrecked or inextricably fixed and abandoned; and confirming in all essential particulars the information brought home by Dr. Rae.\* The great interest which attaches to this journey of Mr. Anderson, intimately connected as it is with the fate of our countrymen, the sufferings and privations endured by himself and his party, will render this volume of our Journal of deep and general interest.

Scarcely had the breath of novelty passed over this sad but too certain history, when the announcement of the return of our medallist, Dr. Kane, completed the page of past adventure in search of our missing countrymen. The important discoveries of this gallant officer consist of an elongation of Smith Sound to a higher northern latitude than that of any other known land in the Arctic regions, and to a higher parallel than had ever been reached by any navigator, except Parry; and of the discovery of a vast ocean beyond, apparently free from ice, with which it communicated. The patient endurance under hardship, sickness, and privation, the zeal displayed in the execution of this arduous service, and important discoveries in those inhospitable regions, have earned for Dr. Kane the unqualified approbation of this country; and the highest honour this Society has to bestow, has been awarded to him; while the modesty with which he has related his perilous adventures, and the merit he bestows upon all his party, will place his narrative amongst the most fascinating papers in our Journal.

Contemporaneously with the notice of Dr. Kane we announced the return of Commodore Rogers of the United States Navy from the seas to the northward of Behring Strait. He records having ascended Herald Island, from which he could see no land whatever; and having sailed over Plover Island, which he removes from the chart; as also the islands reported to have been seen to the north of

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\* Dr. Rae and his companions have now received the award of 10,000*l.* offered by the Admiralty for the first clue to the remains of the expedition.

Cape Yakan. He discovered a vast barrier of ice on the north, so solid as to lead him to declare that no keel has ever divided those waters.

During the last year our indefatigable Captain Collinson has returned to our shores from Behring Strait, rich in Arctic enterprise, and enjoying the distinguished honour of having, by skill, energy, and patient endurance, brought his vessel, the 'Enterprise,' safely back from her perilous adventures, and returned her to the shores, whence he departed with her; an act which should not be overlooked in the catalogue of the meritorious deeds of that highly scientific navigator. About the same period appeared 'The Last of the Arctic Voyages,' by our associate, Sir Edward Belcher; in which he gives an account of his proceedings, and of the many land and boat journeys undertaken by himself and officers under his command; completing, through their instrumentality, the northern coast of the Parry group, and adding Victoria Land and other geographical features to the cartography of those regions. Then, as if to swell the mention of Arctic enterprise, at this time appeared a reprint, by the Hakluyt Society, of the quaint but interesting documents of old voyages; and also a voluminous summary, entitled 'Scoperte Artiche,' compiled for the enlightenment of the Italians, by Conte Francisco M. Erizzo. Lastly, I have to notice among the events of the past year, as connected with Arctic enterprise, the bestowal of the honour of knighthood upon Sir Robert M'Clure (our medallist), the gallant officer who virtually accomplished the North-West passage—a justly-merited tribute of the nation, and a token of the high sense it entertains of the worthy deeds of those navigators who had so laboriously pursued their perilous researches in those ice-encumbered seas.\*

At this period of Arctic discovery it will perhaps be expected that I should offer some remarks upon the results and the benefits which have been derived from it by the country.

It is now nearly forty years since the revival of our Polar voyages, during which period they have been prosecuted with more or less success, until, at length, the great problem has been solved. Besides this grand solution of the question, these voyages have in various ways been beneficial; and Science at least has reaped her harvest. They have brought us acquainted with a portion of the globe before

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\* The sum of 10,000*l.* was also voted to him and his gallant companions by the House of Commons.

unknown. They have acquired for us a vast addition to our store of knowledge—in magnetism, so important an element in the safe conduct of our ships; in meteorology; in geography, natural and physical; and which has led to the prosecution of like discoveries in the regions of the Antarctic Pole. They have shown us what the human frame is capable of undergoing and of accomplishing under great severity of climate and privation. They have opened out various sources of curious inquiry as to the existence at some remote period of tropical plants and tropical animals in those now icy regions, and of other matters interesting and useful to man. They have, in short, expunged the blot of obscurity which would otherwise have hung over and disfigured the page of the history of this enlightened age; and, if we except the lamentable fate which befel the expedition under Sir John Franklin, we shall find that they have been attended with as little if not less average loss of life than that of the ordinary course of mankind. And if any one should be disposed to weigh their advantages in the scale of pecuniary profit, they will find that there also they have yielded fruit, if *not to us*, at least to a *sister nation* in whose welfare we are greatly interested, and whose generous sympathy in the fate of our countrymen endears her to us, and would render it impossible that we should begrudge her this portion of the advantage of our labours. I need hardly remind you of the Report from the Secretary of the United States Navy to the Senate, to the effect that in consequence of information derived from one of our Arctic expeditions to Behring Strait, a trade had sprung up in America by the capture of whales to the north of that Strait, of more value to the States, than all their commerce with what is called the East! and that in two years, there had been added to the national wealth of America, from this source alone, more than eight millions of dollars.

#### AFRICA.

I would next direct your attention to a region widely different in its physical character to the last, but one in which we have alike pushed our discoveries, with slow and occasionally painful progress, it is true, but upon the whole with steady success—the region of Africa. It is from this country I have to congratulate the Society on the safe return of that distinguished traveller Dr. Barth, the successful explorer of a large portion of Central Africa, and of the famed city of Timbuctú. An account of this expedition is now preparing by Dr. Barth for publication, in five volumes, with maps;



and, from the extent of the work and the care bestowed upon it, we may expect to derive an enlarged knowledge of the country through which he passed.

From letters communicated by the Foreign Office, we learn that Dr. Vogel was at Gujeba in January last, and had thence proceeded to Yakoba. His last letter is from Gombé. It appears that, in attempting to reach Adamaua, he had crossed the Binué, at a point where the steamer under Dr. Baikie had stopped, and that he there left letters in expectation that another steamer would be despatched up the Chadda. We learn with regret from Dr. Vogel that his health had suffered, but, on the other hand, we have cause to be thankful that his life had been saved through an accident, which prevented his joining a party of fifty persons going to Yola, all of whom, except two, were murdered the same day.

Our associate, Dr. Baikie, has recently published an interesting and instructive description of the voyage of the 'Pleiad' steamer up the Niger and Chadda, including a map from the original survey by Mr. May, R.N., and much general information respecting the nations and countries of that important part of Africa. In the mention of this work, which reflects credit upon its author, I must not omit to notice an oversight which I am sure Dr. Baikie will, with his usual candour, acknowledge. In alluding to the origin of the Expedition, Dr. Baikie does not mention the persevering part taken by the Council of this Society, and particularly by Sir Roderick Murchison, in promoting it; and he has entirely omitted to connect the name of M'Leod with the great and novel feature of the plan which rendered this Expedition so successful in all respects, and will govern the operations, in regard to season, of all future expeditions. It will be seen in our Journal that, early in 1852, a project for ascending the Niger *with the rising waters*, was laid before the Council by Lieut. Lyons M'Leod, who had been employed for some years on the African coast. Having been referred to the Expedition Committee, attention was directed to a clause in Mr. Laird's mail contract with the Admiralty, which provided for the ascent of one of the African rivers, by steam, at a small expense; and the Committee recommended Lieut. M'Leod to communicate with Mr. Laird and adapt his plan to this arrangement. Other steps were also taken and communicated to the Society by Sir Roderick Murchison, in his Presidential Address of that year. In 1853 the Expedition having been brought under the notice of the Government by Sir Roderick, as President of the Society, some progress

was made, but a change in the Cabinet caused delay; and in the mean time the arrival of Dr. Barth on the banks of the Upper Chadda, directed attention to that branch of the Niger, and turned the proposed course of the Expedition towards it. The plan received the warmest encouragement from Lord Clarendon, but the favourable season being past, it was necessary to defer proceedings till the ensuing year. These circumstances were also laid before the Society in the Presidential Address for 1853. In 1854 the Expedition started, and it was intended that the veteran African explorer, our late member, Mr. Consul Beecroft, then residing at Fernando Po, should take the command; but his lamented decease having occurred a few days before the arrival of the party from England, the command devolved upon Dr. Baikie, with whom Mr. May, of her Majesty's ship 'Crane,' was associated as surveyor, through the kindness of Captain Miller, R.N., F.R.G.S., then chief officer on the station.

I have felt it to be due to the persevering efforts of this Society in promoting this Expedition, and to the individuals whose names are so honourably connected with it, to insert in some detail these facts connected with its origin; of which, I am sure, Dr. Baikie will acknowledge the justice and propriety.

The spirit of adventure is again revived: Dr. Baikie, the successful explorer of the Chadda, has offered his services to conduct an expedition up the Niger, and, leaving a trading party at Rabba, to pursue his route thence by land to Sokatú, the residence of the Sultan, whose influence is said to be so great, that could it only be obtained, an impulse would be given to commerce, and slavery would be annihilated.

A communication from Governor O'Connor, describing a visit to the Island of Bulama, in the Bisagos group, and a voyage up the river Casamance, informs us of the present condition of those places, and the state of the settlements there.

Captain Skene, R.N., of the 'Philomel,' is about to return from the West Coast, where he has ascended the Bonny, the Congo, and the river of Lagos, and from whose journals we may expect some interesting information.

We learn that Commander Lynch, of the United States Navy, has examined a large part of the coast of Liberia, and several of its rivers, as a preliminary to an exploration of the interior. Sickness, however, obliged him to discontinue his labours.\*

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\* Of the death of Dr. Schönlein, at Cape Palmas, mention has already been

We may mention here that M. Raffenel has at length published an account of his failure to penetrate to the interior of Africa from the French settlements on the Senegal.

Comte d'Escayrac de Lauture has presented the Society with a copy of his Memoir on Soudan, accompanied by a map, in which the positions of the principal towns and the courses of the rivers in Central Africa are discussed with great ability and research, and the habits of the people are also described. The Count has just proposed to attempt, with the assistance of the Egyptian Government, the ascent of the Nile to its sources.

The enterprising Sardinian trader, M. Brun-Rollet, whose establishment on the White Nile was mentioned in my noble predecessor's last Address, having returned to his outpost of exploration and commerce in that region, has since penetrated for a considerable distance along the Misselad; and we are indebted to our Corresponding member, M. le Chev. Negri, of Turin, for the following account of M. Brun's proceedings, dated from the banks of the Misselad, Feb. 1, 1856:—

“After a month's research M. Brun-Rollet came to reconnoitre the lake, by which the waters of the Misselad and of the Modj or Lút communicate with the Bahr el Abiad. He found it about 50 leagues in length from north to south, and discovered the entrance of the Misselad into the lake. He entered the Misselad with three boats (barques), and an escort of 23 soldiers, obtained from an Egyptian post recently established at the confluence of the Sanbat, in the Bahr el Abiad; and the intrepid traveller had already ascended the river for nearly 40 leagues, with the determination to push his exploration as far as possible. The Misselad appears to be so large and deep that M. Brun-Rollet, who has previously visited the Blue Nile, or Bahr el Azrek, as well as the White Nile, or Bahr el Abiad, declares *that he has no doubt of the Misselad being the true Nile*. It appears that during the rainy season this river inundates an immense extent of country. The vegetation of this region is magnificent, and the reception offered by the inhabitants, although not always favourable, had not been hostile. M. Brun-Rollet and his companions, among whom is Madame Brun-Rollet, a young Marseillaise, continued to enjoy excellent health.”

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made in the Third number of the Proceedings of the Society; and it is with much regret that I now hear of the decease of a young French explorer, M. Couturier, which took place at Brezina, an oasis in the Sahara, where he had stopped some time in order to acquire a knowledge of some of the native dialects.

From the Eastern Coast we have received, through the Church Missionary Society, an interesting communication from the Rev. J. Erhardt, informing us concerning a large inland sea, long known to exist, and now stated to extend over nearly ten degrees of latitude and four degrees of longitude, with a description of several routes by which different portions of this sea are visited by parties from Mombas, Tanga, Mbomaji, Kiloa, and other towns upon the sea-coast, affording facilities for discovery in that quarter, which the Council have not neglected.

Lower down, upon this coast, we have received information of the return of a party of Moors from the Western Coast of Africa. The 24th volume of our Journal contains an account of a journey performed by a party of Moorish traders from Zanzibar to Benguela, on the West Coast. This is the same party whose arrival we have just announced. It appears that they left Benguela on the 9th June, 1853, and arrived at Mozambique on the 12th November, 1854, crossing large rivers and passing many thickly-inhabited towns in their way; but they do not afford us any means of determining the positions of these places.

I must not conclude these brief remarks upon this continent without calling your attention to the limited extent of our knowledge of that portion of it known as Equatorial Africa. This extensive region, occupying nearly twenty degrees of latitude, and extending from coast to coast, with the exception of the fringe of the shore on either side and the limited discoveries up the Bahr el Abiad, still remains to us almost a "terra incognita." As before observed, we have pushed our expeditions from time to time over its borders, on the north and south and on the east and west, but with sufficient success only to ascertain the general feature of the country in those directions, and to inform us in what quarter we may with the greater advantage direct our future movements. Equatorial Africa really lies still unexplored, and yet, by information from various sources, it seems to present a fruitful field to travellers. The thickly-inhabited towns and large rivers mentioned by the Arabs—the vast inland sea of Niassa mentioned by Erhardt—alone would immortalize the discoverer who should undertake the task; while the existence of mines of copper and other precious metals in that direction, if true, would bid fair to repay the toil.

The source of the Nile, yet undiscovered, lies mysteriously hidden in this vast unexplored region, and, with Niassa, asks who shall unlock its mysteries? We trust that this question will not long

remain unanswered; nor this vast inland region continue almost a blank upon our maps. There are not wanting, in this and other countries, men both willing and able to undertake the task. The gallant Commander of the expedition from Zayla to Harar, Captain Burton, has volunteered to proceed from Zanzibar inland towards the famed Sea of Niassa, and, after exploring its locality, to turn northward towards the Bahr el Abiad; and I will here mention that the Council are now in communication with the Foreign Office and the East India Company, on the subject of the means for sending out an expedition in this direction, a deputation having already had interviews with the Earl of Clarendon.

In Southern Africa, our medallist, Dr. Livingston, is still prosecuting his indefatigable researches. At the last Anniversary, we learnt that he reached Loanda in an exhausted condition, labouring under the effect of fever. His journey thither will be found most interesting, and will well repay the perusal. He then announced his intention of returning to the interior, and of visiting the great chief Muata ya Nvo, or Matiamvo, and of ultimately descending the Leeambye to Quilimane, on the east coast of Africa. By a letter from him at Cassangé, we learn that he had so far carried out the first portion of his plan; but from other sources we are informed that he left Cassangé in February last, crossed the Quango, and pushed on for a trading station, named Cobango, on the river Chihombo, with a view of carrying out his before-mentioned intention of putting himself in communication with Matiamvo. On reaching this place his health was found to have suffered much, from having slept several nights upon a vast plain entirely covered with water; and he was compelled to abandon his intention of visiting Matiamvo, and obliged to strike off southward towards the country of his companions, which he appears to have reached in safety, and in excellent health. Dr. Livingston's observations have been communicated to the Society by Mr. Maclear, the astronomer at the Cape, by whom they have been recalculated and found to be of the most satisfactory character—a feature, in the qualification of a traveller, of the first moment, and which this Society will do well to encourage.

In connection with discovery in the south-east part of Africa, Mr. Moffat, the father-in-law of Dr. Livingston, anxious to learn his fate and to forward supplies for him, had proceeded to Moselekatse's country, the full accounts of which interesting visit have been kindly forwarded to us, by the London Missionary Society, and will be printed in the Journal.

On the South-West, Mr. Hahn, the Rhenish missionary, had left Cape Town for Walfisch Bay, for the purpose of proceeding thence overland to Mossamedes. It was the intention of Mr. Hahn to settle near the mouth of the river Nourse, or Cunené, north of the Ovampo Country, and thence to make expeditions inland along its course. This river appears to be the shortest and most healthy road to this part of the interior.

That persevering and hardy explorer, Mr. Charles John Andersson, to whom the Council adjudged, last year, one of the Royal awards for his journey to Lake Ngami, has published an excellent account of his labours in South Africa, with a map, and many striking illustrations. Mr. Andersson has again started to renew his pursuit of African enterprise, and he also intends directing his attention to the Cunené River.

Lastly, I have to mention M. Lesseps' very interesting pamphlet and map of the Isthmus of Suez, showing the line of a canal which it is proposed to make between the Mediterranean and the Red Sea.

The importance of a ship canal from the Mediterranean to the Red Sea cannot be overrated in a commercial point of view, and especially to this country, when considered in connection with its Indian possessions and colonies. M. Lesseps has shown its importance in other respects, by opening out fresh sources of trade along the shores of the Red Sea itself, and otherwise; and we can only hope that the project, if undertaken, will realize the expectations it has created. The map is a good specimen of chromolithography.

If to these prospects, we add results which may be expected from our indefatigable Associate, Dr. Sutherland, who is a resident at Natal; and from the projected expedition of the United States, *vid* Liberia on the west—from the continuation of Livingston's labours in the south—from the appointment of Mr. M'Leod as consul at Mozambique, and from the encouragement offered by the French Geographical Society in the shape of rewards for discoveries in Africa—we may hope to see discovery pushed forward in that continent with vigour; and posterity may possibly witness the resources of this vast continent, brought under the influence of European civilization, its geography known, and its inhabitants emerge from barbarism and slavery.

#### ASIA.

*India.*—By far the most important work in this quarter of the globe that has been laid before the Council in the past session, is that of

the Trigonometrical Survey of a large portion of India, by Lieut.-Colonel Waugh, the Surveyor-General of India.

This work consists of geodetical operations of the highest order, carried on through countries for the most part unexplored, and, until lately, inaccessible to Europeans, or, in the words of the Society's motto, "*Terræ Reclusæ*."

The first series of this important work is mentioned by my noble predecessor in his Address, as extending from the Seronj base to Karachi; and I gather from a paper laid before the Council by our Vice-President, Colonel Sykes, that the second series of operations branches off to the north-west, from the great meridional arc at Banog and Amsot, through the plains of the Punjab, and along the southern face of the Sub-Himalaya ranges to Attock and to Peshawur. At Attock, a base of verification was measured. This series extends over seven degrees of longitude, and over a space of more than 100 miles in width. The third series consists of meridional arcs passing through Sind and the Punjab from Karachi to Attock, thereby uniting the before-mentioned bases of verification at those places; and the whole completes a gigantic geodetical quadrilateral, of which the great arc, between Seronj and Banog, forms the western side, and corresponds with a similar grand quadrilateral on the eastern side, begun and partially completed by our Associate, Colonel Everest, &c.

Too much praise cannot be bestowed upon this most elaborate and important work, carried on as it has been with such precision through countries almost wholly unexplored and injurious to the health of Europeans.

From Mr. J. Walker, the Hydrographer to the East India Company, we learn, that after the measurement of the base of verification near Karachi, a party remained to observe the latitudes, and to compute and register tidal observations; while another party was detached to build towers, to facilitate the triangulation of the Great Indus series. Another party also has been engaged on the North-West Himalaya series, the operations of which were carried on in the region of perpetual snow, and it required all the energy and determination of the parties to accomplish the work assigned to them. The Assam longitudinal series had proceeded eastward, as far as longitude  $89^{\circ} 30' 29''$ , when the party was obliged precipitately to withdraw for the season on account of the floods. The South-Coast series has been extended to Kuttack; its farther progress, however, was retarded by the whole party having been prostrated by fever.

*Topographical.*—The Survey of the Plains of the Punjab advances satisfactorily. The work, we are informed, will be executed in a style not inferior to that portion which has already been submitted to the inspection of the members of this Society. The Ganjam Survey continues to progress. As it is now being carried on in a country hitherto almost a blank in our maps, and through a number of petty states, the names of which were hardly known, its completion is looked forward to with much interest.

*Revenue.*—These surveys are proceeding steadily. The districts of Rajeshaye, Goalpara, and the Julindher Dooab have recently been completed.

Fifty sheets of the 'Indian Atlas' are now published. Several others will be finished during the ensuing season.

*Marine.*—A new and elaborate survey of the harbour and outer roads of Karachi, has been executed on a large scale by Lieut. Grieve, I.N., and is now being engraved. This harbour, in connection with the railway and electric telegraph, will no doubt become one of the most important stations on the western coast of India. Another sheet of the Survey of the Malacca Strait, extending from Cape Rachado to Mount Formosa, by Lieut. Ward, I.N., has recently been sent home. The Survey of the North Preparis Channel, in the Bay of Bengal, extending from Preparis Island to Cape Negrais, by Lieut. Ward, has also lately been published.

*Turkey in Asia.*—I have next to notice a memoir on the Map of Damascus, the Hauran, and mountains of Lebanon, from personal survey, by our associate, the Rev. J. L. Porter, containing various journeys in Syria, in the performance of which he corrected many errors in the received geography of that country. About Damascus, he finds that the Bahr el Merj is not one lake, but three distinct lakes, and that the plain around Damascus contains many villages, none of which appear on the map. Balbeck is in error in its bearing from Damascus; the Antilibanus chain requires correction. Thus the author proceeds, pointing out numerous errors in the topography of the country, and concludes by observing that the present Ard-el-Bathauzel is the ancient Batanea.

Mr. Arrowsmith is preparing a beautiful map of Syria and Palestine, in three sheets, for the Foreign Office.

We have next an important paper, comprising notes of a journey from Busrah to Bagdad, with descriptions of some Chaldean remains, by Mr. William Kennett Loftus.

In this paper the author furnishes a highly interesting description of the country through which he passed, both in a geographical



and antiquarian point of view. He visited the sites of some of the most ancient cities upon record, comprising those of Babel, Erech, Accad, and Calneh, mentioned in the Bible ; and, as Sir Henry Rawlinson has observed, Mr. Loftus may be considered as the discoverer of Wurka, perhaps the Erech of the Bible. Mr. Loftus gives minute details of the country and of the various modes of irrigation. He particularly directs attention to the effect of the Hindieh Canal, a branch of the Euphrates, which diverts the main stream from its proper channel, thereby occasioning drought and causing the inhabitants of the villages, in the interior of Mesopotamia, to desert their lands. The Hindieh passes through the Bahr el Nedjef, and forms the Semava branch of the Euphrates. The paper contains much important and valuable information.

It will be remembered that in 1848 a Commission was formed for the purpose of determining the boundary line between the Turkish and Persian empires. Its members were appointed by the English, Russian, Turkish, and Persian Governments, and designated the Turco-Persian Frontier Commission. The chief of the English party was Colonel Williams, the present celebrated Sir William Williams of Kars, under whom Lieutenant Glascott, R.N., acted as chief surveyor, and Mr. Loftus as geologist. We learn from Mr. Loftus, that the surveys extended from Mohammerah to Mount Ararat, a direct distance of about 600 m. ; the operations being trigonometrical on an astronomical basis. The opportunities which occurred for extending the examination of the country enabled careful route surveys, corrected by nightly observations, to be extended as far as Shiraz on the S. ; along the plains of the Euphrates and Tigris to Zobeir, Meshid Ali, and Mosul on the W. ; and across the mountains on the E., along the high plains of Persia, as far as the tomb of Cyrus, Ispahan, Hamadan, Lake Urumia, and Bayazid. The Commission had returned to Constantinople, and were engaged in elaborating the results of their labours when the late war broke out, and a separation of the parties constituting the Commission took place ; the Russians taking with them that portion of the observations which they were contributing.

The accuracy of Lieutenant Glascott's labours has been remarkably exhibited in working out the triangulation of this survey, and the Society has already been indebted to that officer for his map of Kurdistan on a scale of 6 inches to a degree, accompanied by a list of his astronomical positions, which appeared in the sixth volume of the Journal.

The return of peace will, it is hoped, admit of the production of the invaluable geographical material resulting from the international researches of the Commission.

The *Vestiges of Assyria*, surveyed by order of the Government of India, by Commander Jones of the Indian Navy, and published in three sheets, exhibit the topographical features of the country, in which are situated the ancient cities of Nineveh, Mosul, and Nimrud, over which the labours and writings of Layard and Rawlinson have thrown such a charm.

The return to this country of that distinguished and learned scholar in Eastern languages, Colonel, now Sir Henry Rawlinson, has been announced; and we learn that he has brought to a close, for the present, the excavations in Assyria and Babylonia. A notice of some of his labours has appeared in the *Transactions of the Asiatic Society*; but they are far beyond any attempt of mine to do justice to them, either in point of value or description. It is with pleasure we learn, that he intends devoting his time to describing his labours and to decyphering the numerous inscriptions he has collected, &c. &c.; a work which, if he succeed in accomplishing, must entitle him to the gratitude of the world: for, hidden under those mysterious mounds and written in those dark inscriptions, may we not hope to find the history of a great nation, whose existence was collateral with that of Israel, and which at many points touched that of the sacred people? May we not hope to read in the records of Assyria, additional proof of those wars and slaveries which are spoken of in the Bible, and to discover traces of those captives, who sat down and wept by the waters of Babylon, and hung their harps upon the willow-trees of a foreign land?

*Persia*.—Abbott's '*Itineraries in Persia*' contain descriptions of such parts of the route from Tehrân through Savé, Kûm, Kashân, and Ispahan, and thence to Yezd, Kerman, Shiraz, and Bunder Bushir, on the Persian Gulf, as have been but seldom or never visited by European travellers. From Bunder Bushir he crossed the Persian Gulf to the mouth of the Shat-el-Arab, as the joint stream of the Tigris and Euphrates is called, and thence by Mohammerah to Bagdad, and by Kermanshah and Hamadan to Tehrân. The route is carefully kept by compass-bearings and estimated distances, and the descriptions of the country, towns, and inhabitants, are carefully given.

*Siam*.—I mention next in order '*Notes on Siam*,' with a new map of the lower part of the Menam River, by our Associate, Mr. Henry Parkes; also an interesting paper, which affords extensive informa-

tion of the inhabitants, productions, and commercial resources of a country of which we had before but a very imperfect knowledge.

*Chinese Empire.*—Having already alluded to Mr. Meadows' work on China, I have only to mention the publication of a new map of Corea by Andrew Kim, edited by M. Jomard; and to allude to the want of a better knowledge of the northern seaboard of China and of North-eastern Asia generally, including particularly its navigable rivers, which recent events have proved to be so little known.

#### AMERICA.

*North America.*—During the present session, the United States Government has presented to the Society, the reports, plans, and sections of the several important expeditions despatched by order of Congress to discover the best route for a railway from the Mississippi to the Pacific, between the 32nd and 49th parallels. These expeditions, organized by the Secretary of War under various leaders, have contributed very largely to American geography, observations having been made from the Mississippi to the Pacific, between the 49th and 47th parallels—the 41st and 43rd—also near the 38th, the 35th, and the 32nd—touching upon the ocean at Puget Sound, San Francisco, S. Pedro, and S. Diego. The report of the Secretary of War, on the results of these labours, concludes, "that the route of the 32nd parallel is, of those surveyed, the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean." Other important additions to a knowledge of the North American continent have been communicated in the Ninth Report of the Smithsonian Institution. Lieut. Beale, superintendent of Indian Affairs in California, accompanied by Mr. G. H. Heap, travelled from Westport, Missouri, to Los Angeles, on the Pacific, in 100 days, following the route, near the 38th parallel, to the Little Salt Lake, then turning south-westerly, across the Mohave desert, to the Pacific.

Our gallant medallist, Colonel Frémont, also made a special journey, along the same route, to test the depth of winter snow in the mountainous region. He reached the Huerfano on December 3rd, passed the Coochetope Pass on December 14th, where he found only four inches of snow, and reached the Little Salt Lake settlements on February 9th.

Under the auspices of the Smithsonian Institution, an examination of Northern Wisconsin has been made by Mr. Baird, in regions

almost unknown before, and several lakes and rivers have been discovered and named by him.

Captain Marcy has explored the head waters of the Brazos and Big Wichita Rivers, in Texas, a region never before trodden by white men ; and a survey of the United States and Mexican boundary was also commenced by Major Emory.

Lieutenant Couch, of the United States' Army, has made a scientific journey into Mexico, at his own expense, leave of absence having been granted to him, at the instigation of the Smithsonian Institute. He went to Matamoros and Monterey, examining the adjacent sierras ; thence he proceeded to Parras, the plains of Mapimi, and the Caves of Durango. Among other motives for this journey, was the acquirement of a large collection of manuscripts, maps, and natural objects, made by Luis Berlandier, a Swiss, and a member of the Academy of Geneva, who had resided in Mexico, and devoted himself to Mexican research from 1826 to 1851, when he died. This collection was found very valuable, and purchased from the widow. A catalogue is appended to the Smithsonian Report.

Among various works which have appeared, and which throw light upon the geography and ethnography of America, I notice a '*Mémoire sur les Anciennes Populations Mexicaines*,' by M. Ludewig ; a treatise on the Hydrography of the Ohio, by Charles Ellet ; a notice and map of the projected canal between the Pacific and Atlantic through Nicaragua, by M. Dupuy. Mr. J. H. Coffin has written upon the distribution of winds in the northern hemisphere ; and great light has been cast on the comparative philology of the American languages by the labours of the Rev. R. S. Riggs, and his acquirement of the Dakota language. Mr. Julius Froebel has furnished a work on the Physical Geography of North America ; and I notice an excursion to the ruins of Abo, Quarra, and Gran Quivira in New Mexico, by Major J. H. Carleton, U.S.A.

*Central America.*—In Central America, Mr. E. G. Squier, formerly Chargé d'Affaires of the United States to the republics of the Isthmus, has pursued his indefatigable researches so far, as to cause a survey to be made of the country lying between Puerto Caballos in the Bay of Honduras, and the Gulf of Fonseca on the Pacific. The results of this investigation have been stated in a Report, advocating the construction of the Honduras Interoceanic Railway ; and also in a volume by Mr. Squier, entitled '*Notes on Central America, particularly the States of Honduras and San Salvador, their Geography, Topography, Climate, Productions, Po-*

pulation, &c. ;' with an original map and sections, which the author has presented to our library.

Our active associate Mr. Power, of Panama, has recently presented to the Society an important addition to the geography of Central-America, in a tracing of an original manuscript map of the province of David, on the frontiers of New Granada and Costa Rica, made from a new survey by Colonel Codazzi. This survey has enabled an interesting portion of the Isthmus to be delineated which was previously a blank on our maps.

*West Indies.*—The Geography of Cuba has been published by Don Esteban Pichardo, under the auspices of the Royal Junta of Fomento.

Among the Papers of this Session, I notice the Landfall of Columbus, by Captain A. B. Becher, R.N. The first land in the New World that was seen by the great Genoese adventurer is a point of considerable historical interest. Hitherto, in this country, the subject has been treated in works of biography and history ; but it has now been taken up by a really practical hydrographer, and the records of the Spanish archives compared step by step with the configuration of accurate modern charts. In like manner, the spot where Julius Cæsar first planted his foot upon British ground was treated of by the most eminent geographers of their day—D'Anville, Halley, Rennell, and others ; but it has been left for the enlightened Astronomer Royal, from an investigation of certain phenomena which modern science had brought to our knowledge, to prove, with almost mathematical certainty, the precise spot in dispute ;\* and thus, by assiduous research and comparison, has our Assistant Hydrographer arrived at conclusions by means of modern delineations with respect to the Landfall of Columbus, which seem to be worthy of equal attention.

*South America.*—The progress of geographical research in South America has been scarcely less active than in the northern and central parts of the great Western continent.

*New Granada.*—The course of the navigable river Atrato, which falls into the Gulf of Darien, has been subjected (along with its western affluents and the adjacent streams flowing to the Pacific) to the investigations of several surveying expeditions, despatched by Mr. F. M. Kelley, of New York, at his own expense. For more than fifty years, Baron Humboldt had continued to direct attention to the facilities, which the Atrato was reported to present, for establishing

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\* See 'Archæologia,' vol. xxxiv.

water-communication between the Atlantic and Pacific Oceans. Actuated by the writings of the veteran geographer, Mr. Kelley has caused the whole course of the Atrato, from its mouth to its headwaters, to be surveyed; and having discovered a route, by way of the Truando, which he deems to be favourable for a ship-canal, he has considered the subject to be of so much importance to the great maritime powers, as to invite an international investigation before any further steps are taken. The scrutiny of the project, which Mr. Kelley has invited from geographers and from civil engineers in this country, has, upon the whole, been favourable to his plan; and his proposal to make a more perfect examination of the locality, seems to be a project well deserving of encouragement.

Lieutenant Gilliss, of the United States' Navy, has presented to the Society two quarto volumes, published by order of Congress, comprising a portion of the results of "the Astronomical Expedition to the Southern Hemisphere" under his orders in the years 1849 to 1852.

*Chile.*—The first of these volumes, besides a summary of the scientific observations made by Lieutenant Gilliss and the officers under his command in Chile, contains a personal narrative of their journeys in that Republic, and many interesting particulars regarding its present political state. In describing its physical geography Lieutenant Gilliss has frankly acknowledged his obligations to the scientific individuals who, under the patronage of the Chilean Government, have been for some years engaged in investigating, surveying, and describing the geology, topography, and natural resources of the Republic, especially Messrs. Claude Gay, Professor Domeyko, and Messrs. Pissis and Allan Campbell, whose labours have been long known to us in Europe.

It was a source of great satisfaction to Lieutenant Gilliss, upon the completion of his own astronomical observations, to find that the Government of Chile was desirous to purchase the valuable instruments he had with him, as well as the observatory which he had set up. These were handed over to them; and thus Chile may boast of a national observatory, in addition to the various other scientific institutions, already founded by the liberality and enlightened policy of her rulers.

The second volume contains the results of a journey made by Lieutenant MacRae, the next officer of the expedition, across the Cumbre and Uspallata Passes of the Andes, and from Mendoza to Buenos Ayres, his instructions being to make a series of observations for elevation, latitude, and longitude, as well as magnetical and meteorological, for each 3000 feet of elevation on the slopes of the

Andes, and for each 100 miles of longitude on the line of road across the Pampas,—a task which he completed in 60 days.

The results, which are given in a tabular form, constitute an important collection of authentic data for geographers. It is satisfactory to observe how they corroborate the accuracy of the labours of the old Spanish officers, Bauza and Espinosa, whose map of the same line of country over the Pampas was published in the Hydrographic Office at Madrid in 1810. A copious appendix gives a particular account, drawn up by various learned individuals in the United States, of the Indian antiquities, and of the zoological, botanical, and mineralogical collections made by the officers in the course of their travels.

These volumes are beautifully embellished by well-executed plates, especially the natural history part; and the work reflects great credit not only upon the scientific attainments of the officers employed in carrying out the great astronomical and geodesical work entrusted to them, but also on the industry and ability with which they have brought together a large and varied mass of information regarding the countries they passed through; and the Government of the United States has done but justice to their labours in publishing the results of this important survey in the most liberal manner at the expense of the State.

*Brazil.*—The labours of our Honorary Member, Dr. Martius, in Brazil have come before us recently under a new form, in a volume presented to us by the author, containing fifty beautiful views illustrating the vegetation of Brazil.

*Paraguay.*—From Lieut. Page, commanding the U. S. Steamer 'Water Witch,' we learn, under date "Buenos Ayres, Dec. 26, 1855," that "the embarrassments arising from the jealous prohibition of the Government of Paraguay have, to such a degree, contracted the field of operations, as to deprive this expedition of the privilege of making contributions to geographical science and natural history to the extent that I had anticipated. I nevertheless hope that our labours will prove not to have been in vain in either of those fields, and that the result may give rise to commercial intercourse with countries fruitful in natural products and susceptible of extended and varied cultivation, but whose resources as yet lie dormant, waiting for the hand of energy and industry to awaken them to life. I allude particularly to those provinces most directly interested in the navigation of the river Salado, a river rising in the Cordillera, in the western part of the province of Salta, and discharging itself into the Paraná at the town of Santa Fé.

“By our exploration of this river we have shown that the Salado is navigable to within the province of Santiago, without presenting an obstacle, and that, with the expenditure of a little labour, it could, in the course of a few months, be made navigable to within the province of Salta, a distance of not less than 900 miles by land.

“The navigation of this river will open to the provinces Jujui, Salta, Tucuman, Catamarca, Santiago del Estero, parts of Cordova and Santa Fé, an easy way by which to transport their products and merchandise, which now, under the most disadvantageous circumstances, are conveyed in ox carts of the most unwieldy construction, involving an expenditure of time and money, and prohibiting the exportation of many valuable articles of commerce which could easily and profitably be transported by the river.

“The river was ascended in a small steamer from its mouth, the distance of 150 m. in a right line, and 350 by the river. This being in July (the season of low water), the steamer could not ascend higher. The river was then entered from its upper waters; its difficulties, its obstacles to immediate navigation throughout the above extent, carefully examined; its rise and fall considered; and the result showed no obstacle that may not easily be removed; and none of those obstacles, such as shoals and banks, which, when removed from one place, reproduce themselves in another.

“We have recently discovered also a new channel between the island Martin Garcia and the coast of the Banda Oriental, of 2 ft. more water than the old channel contains. The importance attached to this discovery is not confined to the greater depth of water in the new channel, but it assumes a political character. It deprives Martin Garcia of that important geographical position which is attached to it by the Government of Buenos Ayres, in whose hands it is at this time. Instead of Buenos Ayres possessing, as she now claims, exclusive jurisdiction over the old channel, leading into the rivers Paraná and Uruguay, on the ground that her territory is on both sides, over the new channel, she has only concurrent jurisdiction with the Banda Oriental. The new channel is more easily entered, and in it vessels are not obliged to pass nearer to Martin Garcia than  $1\frac{1}{4}$  m.; thus taking from this island the perfect command it formerly had over the entrance to the rivers Paraná and Uruguay.”

M. Francis de Castelnau continues the publication of his important journey in South America.



M. Delaporte has published an account of his journey in the country of the Araucanians.

Benjamin Vicuña Mackenna has reported upon the agriculture of Chile and upon European migration to that country.

M. Isambert and M. de Angelis, and Lieut. Maury, U.S.N., have written upon the free navigation of the Amazon.

#### AUSTRALIA.

By far the most important information we have had communicated to us with regard to this country is the progress which has been made by the North Australian Expedition under Mr. Augustus Gregory.

From this enterprising explorer, whose exploits in Western Australia are well known, by a letter communicated through the Colonial Office, we learn that the Expedition left Moreton Island on 13th September, 1855, in the ship 'Monarch' and the 'Tom Tough' schooner, and after nearly encountering shipwreck at the entrance of Port Patterson, was landed at Point Pearce.

At the time of the last despatch the stock had suffered from the voyage, and the horses were in a weak condition; but the Expedition was in all other respects in an efficient state, and the officers and men were all in good health and full of ardour. The horses having been landed from the ship, were to proceed round the head of the Fitzmaurice, making their way to the Kangaroo Point in Victoria River, whence the Expedition would take its final departure for the interior. No natives had been seen, but it was evident by many fires and other traces that they were numerous on that part of the coast. Through Sir Roderick Murchison some information has been received from Mr. Wilson, the geologist to the Expedition; and Mr. Baines, the artist, has illustrated the country about Moreton Bay by the sketches which have been laid on our table.

The importance of this Expedition in opening out to our knowledge the interior of the northern portion of Australia, in bringing us acquainted with the physical and geographical features of the country, by which we may hope to forward the progress of that most important and desirable object; the settlement of this portion of the continent; the determination of the watersheds of those important rivers, the Victoria and Albert, supposed to have their rise in an extensive range of mountains in the locality to be explored, and of the facilities or otherwise of connecting Carpentaria with

the southern ports, by which the dangerous navigation of the coast and of Torres Strait and the delays from monsoons will be avoided ; —the importance, I say, of all this information, which we may expect to derive from this Expedition, cannot be too highly estimated, whether as regards the welfare of the people, or the vast interests which are involved in this country, with respect to that portion of our colonies.

I cannot quit the subject of this Expedition without mentioning an instance of rare liberality in the cause of geographical science which was communicated at one of our evening meetings, during this session, by Count Strzelecki. When the North Australian Expedition was first planned, and when, owing to the length of time which had elapsed before it started, it was supposed that funds were wanting to carry it out, an associate of this Society, Mr. M. Uzielli, generously offered to place the munificent sum of 10,000*l.* at its disposal. Another of our Associates, Mr. W. S. Lindsay, M.P., had also previously offered to contribute largely towards the outfit of the Expedition. As, however, the Government have taken the matter into their own hands, these gentlemen have not been called upon to fulfil their promises ; but we must still look upon the offers as proofs, that the labours of the Geographical Society are fully appreciated by practical men, and of the zeal that exists among us for the advancement of geographical knowledge.

In connection with this part of my subject, I next mention a paper by our Associate Captain Stokes of the Royal Navy, on steam communication between our settlements in Australia and this country, India, and China, and on the establishment of a Penal Settlement in connection with a colony in the vicinity of the Gulf of Carpentaria. In this he proposes a new route through Torres Strait, and to render its various passages safe by the erection of lighthouses and the establishment of pilots.

The necessity for improving the navigation of Torres Strait was some months ago brought prominently forward by the great body of the shipping interests in Australia, in a memorial transmitted to this country, and communicated to Lloyd's ; and there can be no doubt that the vast interests involved, demand our serious attention ; for whether or not the proposed means of communication ultimately become the direct routes to and from those colonies, Torres Strait will still remain the high road of communication between India and the South Pacific Ocean, and between our Southern Australian colonies, India, and China.

*New Caledonia.*—From the ‘*Annales de la Marine et des Colonies*,’ we learn that the French have made a complete investigation of New Caledonia, and have taken possession of the whole island, and caused the sovereignty of France to be acknowledged.

The loss of a Chinese junk upon D’Entrecasteaux Reef, New Caledonia, has been the occasion of bringing us better acquainted with that most dangerous reef, and with its vast extent and correct geographical position, by Lieutenant Chimmo, R.N., and with its formation and natural history by Dr. McDonald, the assistant-  
✓surgeon of H.M.S. ‘*Torch*,’ under Lieutenant Chimmo’s command.

*Norfolk Island.*—You will have learned from our ‘*Proceedings*’ that Norfolk Island, in a complete state of preparation, and with all its buildings, has been appropriated to the use of the Pitcairn Islanders, who have all consented to be transferred there. The planting a colony consisting of persons of such exemplary moral conduct, and of such uniform piety, may perhaps exercise a beneficial effect upon the other islands of the Pacific within their influence.

*Bonin Isles.*—The Bonin Islands have obtained some notoriety lately, from the mention which has been made of them by Commodore Perry of the United States’ Navy, who considers them to be of great importance from their geographical position, and that they may be looked upon as offering to a maritime nation a most “valuable acquisition.” In an early stage of the question this officer claimed them as the property of the United States, under the impression that the group had been visited by an American citizen before the islands were formally taken possession of by myself in 1827. But having since learned from the Address of our late President, the Earl of Ellesmere, that the individual in right of whom he claimed them, was an Englishman, he has generously acknowledged that he was probably  
misinformed. And here I would leave the matter, except that I think it due to myself to reply to his remark, “that in naming these islands I had very unjustly overlooked the name of Coffin, who had visited the southern part of the group before I had.” To this I have only to plead entire ignorance of Captain Coffin ever having visited these islands at all, until I read the remarks of Commodore Perry. The right of possession from priority of discovery is a question of which nations are naturally jealous; but I trust that not only in respect of these islands, but in all other cases, our relations will be such, that our ports will be mutually open for the general benefit of navigation and commerce.

## NEW PUBLICATIONS.

Numerous donations have been presented to the Society, including 4 atlases, upwards of 350 maps and charts, and 663 volumes and pamphlets; affording an excellent proof of the desire to bring its members acquainted with the publications of the day, and denoting a sense of the Society's usefulness. A complete list of these will be printed as usual in the Journal, and many have been specially alluded to in the course of the Address. Among the donations contributed by our own countrymen, though not at present associated with us, may be mentioned the learned work on the Chinese and their Rebellions, by Mr. Meadows, which will receive further notice in the 'Proceedings.'

Our associate, Mr. Alexander Keith Johnston, has completed the new edition of his superb Physical Atlas. The publication of the first edition of this great work, ten years since, had the effect of introducing in this country almost a new era in the popular study of geography, through its attractive and instructive illustration of the prominent features of the science. This second edition is to some extent an entirely new work, owing to the additions and improvements which have been introduced. I have only to refer to the names of Murchison, Forbes, Brewster, Ami Boué, and Berghaus, to stamp the high character of the work; but I must not omit to mention, among new contributions, the Geological Map of Europe, by Sir Roderick Murchison and Professor Nicol; that of America, by Professor Rogers; General Sabine's Map of Terrestrial Magnetism; the Distribution of Marine Animals, by the lamented Professor Edward Forbes; and the addition of a large general Index adds materially to the utility of this extensive compendium of Natural Geography.

The Imperial Atlas of Modern Geography, edited by our associate, Dr. Blackie, of Glasgow, has reached its twelfth number. The maps are very neatly and correctly executed by some of our best cartographers.

The Royal Illustrated Atlas, with an introductory notice on the existing literature of geography, by Dr. Shaw, is also in course of publication by Messrs. Fullarton, and has reached its eighth part. The design of this atlas goes beyond the ordinary scope of unadorned cartography, in combining with the maps, picturesque vignettes and illustrations of the countries and their inhabitants. The maps are prettily drawn according to the latest

authorities, and the pictures, which form an unusual, though instructive feature of the work, are neatly engraved.

I may include in this notice of our own labours, a beautiful Map of Madeira, published in London, in the English language, and dedicated, by permission, to this Society, by our Corresponding member M. Ziegler of Winterthur. The physical features of this island, including the distribution of its vegetation, are skilfully portrayed; and in addition to his own observations, Mr. Ziegler acknowledges the assistance he has derived from the labours of Captain Vidal, R.N., and Sir Charles Lyell; and especially from the communications of Mr. Hartung, whose portfolios are rich with the researches of six winters. Such a map cannot fail to prove valuable to the geographer, and an interesting companion to those who seek in Madeira, for a milder climate than our own.

The successful researches which have been prosecuted among the mounds of Mesopotamia have led to the production of a series of three beautiful Maps for the Government of India, by Commander Jones, I.N., delineating the remains of Khorsabad, Nineveh, Selmieh, and Nimrud.

One of the latest communications received from our lamented Corresponding member, Vicomte de Santarem, contained the donation of a copy of the fac-simile published by the Vicomte of the large Map of the World drawn by Fra Mauro in 1459. This fac-simile is of the same size as the original, and published on six sheets.

Among our members who have contributed to Crimean geography may be now mentioned Mr. G. Cavendish Taylor, who has recently published a *Journal of Adventures with the British Army*, in two volumes.

One of our earliest members, General Monteith, whose Map of Georgia and the Caucasus was engraved several years since by the Society, and still remains in repute, has lately published a volume on Kars and Erzeroum, with an account of the Campaigns of Prince Paskiewitch and of the Russian Conquests beyond the Caucasus.

Mr. William Ferguson, our associate, has published his journal of a visit, entitled '*America by River and Rail, or Notes by the Way on the New World and its People.*'

Dr. J. D. Hooker and our associate Dr. Thompson have published, separately, their *Introductory Essay to the Flora Indica*, including outlines of the Physical Geography and Botany of the Provinces of India.

A fine Map has been published lately by Mr. Stanford, con-

taining the eastern frontier of the Cape of Good Hope, drawn by Mr. Henry Hall, of the Ordnance department in that colony, whose merits as a cartographer are well known. This map appears very opportunely, as it includes the country of the Bassutos, where disturbances are apprehended. Mr. Stanford has also presented a copy of the new edition of Baily's Map of Central America, with corrections from the recent surveys of Squier, Codazzi, and others.

Capt. Burton has completed the narrative of his dangerous journey to Mecca and Medina, in the disguise of an Affghan pilgrim; and he has also published an account of his visit to the African city of Harar, which had been deemed inaccessible, owing to the savage and hostile character of the chief, as well as of the people.

Our associate, Captain Charles F. A. Shadwell, R.N., C.B., has added to his useful publications on navigation a case containing, on a dozen cards, 'Formulæ of Navigation and Nautical Astronomy;' also another work on the Management of Chronometers.

The labours of other Members have been alluded to in various parts of this Address in connection with the different countries to which they relate.

#### PHYSICAL GEOGRAPHY.

During the past year there has appeared, under the direction of the zealous superintendent of the Ordnance Survey, an abstract of the operations, carried on in Ireland, for the purpose of referring the mean water levels upon various parts of the coast to a common standard. Although these observations have long been discussed by our Astronomer Royal, and will be found in the Transactions of the Royal Society, yet it is only now that the complete details of the operations have been published; and as the observations present this curious result, viz. that the mean sea level is higher upon the northern part of Ireland than upon the southern part, and as no notice of this has ever appeared in our Journal that I am aware of, I take this occasion of observing that, if we take as the standard Courtown, in Wicklow—a spot remarkable as having no perceptible rise or fall of its tide, and about midway on the axis of the great tidal wave between the extremities of Ireland—we shall find that the mean sea level stands higher on the north of Ireland (Ballycastle) by 0·881 feet and lower on the south (Castle Townsend) by 0·938 feet than it does at Courtown. I know it will be interesting to many of our Associates to have these facts inserted in their Journal.

Of late, various papers have appeared on the circulation of the waters of the ocean ; and as new facts are received, the interest of the subject increases. The labours of America have in this respect been very fruitful ; Lieutenant Maury, our able and newly elected Corresponding member, has laboured deeply in this field, and has shown us with what accuracy he has determined the course and velocity of the Gulf Stream, by the remarkable agreement between the real and calculated position in which the unfortunate 'San Francisco' was found, after being disabled and drifting many days in the strength of the current.

The American Surveying Expedition, under Lieutenant Lee, has also contributed to the subject ; and, while pursuing its observations upon the streams of the ocean, has largely added to our store of ocean temperatures at various depths, and has furnished us with a most interesting section of the basin of the Atlantic, which will throw considerable light upon the practicability of the project of connecting the two great continents of Europe and America by a telegraphic wire.

Mr. Findlay, our Associate, has added to his former contributions on the subject of ocean streams ; and Captain Irminger, of the Danish Royal Navy, has supplied us with information as to a new course of the stream on the coast of Greenland.

It has been the practice of my predecessors to notice the progress of magnetic science from the natural connection between the compass and topographical operations. During the past year a committee has been formed at Liverpool for the purpose of inquiring into that subtle subject, the disturbance of the compass in iron vessels. They have made a report of their labours, up to the end of the year, to the Board of Trade, which presents some curious and interesting results, and they are still continuing their investigations. The Board of Trade encourages this inquiry, so manifestly advantageous to the shipping interest, by an annual grant of money.

The question of local attraction in ships has also engaged the attention of our learned and indefatigable Astronomer-Royal, who has recently furnished a valuable paper on the subject to the Royal Society.

Various papers on this subject by other authors also have been published since the last anniversary, of which some have been read before the British Association at Glasgow, particularly those by Dr. Scoresby, and by Mr. Towson.

It will be interesting to know that Mr. Piazzi Smyth, the Astro-

nomer-Royal at Edinburgh, is about to proceed to Teneriffe, to make astronomical observations on the summit of the famed Peak of Teyde.

The distinguished author of the 'Law of Storms,' Sir William Reid, has published a notice of the motion of winds and storms in the Mediterranean, and drawn a comparison between the gales and forces of the winds of Malta and of Bermuda. The work embodies a memorandum by our valued associate, Captain Graves, R.N., on the advantages which shipping will derive from pursuing a certain course in the Mediterranean, with respect to prevailing winds at certain seasons of the year.

I am happy to be able to announce the completion of an important series of observations upon the tidal streams of the seas around our own shores, which have been carried on for several years in a small vessel, which the Admiralty liberally placed at my disposal. These observations are of great importance as regards this particular branch of science, as they satisfactorily establish, in tidal waves of a peculiar character, the existence of a simultaneous turn of stream throughout the wave, notwithstanding the remarkable fact of there being a progressively increasing tidal establishment. This theory was advocated in two papers under my own hand, printed in the 'Transactions' of the Royal Society; and it has now been further confirmed by numerous observations. The result will facilitate and simplify the navigation of our channels, and will affect much that has been written upon the subject of tides.

In connection with this branch of physics, I mention a work by Mr. F. A. Keller, an able hydrographical engineer of the French navy, entitled, '*Exposé du Régime des Courants dans la Manche et la Mer Allemagne.*' The author has endeavoured to arrange the results derived from the first series of the observations, published, as before mentioned, in the Philosophical Transactions, in a manner which, he is of opinion, will render them more generally useful to mariners.

Lieutenant Maury has furnished a pamphlet on 'Lanes for Steamers,' or upon the routes which he would have steamers follow, when passing between England and America, in order to render this much frequented route more safe, by diminishing the chance of collision. In addition to lessening the danger of these passages, Lieutenant Maury points out several other advantages which would attend the adoption of his plan, and gives much useful information on the course of the Gulf Stream, as well as on districts where fogs and gales are most frequent, and the times when they most prevail.



## CONCLUSION.

I have now laid before you as much of the general outline of the state and progress of Geographical science during the past year, as may be conveniently comprised within the limits of an Address, and I feel satisfied that there is much upon which the Society may be congratulated. The numerous communications made to the Society during the Session from all parts of the globe—the animated and enlightened discussions upon them, which are recorded in our useful periodical, the ‘Proceedings,’ which has been so successfully started, and the enlarged dimensions which our Journal has attained under the careful editorship of our zealous Secretary, Dr. Norton Shaw—are proofs of the many and fruitful sources whence information flows to us; and when we recollect how few of our evening meetings have been passed within these walls without some positive addition to the science we cultivate, we shall be able to comprehend the progress that is continually being made in Geographical research, and the great increase of the general interest which it excites. But it is not in the pages of our records alone, that the full benefits of the Society are seen—the mere facts added, year by year, to our store of knowledge, are but the promise of the successes before us, and of benefits to be derived from our labours. It is impossible to read the list of names enrolled as members of this Society without feeling convinced that its labours are considered valuable to every interest and to men of all professions; for it is not the geographer alone who will be found thus supporting our efforts: side by side with him stand the politician and the merchant, who regard with deep interest new enterprises opened out for commerce; and next to him the divine, who foresees in the extension of our science, fresh means of spreading the blessings of Christianity, and its attendant, the civilization of man. And so I might pass on to other professions, all concurring in the same sentiments and interests. In this union of views we cannot but foresee the enlarged success of the Society; and feel that it is with no exaggerated hopes we may look forward to its steady and satisfactory progress, and to its increasing importance and usefulness.









