

THE ENCYCLOPÆDIA BRITANNICA

ELEVENTH EDITION

FIRST	edition, published in three	volumes,	1768—1771.
SECOND	„ „ ten	„	1777—1784.
THIRD	„ „ eighteen	„	1788—1797.
FOURTH	„ „ twenty	„	1801—1810.
FIFTH	„ „ twenty	„	1815—1817.
SIXTH	„ „ twenty	„	1823—1824.
SEVENTH	„ „ twenty-one	„	1830—1842.
EIGHTH	„ „ twenty-two	„	1853—1860.
NINTH	„ „ twenty-five	„	1875—1889.
TENTH	„ ninth edition and eleven		
	supplementary volumes,		1902—1903.
ELEVENTH	„ published in twenty-nine volumes,		1910—1911.

THE
ENCYCLOPÆDIA BRITANNICA

A
DICTIONARY
OF
ARTS, SCIENCES, LITERATURE AND GENERAL
INFORMATION

ELEVENTH EDITION

VOLUME I
A to ANDROPHAGI

New York
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DEDICATED BY PERMISSION

TO

HIS MAJESTY GEORGE THE FIFTH

KING OF GREAT BRITAIN AND IRELAND

AND OF THE BRITISH DOMINIONS BEYOND THE SEAS

EMPEROR OF INDIA

AND TO

WILLIAM HOWARD TAFT

PRESIDENT OF THE UNITED STATES OF AMERICA

PREFATORY NOTE

THE *Encyclopædia Britannica*, of which the Eleventh Edition is now issued by the University of Cambridge, has a history extending over 140 years. The First Edition, in three quarto volumes, was issued in weekly numbers (price 6d. each) from 1768 to 1771 by "a Society of Gentlemen in Scotland." The proprietors were Colin MacFarquhar, an Edinburgh printer, and Andrew Bell, the principal Scottish engraver of that day. It seems that MacFarquhar, a man of wide knowledge and excellent judgment, was the real originator of the work, though his want of capital prevented his undertaking it by himself. The work was edited and in great part written by William Smellie, another Edinburgh printer, who was bold enough to undertake "fifteen capital sciences" for his own share. The numerous plates were engraved by Bell so admirably that some of them have been reproduced in every edition down to the present one.

The plan of the work differed from all preceding "dictionaries of arts and sciences," as encyclopædias were usually called until then in Great Britain; it combined the plan of Dennis de Coetlogon (1745) with that in common use—on the one hand keeping important subjects together, and on the other facilitating reference by numerous and short separate articles arranged in alphabetical order. Though the infant *Encyclopædia Britannica* omitted the whole field of history and biography as beneath the dignity of encyclopædias, it speedily acquired sufficient popularity to justify the preparation of a new edition on a much larger scale. The decision to include history and biography caused the secession of Smellie; but MacFarquhar himself edited the work, with the assistance of James Tytler, famous as the first Scottish aeronaut, and for the first time produced an encyclopædia which covered the whole field of human knowledge. This Second Edition was issued in numbers from June 1777 to September 1784, and was afterwards bound up in ten quarto volumes, containing (8595 pages and 340 plates) more than three times as much material as the First Edition.

These earliest editions of the *Encyclopædia Britannica* consisted mainly of what may be described as compilation; like all their predecessors, from the time of Alsted to that of Ephraim Chambers, they had been put together by one or two men who were still able to take the whole of human knowledge for their province. It was with the Third Edition that the plan of drawing on specialist learning, which has since given the *Encyclopædia Britannica* its high reputation, was first adopted. This edition, which was begun in 1788 and completed, in eighteen volumes, in 1797, was edited by MacFarquhar until his death in 1793, when about two-thirds of the work were completed. Bell, the surviving proprietor, then appointed George Gleig—afterwards Bishop of Brechin—as

editor, and it was he who enlisted the assistance, as contributors, of the most eminent men of science then living in Scotland. Professors Robison, Thomas Thomson and Playfair were the most notable of these new specialist contributors, and a Supplement in two volumes was issued in 1801 to allow them to extend their work to those earlier letters of the alphabet which had already been issued by MacFarquhar. It was their labours which first gave the *Encyclopædia Britannica* its pre-eminent standing among works of reference, and prepared the way for it to become, as a later editor claimed, not merely a register but an instrument of research, since thereafter the leading specialists in all departments were invited to contribute their unpublished results to its pages.

In the Fourth Edition, published by Andrew Bell in twenty volumes from 1801 to 1810, the principle of specialist contributions was considerably extended, but it was only brought to such degree of perfection as was possible at the time by Archibald Constable, "the great Napoleon of the realms of print," who purchased the copyright of the *Encyclopædia Britannica* soon after Bell's death in 1809. Constable lavished his energy and his money on the famous "Supplement to the Fourth, Fifth and Sixth Editions," which in 1813 he commissioned Macvey Napier to edit. It was with the appearance of this Supplement that the *Encyclopædia Britannica* ceased to be a purely Scottish undertaking, and blossomed out into that great cosmopolitan or international enterprise which it has since become. The most eminent writers, scholars and men of science in England and on the continent of Europe, as well as in Scotland itself, were enlisted in the work: Sir Walter Scott, Jeffrey, Leslie, Playfair and Sir Humphry Davy, Dugald Stewart—who received the then unprecedented sum of £1000 for a single contribution—Ricardo, Malthus and Thomas Young, with foreign men of science like Arago and Biot. From this time onward, indeed, a list of the contributors to successive editions of the *Encyclopædia Britannica* would be a list of the most eminent British and American writers and thinkers of each generation; the work had become the product of the organized co-operation of acknowledged leaders of the world's thought in every department of human knowledge. For this advance the credit is mainly due to Constable.

The Fifth and Sixth Editions, each in twenty volumes, issued by Constable between 1815 and 1824, were practically reprints of the Fourth, the Supplement—issued in six volumes from 1816 to 1824—being considered adequate to supply their deficiencies. The Seventh Edition, edited by Macvey Napier on the same lines as the Supplement, of which it incorporated a great part, was brought out by a new publisher, Adam Black, who had bought the copyright on Constable's failure. This edition was issued from 1830 to 1842, and was comprised in twenty-one volumes, which included a general index to the whole work. The Eighth Edition, under the editorship of T. Stewart Traill, was issued by the firm of A. & C. Black, from 1853 to 1860, in twenty-one volumes, with a separate index volume.

The Ninth Edition was then undertaken by the same firm on a scale which Adam Black considered so hazardous that he refused to have any part in the undertaking, and he accordingly advertised his retirement from the firm. This Edition began to appear in 1875, under the editorship of Thomas Spencer Baynes, and was completed in 1889 by William Robertson Smith. It consisted of twenty-four volumes, containing 21,572 pages and 302 plates, with a separate index volume. Adam Black's prognostications of failure were signally falsified by the success of the work, of which nearly half a million sets—including American pirated and mutilated editions—were ultimately sold. The great possibilities of popularity for the *Encyclopædia Britannica* in Great

Britain were only realized, however, when in 1898 *The Times* undertook to sell a verbatim reprint of the Ninth Edition at about half the price originally asked for it by the publishers. The success of this reprint led to the publication by *The Times* in 1902 of an elaborate supplement in eleven New Volumes (one containing new maps and one a comprehensive index to the whole work), constituting, with the previous twenty-four volumes, the Tenth Edition. The Eleventh Edition, which supersedes both Ninth and Tenth, and represents in an entirely new and original form a fresh survey of the whole field of human thought and achievement, written by some 1500 eminent specialists drawn from nearly every country of the civilized world, incorporating the results of research and the progress of events up to the middle of 1910, is now published by the University of Cambridge, where it is hoped that the *Encyclopædia Britannica* has at length found a permanent home.

It will be seen from this brief survey of the history of the *Encyclopædia Britannica* that, while the literary and scholarly success of the work has been uniform and continuous, its commercial career has naturally been subject to vicissitudes. Six different publishing firms have been at various times associated with its production; and the increasing magnitude of the work, consequent on the steady growth of knowledge, made this wellnigh inevitable. The *Encyclopædia Britannica* has to-day become something more than a commercial venture, or even a national enterprise. It is a vast cosmopolitan work of learning, which can find no home so appropriate as an ancient university.

The present publication of the new *Encyclopædia Britannica* by the University of Cambridge is a natural step in the evolution of the university as an educational institution and a home of research. The medieval University of Cambridge began its educational labours as an institution intended almost exclusively for the instruction of the clergy, to whose needs its system of studies was necessarily in a large measure accommodated. The Revival of Learning, the Renaissance and the Reformation widened its sphere of intellectual work and its interests, as well as its actual curriculum. The 19th century saw the complete abolition of the various tests which formerly shut the gates of the English universities against a large part of the people. The early establishment in Cambridge of special colleges for women was also a sign of expanding activities. About the same time the University Extension movement, first advocated at Cambridge in 1871 on the ground that the ancient universities were not mere clusters of private establishments but national institutions, led to a wider conception of the possibilities of utilizing the intellectual resources of the universities for the general diffusion of knowledge and culture; and the system of Local Examinations brought the university into close contact with secondary education throughout the country. But the public to which the University of Cambridge thus appealed, though wider than that of the college lecture-rooms, was still necessarily limited. Practically it is only through the medium of the University Press that Cambridge can enter into and maintain direct relations with the whole of the English-speaking world. The present time seems appropriate for an effort towards thus signally extending the intellectual and educational influence of the university.

To this end, the University of Cambridge has undertaken the publication of the *Encyclopædia Britannica*, and now issues the Eleventh Edition of that work. These twenty-eight volumes and index aim at achieving the high ambition of bringing all extant knowledge within the reach of every class of readers. While the work, in its present form, is to some extent based on the

preceding edition, the whole field has been re-surveyed with the guidance of the most eminent specialists. The editors early decided that the new edition should be planned and written as a whole, and refused to content themselves with the old-fashioned plan of regarding each volume as a separate unit, to be compiled and published by itself. They were thus able to arrange their material so as to give an organic unity to the whole work and to place all the various subjects under their natural headings, in the form which experience has shown to be the most convenient for a work of universal reference. An important consequence of this method of editing is that the twenty-eight volumes are now ready for publication at the same time, and that the complete work can be offered to the public in its entirety. Although the work has been reduced to the smallest compass consistent with lucidity—bibliographies of all subjects which call for assistance of this nature being provided in aid of more detailed study—the aim throughout has been to maintain the highest standard of scholarly authority, and to provide a thorough elucidation of important scientific problems for which the modern inquirer has no adequate text-books. This Eleventh Edition of the *Encyclopædia Britannica* is now, therefore, offered to the public by the University of Cambridge in the hope and belief that it will be found to be a trustworthy guide to sound learning, and an instrument of culture of world-wide influence.

CAMBRIDGE,

November 1, 1910.

EDITORIAL INTRODUCTION

ELSEWHERE in these volumes, under the heading of *ENCYCLOPÆDIA* (vol. ix. p. 369), an account is given in detail of the particular form of literature to which that name applies. It is no longer necessary, as was done in some of the earlier editions of the *Encyclopædia Britannica*, to defend in a Preface the main principle of the system by which subjects are divided for treatment on a dictionary plan under the headings most directly suggesting explanation or discussion. The convenience of an arrangement of material based on a single alphabetization of subject words and proper names has established itself in the common sense of mankind, and in recent years has led to the multiplication of analogous works of reference. There are, however, certain points in the execution of the Eleventh Edition to which, in a preliminary survey, attention may profitably be drawn.

*General idea
of the book.*

The Eleventh Edition and its Predecessors.

It is important to deal first with the relationship of the Eleventh Edition to its predecessors. In addition to providing a digest of general information, such as is required in a reference-book pure and simple, the object of the *Encyclopædia Britannica* has always been to give reasoned discussions on all the great questions of practical or speculative interest, presenting the results of accumulated knowledge and original inquiry in the form of articles which are themselves authoritative contributions to the literature of their subjects, adapted for the purpose of systematic reading and study. In this way its successive editions have been among the actual sources through which progressive improvements have been attained in the exposition of many important branches of learning. The Ninth Edition in particular, to which the Eleventh is the lineal successor—for the name of the Tenth was used only to indicate the incorporation of supplementary volumes which left the main fabric untouched—was universally recognized as giving the most scholarly contemporary expression to this constructive ideal. The reputation thus gained by the *Encyclopædia Britannica* as a comprehensive embodiment of accurate scholarship—the word being used here for authoritative exposition in all departments of knowledge—carries with it a responsibility which can only be fulfilled by periodical revision in the light of later research. Yet in any complete new edition, and certainly in that which is here presented, due acknowledgment must be made to the impulse given by those who kept the sacred fire burning in earlier days. In this respect, if a special debt is owing to the editors of the Ninth Edition, and particularly to the great services of Robertson Smith, it must not be forgotten that long before their time the *Encyclopædia Britannica* had enlisted among its contributors many eminent writers, whose articles, substantially carried forward at each revision, became closely associated with the name and tradition of the work.¹ To

*Debt to earlier
editions.*

*Their special
value.*

¹ In earlier days the reverence due to deceased authority was perhaps carried to extreme lengths. The following footnote, attached in the Eighth Edition to Sir Walter Scott's article *DRAMA*, may be cited:—"It is proper to state here . . . that this article is reprinted as it originally appeared in the supplement to the fourth, fifth and sixth editions of this work without any of those adaptations which the course of time and change

preserve the continuity of its historic associations, so far as might be consistent with the public interest, and with what was due to progress in knowledge, was one of the first duties of those responsible for a new edition; and just as the Ninth Edition carried forward, with notable additions or substitutions, work contributed to the Eighth and earlier editions, so it provided matter for utilization in the Eleventh, which in its turn had to accommodate the new knowledge of a later generation.

In considering the treatment, however, of the mass of material thus handed down, the editor of the Eleventh Edition had an entirely new situation to deal with. It is necessary here to explain why it is that the Eleventh Edition is much more than a revision—is, indeed, a new edifice as compared with the structure of the Ninth Edition. In the whole architecture of the latter there was a serious flaw, due to no want of ability in editors or contributors, but to the conditions imposed upon them in the system of publication.

A new departure.

The economic and mechanical obstacles to the production of a great encyclopædia otherwise than in a series of volumes separately issued at intervals during a number of years were formerly considered prohibitive. Thus the Ninth Edition, the first volume of which was published in 1875

The old system of production.

and the twenty-fifth in 1889, was incomplete for some sixteen years after its real inception. Not only does such a long interval between the start and the finish involve the possibility of a change in editorial direction and conception such as happened in 1881 when Spencer Baynes was compelled by ill-health to hand over the reins to Robertson Smith; but even if the same editorial policy remained to dominate the work, the continual progress of time was constantly changing the conditions under which it was exercised. With such a system of publication an encyclopædia can have no proper unity of conception or uniformity of treatment. It cannot be planned from the beginning so as to present at its completion a satisfactory synoptic view of any department of knowledge. The historical record is restricted by the accident of the dates at which the separate volumes are published, in such a way that the facts included in one volume may contradict those in another. Individual volumes, the contents of which are arbitrarily determined by the alphabetical order of headings, may indeed be abreast of the learning and accomplishments of their day, but

Defect of division under different dates.

each time a later volume appears the circumstances have altered, and there is every chance that some integral portion of what had previously been published may be stultified. Those who were responsible for the execution of the Ninth Edition of the *Encyclopædia Britannica* did their best under an impossible system. They made it a collection of detached monographs of the highest authority and value. In their day the demand of a modern public for “up-to-date-ness” had not come into existence, and it seemed perfectly reasonable in 1879 to bring the article on the history of England no further than the accession of Queen Victoria. But it was not their failure to appreciate the importance of dealing with the latest events in history that made so much of the Ninth Edition useless in preparing its successor. When only this was in question, later history could be added. It was the fact that, owing to its system of publication, its arrangement was not encyclopædic, and that in preparing an edition which for the first time had the advantage of being systematic in the distribution of its material, there was no way of adapting to its needs what had been written originally on a faulty principle.

Until the year 1902, when, within nine months, nine supplementary volumes of text were issued by *The Times*, no publisher had cared or dared to attempt to produce at one time the whole of any work of similar magnitude. It was the regular practice to issue volume by volume.

Novelty of the method now employed.

On this system the public has been furnished with the Oxford *New English Dictionary* (still incomplete in 1910, though work had begun in the early 'sixties and the first volume appeared in 1888) and with the *Dictionary of National Biography*, while the French *La Grande Encyclopédie*, which took even longer than the Ninth Edition of the *Encyclopædia Britannica* to complete, was coming out in its thirty-one volumes between 1885 and 1902. But the proof obtained in 1902 of the practicability of simultaneous production in the case of the supplementary volumes which

of circumstances render necessary in ordinary cases. We have deemed this homage due to the genius and fame of the illustrious author, whose splendid view of the origin and progress of the dramatic art we have accordingly presented to the reader exactly as it proceeded from his own hand, leaving every contemporaneous allusion and illustration untouched.” It may be remarked that this footnote, which was reprinted from the Seventh Edition, was itself carried forward without being brought up to date, apparently in the same spirit; and in another footnote, also reprinted from the Seventh Edition, a reference is made to allusions “on p. 147,” which were indeed on p. 147 of the Seventh Edition, but are on p. 137 of the Eighth!

converted the Ninth into the Tenth Edition of the *Encyclopædia Britannica*, made it imperative to extend this limited experiment to the making of an entirely new edition. By this means a new value might be given to a work which aimed not merely at providing a storehouse of facts, but expounding all knowledge as part of an ordered system. For the problem here was bound up with the question of the date of publication to a unique degree. In some other sorts of book the fact that successive volumes appear at certain intervals of time only affects the convenience of the purchaser—as, for instance, in the case of the *Cambridge Modern History*; the various volumes do not cover the same field or touch the same materials. But in an encyclopædia it is only the alphabetization of the headings which causes them to fall in distinct volumes, and the accident of position separates the treatment of the same or closely related subjects in such a way that, if they are discussed from the point of view of widely different dates, the organic unity of the work is entirely lost. Thanks to the enterprising provision of capital, and the co-operation of a far-sighted business management, it was possible to start the preparation of the Eleventh Edition of the *Encyclopædia Britannica* with the knowledge that it would be published as a whole at one date. The separate volumes, whatever their number, would no longer represent so many lapses of time and so many distinct units in executive conception, but merely mechanical divisions for convenience in handling. And arrangements were made so that the printing of the whole edition should eventually take hardly more time than had been required for the printing and correcting of a single volume under the old system.

Peculiar importance to such a work.

The opportunity thus provided was in many ways more appropriate to the making of an entirely new work than to the revision of an old one. For the Ninth Edition was wanting in precisely that character of interdependence in all its parts which could now be given to the various related articles. Moreover, experience had shown that, as compared with other encyclopædias of less ambitious scope, not intended for systematic study or continuous reading, its arrangement as a work of reference had defects which resulted in some injustice being done to its merits as a series of individual contributions to learning. There was no reason why both these purposes should not be served, and attention be paid to distributing the material under the much larger number of headings which are required for rapid and easy reference, when once it was possible to ignore the particular order in which the subjects were treated. Since none of the work was printed or published until the whole of it was ready, new headings could always be introduced with their appropriate matter, according as the examination of what was written under another heading revealed omissions which showed that some related subject required explanation on its own account, or according as the progress of time up to the year of publication involved the emergence of new issues, to which previously no separate reference would have been expected. The execution of the Eleventh Edition, planned on uniform lines as a single organism, and thus admitting of continual improvement in detail, irrespectively of the distribution of matter under this or that letter of the alphabet, could proceed in all its parts *pari passu*, the various articles being kept open for revision or rewriting, so as to represent the collective knowledge and the contemporary standpoint of the date at which the whole was issued.

Mere revision no longer possible.

This new design involved the maintenance, during all the years of preparation, of an active collaboration among a vast body of contributors. The formal structure of the Ninth Edition necessarily disappeared, leaving only its component parts as building material for incorporation in the new edifice to such degree as examination might prove its adaptability. The site—in this case the whole field of knowledge—was mapped out afresh under the advice of specialist departmental advisers, who, in providing for the occupation of the different areas, co-operated with a central editorial staff, comprising many members, each of whom was responsible to the Editor-in-Chief for a particular section of the work. In this manner what, it is hoped, is a more complete articulation of subjects was effected, while co-operation between the contributors who dealt with each homogeneous department of knowledge was combined with the concentration in editorial direction, which alone could make the Eleventh Edition of the *Encyclopædia Britannica* an organic unit.

A new survey of the field of knowledge.

The result of the new survey was a distribution of material under a far larger number of headings than had been included in the Ninth Edition—some 40,000 instead of some 17,000; and the method of simultaneous construction enabled the co-ordination which is of such peculiar importance in

Method and results.

a work of reference to be applied systematically by the editorial staff. The authority which attaches to the names of individual contributors remains, as before, an important

feature of the Eleventh Edition, but by these means, it is hoped, the authority which attaches to the *Encyclopædia Britannica* itself is more firmly established. When Robertson Smith finally wrote his preface to the Index volume of the Ninth Edition, he said:—"The use of initials (as signatures to articles) was not designed to lighten the responsibility of the editors. No editor can possess the knowledge

The two sources of authority.

which would enable him to control the work of his contributors in all the subjects treated of in the *Encyclopædia*, but no effort has been spared on the part of the editorial staff to

secure the accuracy and sufficiency of every contribution, and to prevent those repetitions and inconcinnities which necessarily occur where each contributor is absolutely and solely responsible for the articles which bear his name." The principle here enunciated, which represents the

tradition of the *Encyclopædia Britannica* in the matter of the correct relationship between editors and contributors, and the responsibility attaching to individual signatures, has been adopted in the Eleventh Edition, but with all the advantages resulting alike from simultaneous production and from the fact that the Editor-in-Chief was assisted by a much larger staff, working under conditions which enabled the editorial control to be effective to a degree unattainable under the earlier system. In concert with the numerous eminent writers whose signatures give individual interest

Increased value for reference.

and weight to their contributions, the whole work—and not only the unsigned articles, many of which indeed have equally high authority behind them—passed through the detailed scrutiny of the editorial staff, whose duty it was to see that it provided what

those who used any part of the book could reasonably expect to find, to remedy those "inconcinnities" to which Robertson Smith alluded, and to secure the accuracy in the use of names, the inclusion of dates, and similar *minutiæ*, which is essential in a work of reference.

A great deal of the older fabric was obviously incompatible with the new scheme of treatment; but, where possible, those earlier contributions have been preserved which are of the nature of classics in the

Use of older material.

world of letters. By a selective process which, it is believed, gives new value to the old material—by the revision, at the hands of their own authors or of later authorities, of

such articles or portions of articles as were found to fit accurately into their several places—or by the inclusion under other headings of a consideration of controverted questions on which the writers may have taken a strong personal view, itself of historical interest—their retention has been effected so as to conform to the ideal of making the work as a whole representative of the best thought of a later day.

Questions of Formal Arrangement.

Both in the addition of new words for new subjects, and in the employment of different words for old subjects, the progress of the world demands a reconsideration from time to time of the

Natural headings.

headings under which its accumulated experiences can best be presented in a work which employs the dictionary plan as a key to its contents. No little trouble was therefore expended, in planning the Eleventh Edition, on the attempt to suit the word to the subject

in the way most likely to be generally useful for reference. While the selection has at times been, of necessity, somewhat arbitrary, it has been guided from first to last by an endeavour to follow the natural mental processes of the average educated reader. But it was impossible to interpret what

Correctness and common sense.

is "natural" in this connexion without consideration for the advances which have been made in terminological accuracy, alike in the technicalities of science and in the forms of language adopted by precise writers, whose usage has become or is rapidly becoming part of the common stock. The practice of modern schools and the vocabulary of a modern curriculum, as well as the predominating example of expert

authorities, impose themselves gradually on the public mind, and constitute new conventions which are widely assimilated. In forecasting what would be for the convenience of a new generation of readers, it has seemed best to aim at adopting the nearest approach to correct modern terminology, while avoiding mere pedantry on the one hand, and on the other a useless abandonment of well-established English custom.

It is easier, however, to lay down principles than to carry them out consistently in face of the obstinacy of the materials with which one is dealing in an encyclopædia which attempts to combine accurate scholarship with general utility and convenience. In the case of biographical articles, for instance, it was decided that the proper headings were the names by which the individuals concerned are in fact commonly known. Thus "George Sand" is now dealt with under her pen-name (SAND, GEORGE) and not under that of Madame Dudevant; "George Eliot" is no longer hidden away under her married name of Mrs Cross; and "Mark Twain" is taken as the permanent name by which the world will know Mr Clemens. But it is not only in the case of pseudonyms that there is a difficulty in deciding upon the heading which is most appropriate. In variance with the practice of the *Dictionary of National Biography*, all articles on titled persons are here arranged under the title headings and not the family names. In principle it is believed that this is much the more convenient system, for in most cases the public (especially outside the British Islands) does not know what the family name of an English peer may be. Moreover, the system adopted by the *Dictionary of National Biography* sacrifices a very important feature in connexion with these biographical articles, namely, the history of the title itself, which has often passed through several families and can only be conveniently followed when all the holders are kept together. As a rule, this system of putting peers under the headings of their titles agrees with the principle of adopting the names by which people actually are called; but sometimes it is too glaringly otherwise. Nobody would think of looking for Francis Bacon under the heading of Viscount St Albans, or for Horace Walpole under that of Earl of Orford. In such cases what is believed to be the natural expectation of readers has been consulted. The exceptional use, however, of the family name as a heading for persons of title has been reserved strictly for what may be regarded as settled conventions, and where reasonably possible the rule has been followed; thus Harley and St John are dealt with as Earl of Oxford and Viscount Bolingbroke respectively. On the other hand, when a celebrity is commonly known, not under his family name but under a title which eventually was changed for a different one of higher rank, the more convenient arrangement has seemed to be—notwithstanding general usage—to associate the article with the higher title, and so to bring it into connexion with the historical peerage. Thus the account of the statesman commonly called by his earlier title of Earl of Danby is deliberately placed under his later title of Duke of Leeds, and that of Lord Castlereagh under Marquess of Londonderry. If the result of such exceptions to the rule might seem to be that in certain cases a reader would not know where to turn, the answer is that a reference to the Index, where cross-references are given, will decide. In the text of the work, although a great deal has been done to refer a reader from one article to another, mere cross-references—such as "Danby, Earl of; see LEEDS, DUKE OF"—are not included as distinct entries; it was found that the number of such headings would be very large, and they would only have duplicated the proper function of the Index, which now acts in this respect as the real guide to the contents and should be regarded as an integral part of the work.

The reference just made to the *Dictionary of National Biography* may here be supplemented by a few words as to the British biographies in the Eleventh Edition of the *Encyclopædia Britannica*. The whole standard of biographical writing of this kind has undoubtedly been raised by the labours of Sir Leslie Stephen, Dr Sidney Lee, and their collaborators, in the compilation of that invaluable work; and no subsequent publication could fail to profit, both by the scholarly example there set, and by the results of the original research embodied in it. But in the corresponding articles in the *Encyclopædia Britannica* advantage has been taken of the opportunity for further research and the incorporation of later information, and they represent an independent study, the details of which sometimes differ from what is given in the *Dictionary*, but must not for that reason be thought in haste to be incorrect. Allowance being made for a somewhat different

Pseudonyms.

Personal names and titles.

Use of the Index.

Progress in treatment of biography.

standard in the selection of individuals for separate biographies, and for the briefer treatment, the attempt has been made to carry even a step forward the ideals of the *Dictionary* in regard to accuracy of detail and critical judgment. This has largely been made possible by the existence of the *Dictionary*, but the original work done in the Eleventh Edition of the *Encyclopædia Britannica* in the same field—drawing as it can upon a number of biographical articles, already classics, in its earlier editions—gives it an independent authority even in the sphere of British national biography. Moreover, the inclusion of biographies of eminent persons who died after the *Dictionary* was supplemented in 1901, and of others still living in 1910, results in a considerable extension of the biographical area, even as regards individuals of British nationality in the narrowest sense. The articles in the *Encyclopædia Britannica*, however, are of course not limited to personages of the British Islands. Not only are biographies here included of the great men and women of French, German, Italian, Belgian, Dutch, Russian, Scandinavian, Japanese, and other foreign nationalities, as well as of those of the ancient world, but the same standard of selection has been applied to American and British Colonial biography as to English, Welsh, Scottish and Irish. Indeed the *Encyclopædia Britannica* may now claim for the first time to supply a really adequate Dictionary of American National Biography, covering all those with whom the citizens of the United States are nationally concerned. It thus completes its representation of the English-speaking peoples, to all of whom English history, even in its narrower sense, is a common heritage, and in its evolution a common example.

Another form of the terminological problem, to which reference was made above, is found in the transliteration of foreign names, and the conversion of the names of foreign places and countries into English equivalents. As regards the latter, there is no English standard which can be said to be universal, though in particular cases there is a convention which it would be absurd to attempt to displace for any reason of supposed superior accuracy. It would be pragmatical in the extreme to force upon the English-speaking world a system of calling all foreign places by their local names, even though it might be thought that each nationality had a right to settle the nomenclature of its country and the towns or districts within it. In general the English conventions must stand. One of these days the world may agree that an international nomenclature is desirable and feasible, but not yet; and the country which its own citizens call *Deutschland* and the French *l'Allemagne* still remains Germany to those who use the English language. Similarly Cologne (*Köln*), Florence (*Firenze*), or Vienna (*Wien*) are bound to retain their English names in an English book. But all cases are not so simple. The world abounds in less important places, for which the English names have no standardized spelling; different

English newspapers on a single day, or a single newspaper at intervals of a few weeks or months, give them several varieties of form; and in Asia or Africa the latest explorer always seems to have a preference for a new one which is unlike that adopted by rival geographers. When the Eleventh Edition of the *Encyclopædia Britannica* was started, the suggestion was made that the Royal Geographical Society of London—the premier geographical society of the world—might co-operate in an attempt to secure the adoption of a standard English geographical and topographical nomenclature. The Society, indeed, has a system of its own which to some extent aims at fulfilling this requirement, though it has failed to impose it upon general use; but unfortunately the Society's system breaks down by admitting a considerable number of exceptions and by failing to settle a very large number of cases which really themselves constitute the difficulty. The co-operation of the Royal Geographical Society for the purpose of enabling the *Encyclopædia Britannica* to give prominent literary expression to an authoritative spelling for every place-name, included within its articles or maps was found to be impracticable; and it was therefore necessary for the Eleventh Edition to adopt a consistent spelling which would represent its own judgment and authority. It is hoped that by degrees this spelling may recommend itself in other quarters. Where reasonably possible, the local spelling popularized by the usage of post-offices or railways has been preferred to any purely philological system of transliteration, but there are numerous cases where even this test of public convenience breaks down and some form of Anglicization becomes essential to an English gazetteer having an organic unity of its own. Apart from the continuance of English conventions which appeared sufficiently crystallized, the most authori-

tative spelling of the foreign name has been given its simplest English transliteration, preference being given, in cases of doubt, to the form, for instance in African countries, adopted by the European nation in possession or control. In the absence of any central authority or international agreement, the result is occasionally different in some slight degree from any common English variant, but this cannot well be helped when English variants are so capricious, and none persistent; and the names selected are those which for purposes of reference combine the most accuracy with the least disturbance of familiar usage. Thus the German African colony of *Kamerun* is here called Cameroon, an English form which follows the common practice of English transliteration in regard to its initial letter, but departs, in deference to the German official nomenclature, from the older English Cameroons, a plural no longer justifiable, although most English newspapers and maps still perpetuate it. **Method adopted.**

In the case of personal names, wherever an English spelling has become sufficiently established both in literature and in popular usage it has been retained, irrespectively of any strict linguistic value. Foreign names in English shape really become English words, and they are so treated here; e.g. Alcibiades (not Alkibiades), Juggernaut (not Jagganath). But discrimination as to where convenience rather than philological correctness should rule has been made all the more difficult, especially with names representing Arabic or other Oriental originals, by the strong views of individual scholars, who from time to time attempt in their own writings to impose their own transliterations upon others, in the face of well-established convention. In the course of the preparation of the Eleventh Edition of the *Encyclopædia Britannica*, various eminent Arabic scholars have given strong expression to their view as to the English form of the name of the Prophet of Islam, preference being given to that of Muḥammad. But the old form Mahomet is a well-established English equivalent; and it is here retained for convenience in identification where the Prophet himself is referred to, the form Mahommed being generally used in distinction for other persons of this name. Purists may be dissatisfied with this concession to popular usage; our choice is, we believe, in the interest of the general public. If only the "correct" forms of many Oriental names had been employed, they would be unrecognizable except to scholars. On the other hand, while the retention of Mahomet is a typical instance of the preference given to a vernacular spelling when there is one, and customary forms are adopted for Arabic and other names in the headings and for ordinary use throughout the work, in every case the more accurate scientific spelling is also given in the appropriate article. While deference has naturally been paid to the opinion of individual scholars, as far as possible, in connexion with articles contributed by them, uniformity throughout the work (a necessity for the purpose of Index-making, if for no other) has been secured by transliterating on the basis of schemes which have been specially prepared for each language; for this purpose the best linguistic opinions have been consulted, but due weight has been given to intelligibility on the part of a public already more or less accustomed to a stereotyped spelling. In the case of Babylonian names, a section of the general article BABYLONIA is specially devoted to an elucidation of the divergences between the renderings given by individual Assyriologists. **Proper names in Oriental languages.**

While the *Encyclopædia Britannica* has aimed, in this matter of local and personal nomenclature, at conciliating the opinion of scholars with public usage and convenience, and the present edition makes an attempt to solve the problem on reasonable lines, it should be understood that the whole question of the uniform representation in English of foreign place and personal names is still in a highly unsatisfactory condition. Scholars will never get the public to adopt the very peculiar renderings, obscured by complicated accents, which do service in purely learned circles and have a scientific justification as part of a quasi-mathematical device for accurate pronunciation. Any attempt to transliterate into English on a phonetic basis has, moreover, a radical weakness which is too often ignored. So long as pronunciation is not itself standardized, and so long as the human ear does not uniformly carry to a standardized human brain the sound that is uniformly pronounced—and it will be long before these conditions can be fulfilled—even a phonetic system of spelling must adopt *some* convention; and in that case it is surely best, if a well-recognized convention already exists and is in use among the public at large, to adopt it rather than to invent a new one. The point is, indeed, of more than formal importance. So long as scholars and the public are at issue on the very **Public and Scholar.**

essentials of the comprehension of scholarly books, which are made unreadable by the use of diacritical signs and unpronounceable spellings, culture cannot advance except within the narrowest of sects. This incompatibility is bad for the public, but it is also bad for scholarship. While the general reader is repelled, the Orientalist is neglected,—to the loss of both. This criticism, which substantially applies to many other formal aspects of modern learning, may be unwelcome to the professors, but it is the result of an extended experience in the attempt to bring accurate knowledge into digestible shape for the wide public for whom the *Encyclopædia Britannica* is intended. It is indeed partly because of the tendency of modern science and modern scholarship to put the artificial obstacles of a technical jargon in the path of people even of fairly high education, that it becomes imperative to bring both parties upon a common ground, where the world at large may discover the meaning of the learned research to which otherwise it is apt to be a stranger.

With regard to the various departments of natural science, there was a tendency in previous editions of the *Encyclopædia Britannica* to make inclusive treatises of the longer articles, and to incorporate under the one general heading of the science itself matter which would more naturally form a separate, if subordinate, subject. An attempt has now been made to arrange the material rather according to the heading under which, in an encyclopædia, students would expect to find it. In any text-book on Light, for instance, the technical aspects of aberration, refraction, reflection, interference, phosphorescence, &c., would be discussed concurrently as part of the whole science, in so many chapters of a continuous treatise.

But each such chapter or subdivision in a treatise becomes in an encyclopædia arranged on the dictionary plan, matter to be explained where the appropriate word occurs in the alphabetical order of headings. Under the name of the common subject of the science as a whole, its history and general aspects are discussed, but the details concerned with the separate scientific questions which fall within its subject-matter—on each of which often

a single specialist has unique authority—are relegated to distinct articles, to the headings of which the general account becomes, if required, a key or pointer. This arrangement of the scientific material—a general article acting as pointer to subsidiary articles, and the latter relieving the general account of details which would overload it—has been adopted throughout the Eleventh Edition; and in the result it is believed that a more complete and at the same time more authoritative survey has been attained, within the limits possible to such a work, than ever before. The single-treatise plan, which was characteristic of the Ninth Edition, is not only cumbrous in a work of reference, but lent itself to the omission altogether, under the general

heading, of specific issues which consequently received no proper treatment at all anywhere in the book; whereas the dictionary plan, by automatically providing headings throughout the work, under which, where appropriate, articles of more or less length may be put, enables every subject to be treated, comprehensively or in detail, yet as part of an organic whole, by means of careful articulation adapted to the requirements of an intelligent reader.

In preparing the Eleventh Edition a useful check on the possibility of such accidental omissions as are apt to occur when the treatise plan is pursued, was provided by the decision, arrived at independently of any question of subdivision, to revert more closely to the original

form of the *Encyclopædia Britannica*, and to make separate headings of any words which, purely as words, had any substantial interest either for historical or philological reasons, or as requiring explanation even for English-speaking readers.¹ The labours of Sir James Murray and his colleagues on the Oxford *New English Dictionary*, which has only become accessible since the Ninth Edition of the *Encyclopædia Britannica* was published, have enabled a precise examination to be made of all the possible headings of this kind. Such words, or groups of words, together with proper names, personal, geographical, zoological, etc., obviously exhaust the headings

¹ Though, in pursuance of the ideal of making the whole book self-explanatory, a great many purely technical terms have been given their interpretation only in the course of the article on the science or art in which they are used, even these are included, with the correct references, among the headings in the Index. Similarly, biographical accounts are given of far more persons than have separate biographies. The Index in all such cases must be consulted, whether for word or name.

under which the subject matter of an encyclopædia can be subdivided; and thus the dictionary plan, combined with a complete logical analysis of the contents of the various arts and sciences, forms a comprehensive basis for ensuring that no question of any substantial interest can be omitted. As a rule the headings suggested by a logical subdivision of subject, as approved by the professional or scientific expert, follow the usage of words which is natural to any one speaking the English language; but where, owing to the existence of some accepted terminology in any particular line of inquiry, it departs from this ordinary usage, the dictionary plan still enables a cross-reference to guide the reader, and at the same time to impart instruction in the history or technical niceties of a vocabulary which is daily outgrowing the range even of the educated classes. It is highly and increasingly important that mere words should be correctly evaluated, and connected with the facts for which properly they stand.

*Importance of
terminological
accuracy.*

Some Points as to Substance.

In considering the substance, rather than the form, of the Eleventh Edition, it may be remarked first that, as a work of reference no less than as a work for reading and study, its preparation has been dominated throughout by the historical point of view. Any account which purports to describe what actually goes on to-day, whether in the realm of mind or in that of matter, is inevitably subject to change as years or even months pass by; but what *has been*, if accurately recorded, remains permanently true as such. In the larger sense the historian has here to deal not only with ancient and modern political history, as ordinarily understood, but with past doings in every field, and thus with the steps by which existing conditions have been reached. Geography and exploration, religion and philosophy, pure and applied science, art and literature, commerce and industry, law and economics, war and peace, sport and games,—all subjects are treated in these volumes not only on their merits, but as in continual evolution, the successive stages in which are of intrinsic interest on their own account, but also throw light on what goes before and after. The whole range of history, thus considered, has, however, been immensely widened in the Eleventh Edition as compared with the Ninth. The record of the past, thrown farther and farther back by the triumphs of modern archaeology, is limited on its nearer confines only by the date at which the *Encyclopædia Britannica* is published. Any contemporary description is indeed liable to become inadequate almost as soon as it is in the hands of the reader; but the available resources have been utilized here to the utmost, so that the salient facts up to the autumn of the year 1910 might be included throughout, not merely as isolated events, but as part of a consistent whole, conceived in the spirit of the historian. Thus only can the fleeting present be true to its relation with later developments, which it is no part of the task of an encyclopædia to prophesy.

*The spirit of
the historian.*

In this connexion it is advisable to explain that while the most recent statistics have been incorporated when they really represented conditions of historic value, the notion that economic development can be truly shown merely by giving statistics for the last year available is entirely false, and for this reason in many cases there has been no attempt merely to be “up-to-date” by inserting them. Statistics are used here as an illustration of the substantial existing conditions and of real progress. For the statistics of one year, and especially for those of the latest year, the inquirer must necessarily go to annual publications, not to an encyclopædia which attempts to show the representative conditions of abiding importance. In such a work statistics are only one useful method of expressing historic evolution; their value varies considerably according to the nature of the subject dealt with; and the figures of the year which by accident is the last before publication would often be entirely misleading, owing to their being subject to some purely temporary influence. In general, far less tabular matter has been included in the Eleventh Edition than in the Ninth. Where it is used, it is not as a substitute for descriptive accounts, which can put the facts in readable form much better, but more appropriately as showing concisely and clearly the differences between the conditions at different periods. As years pass by,

*The use of
statistics.*

and new statistics on all subjects become accessible, those which have been given here for their historical value are, as such, unaffected by the lapse of time; but if they had been slavishly inserted simply because they were the latest in the series of years immediately preceding publication, their precarious connexion with any continuous evolution would soon have made them futile. So much has been done in the Eleventh Edition to bring the record of events, whether in political history or in other articles, down to the latest available date, and thus to complete the picture of the world as it was in 1910, that it is necessary to deprecate any misconception which might otherwise arise from the fact that statistics are inserted not as events in themselves—this they may or may not be, according to the subject-matter—but as a method of expressing the substantial results of human activity; for that purpose they must be given comparatively, selected as representative, and weighed in the balance of the judicious historian.

While every individual article in an encyclopædia which aims at authoritative exposition must be informed by the spirit of history, it is no less essential that the spirit of science should move over the construction of the work as a whole. Whatever may be the deficiencies of its execution, the Eleventh Edition has at any rate this advantage to those who use it,

The spirit of science.

that the method of simultaneous preparation, already referred to, has enabled every subject to be treated systematically. Not only in the case of "science" itself, but in history, law, or any other kind of knowledge, its contributors were all assisting to carry out a preconcerted scheme, each aware of the relation of his or her contribution to others in the same field; and the interdependence of the related parts must be remembered by any reader who desires to do justice to the treatment of any large subject. Cross-references and other indications in the text are guides to the system employed, which are supplemented in greater detail by the elaborate Index. But the scientific spirit not only affects the scheme of construction as a whole: it has modified the individual treatment. Attention may perhaps be drawn to two particular points in this connexion,—the increased employment of the comparative method, and the attempt to treat opinion and controversy objectively, without partisanship or sectarianism.

The title of the *Encyclopædia Britannica* has never meant that it is restricted in its accounts of natural science, law, religion, art, or other subjects, to what goes on in the British dominions; but a considerable extension has been given in the Eleventh Edition to the amount of information it contains concerning the corresponding activities in other countries. By

The comparative method.

approaching each subject, as far as possible, on its merits, the contributors in every department aim at appraising the achievements of civilization from whatever source they have arisen, and at the same time, by inserting special sections on different countries when this course is appropriate, they show the variations in practice under different systems of government or custom. But the subjects are not only arranged comparatively in this sense: new branches of study have arisen which are of chief importance mainly for the results attained by the comparative method. The impetus given to comparative sociology by Herbert Spencer, the modern interest in comparative law, religion, folklore, anthropology, psychology and philology, have resulted in the accumulation of a mass of detail which it becomes the task of an encyclopædia produced on the plan of organized co-operation to reduce to manageable proportions and intelligible perspective. Comparative bibliography, so much fostered of late years by the growth of great library organizations, undergoes in its turn the same process; and expert selection makes the references to the best books a guide to the student without overwhelming him. To deal here with all the lines of new research which have benefited by the comparative method in recent years would trench unnecessarily upon the scope of the contents of the work, where sufficient is already written. One illustration must suffice of a science in which the new treatment affects both the substance and the form of the articles in the Eleventh Edition of the *Encyclopædia Britannica*. Comparative Anatomy, as a branch of Zoology, can no longer be scientifically separated from Human Anatomy. The various parts of the human body are therefore systematically treated under separate headings, in connexion not only with the arts of medicine and surgery, which depend on a knowledge of each particular structure, but with the corresponding features in the rest of the animal kingdom, the study of which continually leads to a better understanding of the human organism. Thus comparative anatomy and human anatomy take their places, with physiology and pathology, as interdependent and inter-

connected branches of the wider science of Zoology, in which all the lines of experimental inquiry and progressive knowledge lead up to a more efficient service of man and society.

In stating "the position taken by the *Encyclopædia Britannica* in relation to the active controversies of the time," Spencer Baynes, in his Preface to the first volume of the Ninth Edition (1875), referred to the conflict of opinion then raging in regard to religion and science. "In this conflict," he said, "a work like the *Encyclopædia* is not called upon to take any direct part. It has to do with knowledge, rather than opinion, and to deal with all subjects from a critical and historical rather than a dogmatic point of view. It cannot be the organ of any sect or party in science, religion or philosophy." The same policy has inspired the Eleventh Edition. The *Encyclopædia Britannica* itself has no side or party; it attempts to give representation to all parties, sects and sides. In a work indeed which deals with opinion and controversy at all, it is manifestly impossible for criticism to be colourless; its value as a source of authoritative exposition would be very different from what it is if individual contributors were not able to state their views fully and fearlessly. But every effort has been made to obtain, impartially, such statements of doctrine and belief in matters of religion and similar questions as are satisfactory to those who hold them, and to deal with these questions, so far as criticism is concerned, in such a way that the controversial points may be understood and appreciated, without prejudice to the argument. The easy way to what is sometimes considered impartiality is to leave controversy out altogether; that would be to avoid responsibility at the cost of perpetuating ignorance, for it is only in the light of the controversies about them that the importance of these questions of doctrine and opinion can be realized. The object of the present work is to furnish accounts of all subjects which shall really explain their meaning to those who desire accurate information. Amid the variety of beliefs which are held with sincere conviction by one set of people or another, impartiality does not consist in concealing criticism, or in withholding the knowledge of divergent opinion, but in an attitude of scientific respect which is precise in stating a belief in the terms, and according to the interpretation, accepted by those who hold it. In order to give the fullest expression to this objective treatment of questions which in their essence are dogmatic, contributors of all shades of opinion have co-operated in the work of the Eleventh Edition of the *Encyclopædia Britannica*. They have been selected as representative after the most careful consideration and under the highest sense of editorial responsibility. The proportion of space devoted to these subjects is necessarily large, because they bulk largely in the minds of thinking people; and while they are treated more comprehensively than before, individual judgments as to their relative claims may naturally vary. The general estimates which prevail among the countries which represent Western civilization are, however, in practical agreement on this point, and this consensus is the only ultimate criterion. In one respect the Eleventh Edition is fortunate in the time of its appearance. Since the completion of the Ninth Edition the controversies which at that time raged round the application of historical and scientific criticism to religion have become less acute, and an objective statement of the problems, for instance, connected with the literary history of the Bible is now less encumbered with the doubts as to the effect on personal religion which formerly prevailed. Science and theology have learnt to dwell together; and a reverent attitude towards religion, and indeed towards all the great religions, may be combined, without *arrière-pensée*, with a scientific comparative study of the phenomena of their institutions and development.

Modern scientific progress has naturally affected other aspects of the Eleventh Edition no less than the literary text; and a word may be added here as to the illustrations and maps. Photography and reproductive processes generally now combine to enable much more to be done than was possible a generation ago to assist verbal explanations and descriptions by an appeal to the eye, and to make this appeal scientifically accurate both in form and colour. The older pictorial material in the Ninth Edition has undergone the same critical survey as the text; and a large proportion of what now appears in the Eleventh Edition is not only new, but represents more adequately the modern principles of the art of illustration. The microscope on the one hand, and the museum on the other, have become in an increasing degree the

The objective view.

The art of illustration.

instruments for attaining a scientific presentment in pictorial form of the realities of science and art. Whether for elucidating the technicalities of zoology or engineering machinery, or for showing concrete examples of ancient or modern statuary or painting, the draughtsman or the photographer has co-operated in the Eleventh Edition with the writers of the various articles, so that as far as possible their work may be accurately illustrated, in the correct sense, as distinct from any object of beautifying the book itself by pictures which might merely be interesting on their own account. Similarly the maps are not collected in an atlas, but accompany the topographical articles to which they are appropriate. Whether plate-maps or text-maps, they were all laid out with the scope, orthographical system, and other requirements of the text in view; either the cartographers have worked with the text before them—often representing new geographical authority on the part of the contributors—or they have been directed by the geographical department of the editorial staff as to the sources on which they should draw; and the maps have been indexed as an atlas is, so that any topographical article not accompanied by a map has its appropriate map-reference in the general index. The more important coloured maps have been specially prepared by Messrs Justus Perthes of Gotha, the publishers of *Stieler's Atlas*, which in some instances has served as their basis; and the others have been made under the direction of Mr Emery Walker of London, in collaboration with the editorial staff. Mr Emery Walker's great knowledge and experience in the work of illustration has throughout been put ungrudgingly at the service of the Eleventh Edition.

Conclusion.

In expressing, on behalf of the editorial staff and the publishers, their indebtedness to the large number of contributors who have assisted in carrying the work to its completion, the Editor would be glad to refer to many individuals among the eminent writers who have given of their best. But the list is so long that he must content himself with a word of general thanks. It is more important to give public credit here to those who, without actually being members of the editorial staff, have taken an intimate part with them in planning and organizing the Eleventh Edition. It was necessary for the Editor to be able to rely on authoritative specialists for advice and guidance in regard to particular sciences. Foremost among these stand the subjects of Zoology and Botany, which were under the charge respectively of Dr P. Chalmers Mitchell, Secretary of the Zoological Society of London, and Dr A. B. Rendle, Keeper of the department of Botany, British Museum. Dr Chalmers Mitchell's **Advisers on special subjects.** assistance in regard to Zoology extended also to the connected aspects of Comparative Anatomy (in association with Mr F. G. Parsons), Physiology and Palaeontology. The whole field of Biology was covered by the joint labours of Dr Chalmers Mitchell and Dr Rendle; and their supervision, in all stages of the work, gave unity to the co-operation of the numerous contributors of zoological and botanical articles. The treatment of Geology was planned by Mr H. B. Woodward; and with him were associated Dr J. A. Howe, who took charge of the department of Topographical Geology, Dr J. S. Flett, who covered that of Petrology, and Mr L. J. Spencer and Mr F. W. Rudler, who dealt comprehensively with Mineralogy and Crystallography. The late Dr Simon Newcomb planned and largely helped to carry out the articles dealing with Astronomy. Prof. J. A. Fleming acted in a similar capacity as regards Electricity and Magnetism. Prof. Hugh Callendar was responsible for the treatment of Heat; Prof. Poynting for that of Sound; and the late Prof. C. J. Joly, Royal Astronomer in Ireland, planned the articles dealing with Light and Optics. On literary subjects the Editor had the sympathetic collaboration of Mr Edmund Gosse, Librarian to the House of Lords; and Mr Marion H. Spielmann, on artistic subjects, also gave valuable help.

Among those whose association with the editorial staff was particularly close were the Rev. E. M. Walker of Oxford, as regards subjects of ancient Greek history; Mr Stanley Cook of Cambridge, who was the Editor's chief adviser on questions of Old Testament criticism and Semitic learning generally; Dr T. Ashby, Director of the British School of Archaeology at Rome, who dealt with Italian topography and art; and Mr Israel Abrahams, who was consulted on Jewish subjects. Dr Peter Giles of Cambridge undertook the survey of Comparative Philology, and Sir Thomas

Barclay that of International Law. Others who gave valuable advice and assistance in regard to their various subjects were—Lord Rayleigh and Mr W. C. D. Whetham (Physical Science), Sir Archibald Geikie (Geology), Sir E. Maunde Thompson (Palaeography and Bibliology), Mr J. H. Round (History and Genealogy), Mr Phené Spiers (Architecture), Mr W. Burton (Ceramics), Mr T. M. Young of Manchester (Textile Industries), Prof. W. E. Dalby (Engineering), Dr G. A. Grierson (Indian Languages), the Rev. G. W. Thatcher (Arabic), Mr H. Stuart Jones (Roman History and Art), Dr D. G. Hogarth and Prof. Ernest Gardner (Hellenic Archaeology), the late Dr W. Fream (Agriculture), Mr W. F. Sheppard (Mathematics), Mr Arthur H. Smith (Classical Art), Dr Postgate (Latin Literature), Mr Fitzmaurice Kelly (Spanish Literature), Prof. J. G. Robertson (German Literature), Mr J. S. Cotton (India), Mr Edmund Owen (Surgery), Mr Donald Tovey (Music), Prof. H. M. Howe of Columbia University (Mining), Prof. W. M. Davis and Prof. D. W. Johnson of Harvard (American Physiology).

These names may be some indication of the amount of expert assistance and advice on which the editorial staff were able to draw, first when they were engaged in making preparations for the Eleventh Edition, then in organizing the whole body of contributors, and finally in combining their united resources in revising the work so as to present it in the finished state in which it is given to the public. Constituting as they did a college of research, a centre which drew to itself constant suggestions from all who were interested in the dissemination of accurate information, its members had the advantage of communication with many other leaders of opinion, to whose help, whether in Europe or America, it is impossible to do adequate justice here. The interest shown in the undertaking may be illustrated by the fact that his late Majesty King Edward VII. graciously permitted his own unique collection of British and foreign orders to be used for the purpose of making the coloured plates which accompany the article KNIGHTHOOD. Makers of history like Lord Cromer and Sir George Goldie added their authority to the work by assisting its contributors, even while not becoming contributors themselves. Custodians of official records, presidents and secretaries of institutions, societies and colleges, relatives or descendants of the subjects of biographies, governmental or municipal officers, librarians, divines, editors, manufacturers,—from many such quarters answers have been freely given to applications for information which is now embodied in the *Encyclopædia Britannica*.

**Collective
support.**

In the principal Assistant-Editor, Mr Walter Alison Phillips, the Editor had throughout as his chief ally a scholarly historian of wide interests and great literary capacity. Prof. J. T. Shotwell, of Columbia University, U.S.A., in the earlier years of preparation, acted as joint Assistant-Editor; and Mr Ronald McNeill did important work as additional Assistant-Editor while the later stages were in progress. To Mr Charles Crawford Whinery was entrusted the direction of a separate office in New York for the purpose of dealing with American contributors and with articles on American subjects; to his loyal and efficient co-operation, both on the special subjects assigned to the American office, and in the final revision of the whole work, too high a tribute cannot be paid. The other principal members of the editorial staff in London, responsible for different departments, were Mr J. Malcolm Mitchell, Dr T. A. Ingram, Mr H. M. Ross, Mr Charles Everitt, Mr O. J. R. Howarth, Mr F. R. Cana, Mr C. O. Weatherly, Mr J. H. Freese, Mr K. G. Jayne, Mr Roland Truslove, Mr C. F. Atkinson, Mr A. W. Holland, the Rev. A. J. Grieve, Mr W. E. Garrett Fisher and Mr Arthur B. Atkins, to the last of whom, as private secretary to the Editor-in-Chief, the present writer owes a special debt of gratitude for unfailing assistance in dealing with all the problems of editorial control. On the New York staff Mr Whinery had the efficient help of Mr R. Webster, Dr N. D. Mereness, Dr F. S. Philbrick, Dr W. K. Boyd, Dr W. O. Scroggs, Mr W. T. Arndt, Mr W. L. Corbin and Mr G. Gladden.

The Staff.

A word must be added concerning a somewhat original feature in the editorial mechanism, the Indexing department. This department was organized from the first so that it might serve a double purpose. By indexing the articles as they came in, preparation could gradually be made for compiling the Index which would eventually be published; and as the reference-cards gradually accumulated under systematic index-headings, the comparison of work done by different writers might assist the editing of the text itself by discovering inconsistencies or inaccuracies in points of detail or suggesting the incorporation of additional material. The text of the Eleventh Edition owes

The Index.

much in this way to suggestions originating among the staff of ladies concerned, among whom particular mention may be made of Miss Griffiths, Miss Tyler, and Miss Edmonds. The actual Index, as published, represents a concentration and sifting of the work of the Indexing department; and in order to put it into shape a further stage in the organization was necessary, which was carried through under the able direction of Miss Janet Hogarth. The completion of the Index volume, which all those who wish to make full use of the Eleventh Edition of the *Encyclopædia Britannica* should regard as the real guide to its contents, brought finally into play all parts of the editorial machinery which had been engaged in the making of the work itself,—a vast engine of co-operative effort, dedicated to the service of the public.

HUGH CHISHOLM.

LONDON,

December 10, 1910.

INITIALS USED IN VOLUME I. TO IDENTIFY INDIVIDUAL CONTRIBUTORS,¹ WITH THE HEADINGS OF THE ARTICLES IN THIS VOLUME SO SIGNED.

A. A. R.*	ARTHUR ALCOCK RAMBAUT, M.A., D.Sc., F.R.S. Radcliffe Observer, Oxford. Professor of Astronomy in the University of Dublin and Royal Astronomer of Ireland, 1892-1897.	Airy.
A. C. L.	SIR ALFRED COMYN LYALL, K.C.B. See the biographical article: LYALL, SIR A. C.	Abdur Rahman; Afghanistan: <i>History</i> .
A. D.	AUSTIN DOBSON, LL.D. See the biographical article: DOBSON, HENRY AUSTIN.	Addison (<i>in part</i>).
A. E. S.	ARTHUR EVERETT SHIPLEY, M.A., D.Sc., F.R.S. Fellow and Tutor of Christ's College, Cambridge. Reader in Zoology in Cam- bridge University. Joint-editor of the <i>Cambridge Natural History</i> .	Acanthocephala.
A. F. B.	ALDRED FARRER BARKER, M.Sc. Professor of Textile Industries at Bradford Technical College.	Alpaca.
A. F. P.	ALBERT FREDERICK POLLARD, M.A., F.R.HIST.SOC. Fellow of All Souls' College, Oxford; Professor of English History in the University of London. Assistant-editor of the <i>Dictionary of National Biography</i> , 1893-1901.	Aconcio.
A. Ghr.	ARTHUR GIRAULT. Professor of Political Economy at the University of Poitiers. Member of the International Colonial Institute. Author of <i>Principes de colonisation</i> (1907-1908).	Algeria: <i>History</i> .
A. G. H.	A. G. HADCOCK (late R.A.) Manager of the Gun Department, Elswick Works, Newcastle-on-Tyne.	Ammunition (<i>in part</i>).
A. H. J. G.	ABEL HENDY JONES GREENIDGE, M.A., D.LITT. (Oxon.) (d. 1905). Formerly Fellow and Lecturer of Hertford College, Oxford, and of St John's College, Oxford. Author of <i>Infamia in Roman Law</i> ; &c.	Agrarian Laws (<i>in part</i>).
A. J. B.	ALFRED JOSHUA BUTLER, M.A., D.LITT. Fellow and Bursar of Brasenose College, Oxford. Fellow of Eton College.	Abyssinian Church.
A. J. G.	REV. ALEXANDER J. GRIEVE, M.A., B.D. Professor of New Testament and Church History, Yorkshire United Independent College, Bradford.	Adoptianism; Alford; Alsop, V.; Ambrose, St.
A. Mw.	ALLEN MAWER, M.A. Professor of English Language and Literature, Armstrong College, Newcastle-on- Tyne; formerly Fellow of Gonville and Caius College, Cambridge.	Æthelflaed; Æthelred I; Æthelstan; Æthelweard.
A. M. C.	AGNES MARY CLERKE. See the biographical article: CLERKE, A. M.	Algol.
A. M. Cl.	AGNES MURIEL CLAY (Mrs Edward Wilde). Late Resident Tutor of Lady Margaret Hall, Oxford. Joint-editor of <i>Sources of</i> <i>Roman History</i> , 133-70 B.C.	Agrarian Laws (<i>in part</i>).
A. R. W.	ALFRED RUSSEL WALLACE, LL.D., D.C.L., F.R.S. See the biographical article: WALLACE, A. R.	Acclimatization.
A. Si.	ARTHUR SIDGWICK, M.A., LL.D. (Glasgow). Fellow of Corpus Christi College, Oxford; formerly Reader in Greek, Oxford Uni- versity.	Aeschylus.
A. W.*	ARTHUR WILLEY, D.Sc., F.R.S. Director of Colombo Museum, Ceylon.	Amphioxus.
A. W. H.*	ARTHUR WILLIAM HOLLAND. Formerly Scholar of St John's College, Oxford. Bacon Scholar of Gray's Inn, 1900.	Aberdeen, 4th Earl of.
B. M.*	BUDGETT MEAKIN (d. 1906). Author of <i>The Moors</i> ; <i>The Land of the Moors</i> ; <i>The Moorish Empire</i> ; &c.	Almohades (<i>in part</i>); Almoravides (<i>in part</i>).
C. B.*	CHARLES BÉMONT, D. ÈS L., LITT.D. (Oxon.). See the biographical article: BÉMONT, C.	Agenais.
C. E.*	CHARLES EVERITT, M.A., F.C.S., F.G.S., F.R.A.S. Magdalen College, Oxford.	Algebra: <i>History</i> .
C. F. A.	CHARLES FRANCIS ATKINSON. Formerly Scholar of Queen's College, Oxford. Captain, 1st City of London (Royal Fusiliers). Author of <i>The Wilderness and Cold Harbour</i> .	Alexandria: <i>Battle</i> . American Civil War; Ammunition (<i>in part</i>).

¹ A complete list, showing all individual contributors, appears in the final volume.

C. F. R.	CHARLES F. RICHARDSON, PH.D. Professor of English, Dartmouth College, U.S.A.	{ Alcott, A. B.; Alcott, L. M.
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C. Mi.	CHEDOMILLE MIJATOVICH. Senator of the Kingdom of Servia. Envoy Extraordinary and Minister Plenipotentiary of the King of Servia to the Court of St James's, 1895-1900, and 1902-1903.	{ Alexander of Servia.
C. Pf.	CHRISTIAN PFISTER, D. ÈS L. Professor at the Sorbonne, Paris. Chevalier of the Legion of Honour. Author of <i>Études sur le règne de Robert le Pieux</i> .	{ Aleuin.
C. Pl.	REV. CHARLES PLUMMER, M.A. Fellow of Corpus Christi College, Oxford. Author of <i>Life and Times of Alfred the Great</i> ; &c. Ford's Lecturer, 1901.	{ Alfred the Great.
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C. S. P.*	REV. CHARLES STANLEY PHILLIPS. King's College, Cambridge. Gladstone Memorial Prize, 1904.	{ Æthelred II.
C. We.	CECIL WEATHERLY. Formerly Scholar of Queen's College, Oxford. Barrister-at-Law.	{ Advertisement (<i>in part</i>).
D. B. Ma.	DUNCAN BLACK MACDONALD, M.A., D.D. Professor of Semitic Languages, Hartford Theological Seminary, U.S.A.	{ Abu Hanifa; Ahmad Ibn Hanbal.
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D. H.	DAVID HANNAY. Formerly British Vice-Consul at Barcelona. Author of <i>Short History of Royal Navy, 1217-1688</i> ; <i>Life of Emilio Castelar</i> ; &c.	{ Adams, John Couch.
D. M.	REV. D. MEIKLEJOHN.	{ Alexander, W. L.; Allon, H.
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E. C. B.	RIGHT REV. EDWARD CUTHBERT BUTLER, O.S.B., D.LITT. Abbot of Downside Abbey, Bath.	{ Aasen; Almqvist; Anacreontics; Andersen, Hans Christian.
E. G.	EDMUND GOSSE, LL.D. See the biographical article: GOSSE, EDMUND.	{ Abae; Acarnania; Aegina.
E. Gr.	ERNEST ARTHUR GARDNER, M.A. See the biographical article: GARDNER, PERCY.	{ Africa: <i>Geography, Economics, Bibliography</i> .
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E. J. R.	EMANUEL JOSEPH RISTORI, PH.D., ASSOC.M.INST.C.E. Member of Council, Institute of Metals.	{ Aegina: <i>History</i> .
E. M. W.	REV. EDWARD MEWBURN WALKER, M.A. Fellow, Senior Tutor and Librarian of Queen's College, Oxford.	{ Abdomen; Abscess; Adenoids.
E. O.*	EDMUND OWEN, M.B., F.R.C.S., LL.D., D.Sc. Consulting Surgeon to St Mary's Hospital, London, and to the Children's Hospital, Great Ormond Street. Late Examiner in Surgery at the Universities of Cambridge, Durham and London. Author of <i>A Manual of Anatomy for Senior Students</i> .	

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E. R. B.	EDWYN ROBERT BEVAN, M.A. New College, Oxford. Author of <i>The House of Seleucus</i> .	Alexander the Great.
E. Th.	REV. ETHELRED LEONARD TAUNTON (d. 1907). Author of <i>The English Black Monks of St Benedict; History of the Jesuits in England</i> .	Acolyte; Allen, William.
E. V.	REV. EDMUND VENABLES, M.A., D.D. (1819-1895). Canon and Precentor of Lincoln. Author of <i>Episcopal Palaces of England</i> .	Abbey; Abbot.
E. W.*	EDGAR WHITAKER (d. 1905). Formerly <i>Times</i> correspondent at Constantinople.	Ahmed Vefik.
F. A. E.	FRED. A. EATON. Secretary to the Royal Academy.	Academy, Royal.
F. C. C.	FREDERICK CORNWALLIS CONYBEARE, M.A., D.TH. (Giessen). Formerly Fellow of University College, Oxford. Fellow of the British Academy. Author of <i>The Ancient Armenian Texts of Aristotle; Myth, Magic and Morals; &c.</i>	Ablution; Agapē; Anabaptists; Ancestor-Worship.
F. Fn.	FRANK FINN, F.Z.S. Late Assistant Director of the Indian Museum, Calcutta.	Acclimatization.
F. G. M. B.	FREDERICK GEORGE MEESON BECK, M.A. Fellow and Lecturer of Clare College, Cambridge.	Æthelbald; Æthelberht; Æthelfrith; Æthelred; Æthelwulf; Alamanni.
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F. H. Ne.	FRANCIS HENRY NEVILLE, M.A., F.R.S. Fellow of Sidney Sussex College, Cambridge, and Lecturer on Physics and Chemistry.	Alloys (in part).
F. Ll. G.	FRANCIS LLEWELYN GRIFFITH, M.A., PH.D., F.S.A. Reader in Egyptology, Oxford. Editor of the <i>Archæological Survey and Archæo- logical Reports of the Egypt Exploration Fund</i> .	Abu Simbel; Akhmim; Amasis; Ammon.
F. R. C.	FRANK R. CANA. Author of <i>South Africa from the Great Trek to the Union</i> .	Abyssinia: Geography; Africa: Geography, History (in part); Albert Edward Nyanza (in part); Albert Nyanza (in part); Alexandria (in part); Algeria: Geography.
F. S.	FRANCIS STORR. Editor of the <i>Journal of Education</i> (London). Officier d'Académie (Paris).	Academies.
F. T. M.	SIR FRANK THOMAS MARZIALS. Accountant-General of the Army, 1898-1904. Editor of "Great Writers" Series.	About.
F. W. R.*	FREDERICK WILLIAM RUDLER, I.S.O., F.G.S. Curator and Librarian of the Museum of Practical Geology, London, 1879-1902. President of the Geologists' Association, 1887-1889.	Agate; Alabaster; Alexandrite; Amber; Amethyst.
G.*	COUNT ALBERT EDWARD WILFRED GLEICHEN, K.C.V.O., C.B., C.M.G., D.S.O., A.D.M.O., War Office; Colonel, Grenadier Guards. Mission to Abyssinia, 1897.	Abyssinia: History.
G. A. B.	GEORGE A. BOULENGER, D.Sc., F.R.S. In charge of the Collections of Reptiles and Fishes, Department of Zoology, British Museum. Vice-President of the Zoological Society of London.	Alytes.
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G. Br.	REV. GEORGE BRYCE, D.D., LL.D. Head of Faculty of Science, and Lecturer in Biology and Geology in Manitoba University, 1891-1904. Vice-President of Royal Society, Canada, 1908.	Alberta.
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G. C. R.	GEORGE CROOM ROBERTSON. See the biographical article: ROBERTSON, G. C.	Abelard (in part).
G. E. C.	COLONEL GEORGE EARL CHURCH. See the biographical article: CHURCH, G. E.	Amazon.
G. E. W.	GEORGE EDWARD WOODBERRY, Litt.D., LL.D. Professor of Comparative Literature at Columbia University, 1891-1904. Author of <i>Edgar Allan Poe; Makers of Literature; America in Literature; &c.</i>	American Literature.
G. F. B.	G. F. BARWICK. Assistant-Keeper of Printed Books and Superintendent of Reading-room, British Museum.	Alfred, Duke of Saxe-Coburg; Alice, Grand-Duchess of Hesse.
G. L.	GEORG LUNGE, PH.D. (Breslau), HON. DR.ING. (Karlsruhe). See the biographical article: LUNGE, G.	Alkali Manufacture.

G. P. M.	GEORGE PERCIVAL MUDGE, A.R.C.S., F.Z.S. Lecturer on Biology, London Hospital Medical College, and London School of Medicine for Women.	Albino.
G. W. B.	GEORGE WILLIS BOTSFORD, A.M., Ph.D. Professor of History of Greece and Rome in Columbia University, New York. Author of <i>The Roman Assemblies</i> ; &c.	Amphietyony.
G. W. T.	REV. GRIFFITHES WHEELER THATCHER, M.A., B.D. Warden of Camden College, Sydney, N.S.W. Formerly Tutor in Hebrew and Old Testament History at Mansfield College, Oxford.	Abu-l-'ala; Abu-l-'Atahiya; Abulfaraj; Abulfeda; Abu-l-Qasim; Abu Nuwas; Abu Tammam; Abu Ubaida; Akhtal; Algama Ibn 'Abada; Amru'-ul-Qais.
H. B. Wo.	HORACE BOLINGBROKE WOODWARD, F.R.S., F.G.S. Formerly Assistant Director of the Geological Survey of England and Wales. President Geologists' Association, 1893-1894. Wollaston Medallist, 1908.	Agassiz, J. L. R.
H. Ch.	HUGH CHISHOLM, M.A. Formerly Scholar of Corpus Christi College, Oxford. Editor of the 11th edition of the <i>Encyclopaedia Britannica</i> ; co-editor of the 10th edition.	Acton, Lord; Agnosticism; Albert, Prince Consort.
H. C. C.	HERBERT CHALLICE CROUCH, M.R.C.S., L.R.C.P. Anaesthetist and Teacher of Anaesthetics at St Thomas's, Samaritan and French Hospitals, London.	Anaesthesia.
H. M. R.	HUGH MUNRO ROSS. Formerly Exhibitioner of Lincoln College, Oxford. Editor of the <i>Times Engineering Supplement</i> . Author of <i>British Railways</i> .	Alchemy.
H. M. V.	HERBERT M. VAUGHAN, F.S.A. Keble College, Oxford. Author of <i>The Last of the Royal Stuarts</i> ; &c.	Albany, Countess of.
H. P. J.*	HENRY PHILIPS JOHNSTON. Author of <i>Loyalist History of the Revolution</i> ; <i>The Yorktown Campaign</i> ; &c.	American War of Independence: Land Operations.
H. R. H.*	H. R. HAXTON.	Advertisement.
H. S.-K.	SIR HENRY SETON-KARR, C.M.G. Member for St. Helen's, 1885-1906. Author of <i>The Call to Arms</i> .	Ammunition: Small Arms.
H. S. J.	HENRY STUART JONES, M.A. Formerly Fellow of Trinity College, Oxford. Director of the British School at Rome, 1903-1905. Author of <i>The Roman Empire</i> .	Amphitheatre.
H. V. K.	CAPTAIN HOWARD V. KNOX, M.A. Exeter College, Oxford.	Alps: Flora and Fauna.
H. W. C. D.	HENRY WILLIAM CARLESS DAVIS, M.A. Fellow and Tutor of Balliol College, Oxford. Fellow of All Souls', Oxford, 1895-1902.	Ælfred; Alredus; Ambrose.
H. W. H.	HOPE W. HOGG, M.A. Professor of Semitic Languages and Literatures in the University of Manchester.	Anah.
H. W. S.	H. WICKHAM STEED. Correspondent of <i>The Times</i> at Rome (1897-1902) and Vienna.	Amedeo, Ferdinando, of Savoy.
H. Y.	SIR HENRY YULE, K.C.S.I. See the biographical article: YULE, Sir H.	Afghanistan: History.
J. A. Ba.	J. ARTHUR BARRETT, LL.B. New York Bar, 1880. U.S. Supreme Court Bar, 1901.	Admiralty Jurisdiction: United States.
J. A. E.	JAMES ALFRED EWING, C.B., LL.D., F.R.S., M.INST.C.E. Director of (British) Naval Education, 1903. Hon. Fellow of King's College, Cambridge. Professor of Mechanism and Applied Mechanics in the University of Cambridge; 1890-1903.	Air-Engine.
J. A. F.	JOHN AMBROSE FLEMING, M.A., D.Sc., F.R.S. Pender Professor of Electrical Engineering in the University of London. Fellow of University College, London. Formerly Fellow of St John's College, Cambridge, and University Lecturer on Applied Mechanics. Author of <i>Magnets and Electric Currents</i> .	Amperemeter.
J. A. H.	JOHN ALLEN HOLT, B.Sc. Curator and Librarian at the Museum of Practical Geology, London.	Albian.
J. B. B.	JOHN BAGNELL BURY, Litt.D., LL.D. See the biographical article: BURY, J. B.	Alexius I. to III.
J. D. B.	JAMES DAVID BOURCHIER, M.A., F.R.G.S. Correspondent of <i>The Times</i> in South-Eastern Europe. Officer of the Order of St Alexander of Bulgaria.	Albania; Alexander of Bulgaria.
J. D. Pr.	JOHN DYNELEY PRINCE, Ph.D. Professor of Semitic Languages at Columbia University, N.Y. Took part in the Expedition to Southern Babylonia, 1888-89.	Akkad.
J. F.-K.	JAMES FITZMAURICE-KELLY, Litt.D., F.R.HIST.S. Fellow of the British Academy. Gilmour Professor of Spanish Language and Literature in the University of Liverpool. Norman MacColl Lecturer in the University of Cambridge. Knight Commander of the Order of Alphonso XII. Author of <i>A History of Spanish Literature</i> .	Acosta, J. de; Alarcon, J. R. de; Alarcon, P. A. de; Aleman; Amadis de Gaula.
J. F. R.	JAMES FORD RHODES, LL.D. See the biographical article: RHODES, J. FORD.	Adams, C. F.
J. G. C. A.	JOHN GEORGE CLARK ANDERSON, M.A. Student, Censor and Tutor of Christ Church, Oxford. Craven Fellow, 1896. Formerly Fellow of Lincoln College, Oxford.	Ancyra.

INITIALS AND HEADINGS OF ARTICLES

xxix

J. G. Gr.	JOHN G. GRIFFITHS. Fellow and late President, Institute of Chartered Accountants.	Accountants.
J. G. Sc.	SIR JAMES GEORGE SCOTT, K.C.I.E. Superintendent and Political Officer, Southern Shan States. Author of <i>Burma</i> ; &c.	Akyab.
J. H. P.	JOHN HENRY POYNTING, M.A., D.Sc., F.R.S. Mason Professor of Physics and Dean of the Faculty of Science, Birmingham University. Sometime Fellow of Trinity College, Cambridge.	Acoustics.
J. H. R.	JOHN HORACE ROUND, M.A., LL.D. (Edin.). Author of <i>Feudal England</i> ; <i>Peerage and Pedigree</i> ; &c.	Abeyance; Aids.
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J. L. M.	JOHN LINTON MYRES, M.A., F.S.A., F.R.G.S. Wykeham Professor of Ancient History in the University of Oxford. Formerly Gladstone Professor of Greek and Lecturer in Ancient Geography, University of Liverpool. Lecturer in Classical Archaeology in University of Oxford.	Amathus.
J. M. M.	JOHN MALCOLM MITCHELL. Formerly Scholar of Queen's College, Oxford. Lecturer in Classics, East London College (University of London). Joint-editor of Grote's <i>History of Greece</i> .	Anaxagoras (in part).
J. P.-B.	JAMES GEORGE JOSEPH PENDEREL-BRODHURST. Editor of the <i>Guardian</i> (London).	Adam, Robert.
J. P. Pe.	JOHN PUNNETT PETERS, Ph.D., D.D. Canon Residentiary, Cathedral of New York. Formerly Professor of Hebrew in the University of Pennsylvania. In charge of the University Expedition to Babylonia; 1888-1895. Author of <i>Nippur, or Explorations and Adventures on the Euphrates</i> .	Anbar.
J. R. C.	JOSEPH ROGERSON COTTER, M.A. Assistant to the Professor of Physics, Trinity College, Dublin. Editor of 2nd edition of Preston's <i>Theory of Heat</i> .	Absorption of Light.
J. R. D.	COLONEL JOHN RICHARD DODD, M.D., F.R.C.S., R.A.M.C. Administrative Medical Officer of Cork Military District.	Ambulance.
J. S.	JAMES SULLY, LL.D. See the biographical article: SULLY, J.	Aesthetics.
J. S. F.	JOHN SMITH FLETT, D.Sc., F.G.S. Petrographer to the Geological Survey. Formerly Lecturer on Petrology in Edinburgh University.	Agglomerate; Amphibolite; Andesite.
J. S. K.	JOHN SCOTT KELTIE, LL.D., F.S.S., F.S.A. (Scot.). Sec. Royal Geog. Soc. Hon. Memb. Geographical Societies of Paris, Berlin, Rome, &c. Editor of <i>Statesman's Year-book</i> . Editor of the <i>Geographical Journal</i> .	Abbadie; Africa: History.
J. T. Be.	JOHN T. BEALBY. Joint-author of <i>Stanford's Europe</i> . Formerly editor of the <i>Scottish Geographical Magazine</i> . Translator of Sven Hedin's <i>Through Asia, Central Asia and Tibet</i> ; &c.	Altai.
J. T. C.	JOSEPH THOMAS CUNNINGHAM, M.A., F.Z.S. Lecturer on Zoology at South-Western Polytechnic, London. Formerly Fellow of University College, Oxford. Assistant Professor of Natural History in the University of Edinburgh. Naturalist to the Marine Biological Association.	Anchovy.
J. T. S.*	JAMES THOMSON SHOTWELL, Ph.D. Professor of History in Columbia University, New York City.	Abelard (in part).
J. V. B.	J. VERNON BARTLET, M.A., D.D. Professor of Church History, Mansfield College, Oxford.	Acts of the Apostles.
Jno. W.	JOHN WESTLAKE, K.C., LL.D., D.C.L. Professor of International Law, Cambridge, 1888-1908. One of the Members for United Kingdom of International Court of Arbitration under the Hague Convention, 1900-1906. Author of <i>A Treatise on Private International Law, or the Conflict of Laws: Chapters on the Principles of International Law</i> , part i. "Peace," part ii. "War."	Alien; Allegiance.
J. W. D.	CAPTAIN J. WHITLY DIXON, R.N. Nautical Assessor to the Court of Appeal.	Anchor.
K. S.	KATHLEEN SCHLESINGER. Author of <i>The Instruments of the Orchestra</i> ; &c.	Accordion; Aeolian Harp; Alpenhorn.
L. D.*	LOUIS MARIE OLIVIER DUCHESNE. See the biographical article: DUCHESNE, L. M. O.	Adrian I., II., III.; Alexander I., II. (popes).
L. J. S.	LEONARD JAMES SPENCER. Department of Mineralogy, British Museum. Formerly Scholar of Sidney Sussex College, Cambridge, and Harkness Scholar. Editor of the <i>Mineralogical Magazine</i> .	Albite; Alunite; Amblygonite; Amphibole; Analcite; Anatase; Andalusite.
L. V.*	LUIGI VILLARI. Italian Foreign Office (Emigration Dept.). Formerly Newspaper Correspondent in east of Europe; Italian Vice-Consul in New Orleans, 1906, Philadelphia, 1907, and Boston, U.S.A., 1907-1910. Author of <i>Italian Life in Town and Country</i> ; &c.	Aceoramboni; Alexander VI. (pope); Amari.

- M. Br.** MARGARET BRYANT. { Alexander the Great: Legends.
- M. G.** MOSES GASTER, PH.D. (Leipzig). Chief Rabbi of the Sephardic communities of England. Vice-President, Zionist Congress, 1898, 1899, 1900. Ilchester Lecturer at Oxford on Slavonic and Byzantine Literature, 1886 and 1891. President, Folklore Society of England. Vice-President, Anglo-Jewish Association. Author of *History of Rumanian Popular Literature*; *The Hebrew Version of the Secretum Secretorum of Aristotle*. { Alecsandri.
- M. G. D.** RT. HON. SIR MOUNTSTUART ELPHINSTONE GRANT-DUFF, G.C.S.I., F.R.S. (1829-1906). M.P. for the Elgin Burghs, 1857-1881. Under-Secretary of State for India, 1868-1874. Under-Secretary of State for the Colonies, 1880-1881. Governor of Madras, 1881-1886. President of the Royal Geographical Society, 1889-1893. President of the Royal Historical Society, 1892-1899. Author of *Studies in European Politics*; *Notes from a Diary*; &c. { Amphill, Baron.
- M. Ha.** MARCUS HARTOG, M.A., D.Sc. (Lond.), F.L.S. Professor of Zoology in University College, Cork. Formerly Professor of Natural History in Queen's College, Cork, and Fellow of the Royal University of Ireland. { Amoeba.
- M. H. C.** MONTAGUE HUGHES CRACKANTHORPE, M.A., K.C., D.C.L. President of the Eugenics Education Society. Formerly Member of the General Council of the Bar and Council of Legal Education. Late Chairman, Incorporated Council of Law Reporting. Chairman of Quarter Sessions, Westmorland. Honorary Fellow, St John's College, Oxford. { "Alabama" Arbitration.
- M. Ja.** MORRIS JASTROW, JR., PH.D. Professor of Semitic Languages, University of Pennsylvania, U.S.A. Author of *Religion of the Babylonians and Assyrians*; &c. { Adad.
- M. M. Bh.** SIR MANCHERJEE MERWANJEE BHOWNAGGREE, K.C.I.E. Fellow of Bombay University. M.P. (C.) Bethnal Green, North-East, 1895-1906. Author of *Small History of the East India Company*. { Aga Khan.
- M. N. T.** MARCUS NIEBUHR TOD, M.A. Fellow and Lecturer of Oriel College, Oxford. University Lecturer in Greek Epigraphy. Corresponding Member of the German Imperial Archaeological Institute. Joint-author of *Catalogue of the Sparta Museum*. { Agesilaus; Agis.
- M. O. B. C.** MAX OTTO BISMARCK CASPARI, M.A. Reader in Ancient History at London University. Lecturer in Greek at Birmingham University, 1905-1908. { Acarnania; Achaean League; Actium; Aetolia; Ambracia.
- M. P.*** LÉON JACQUES MAXIME PRINET. Formerly Archivist to the French National Archives. Auxiliary of the Institute of France (Academy of Moral and Political Sciences). { Albret; Alençon, Counts of.
- N. V.** JOSEPH MARIE NOEL VALOIS. Member of Académie des Inscriptions et Belles-lettres, Paris. Honorary Archivist at the Archives Nationales. Formerly President of the Société de l'Histoire de France, and of the Société de l'École de Chartes. { Ailly; Alexander V. (pope).
- O. E.** S. OTTO EPPENSTEIN, PH.D. Member of Scientific Staff at Zeiss's optical works, Jena. Editor of 2nd ed. of *Grundzüge der Theorie der optischen Instrumente nach Abbe*. { Aberration.
- O. H.*** OTTO HEHNER, PH.D. Formerly President of the Society of Analytical Chemists. { Adulteration.
- O. T. M.** OTIS TUFTON MASON (d. 1908). Curator, Department of Anthropology, National Museum, Washington, 1884-1908. Author of *Woman's Share in Primitive Culture*; *Primitive Travel and Transportation*; &c. { America: Ethnology and Archaeology.
- P. A.** PAUL DANIEL ALPHANDÉRY. Professor of the History of Dogma, École Pratique des Hautes Études, Sorbonne, Paris. Author of *Les Idées morales chez les hétérodoxes latines au début du XIII^e siècle*. { Alain de Lille; Albigenes.
- P. A. A.** PHILIP A. ASHWORTH, M.A., D.JURIS. New College, Oxford. Barrister-at-Law. { Alsace-Lorraine.
- P. A. G.** P. ANDERSON GRAHAM. Editor of *Country Life*. Author of *The Rural Exodus: the Problem of the Village and the Town*. { Allotments.
- P. A. K.** PRINCE PETER ALEXEIVITCH KROPOTKIN. See the biographical article: KROPOTKIN, P. A. { Altai; Amur: District; Anarchism.
- P. A. M.** PERCY ALEXANDER MACMAHON, D.Sc., F.R.S., LATE MAJOR R.A. Deputy Warden of the Standards, Board of Trade. Joint General Secretary, British Association. Formerly Professor of Physics, Ordnance College. President of London Mathematical Society, 1894-1896. { Algebraic Forms.
- P. C. M.** PETER CHALMERS MITCHELL, F.R.S., D.Sc., LL.D. Secretary to the Zoological Society of London from 1903. University Demonstrator in Comparative Anatomy and Assistant to Linacre Professor at Oxford, 1888-1891. Lecturer on Biology at Charing Cross Hospital, 1892-1894; at London Hospital, 1894. Examiner in Biology to the Royal College of Physicians, 1892-1896, 1901-1903. Examiner in Zoology to the University of London, 1903. { Abiogenesis; Actinozoa; Alimentary Canal; Amphibia (in part).
- P. C. Y.** PHILIP CHESNEY YORKE, M.A. Magdalen College, Oxford. { Aberdeen, 1st Earl of; Allestree, R.
- P. Gl.** PETER GILES, M.A., LL.D. Fellow and Classical Lecturer of Emmanuel College, Cambridge, and University Reader in Comparative Philology. { A; Accent; Alphabet.

- P. La.** PHILIP LAKE, M.A., F.G.S.
Lecturer on Physical and Regional Geography in Cambridge University. Formerly of the Geological Survey of India. Author of *Monograph of British Cambrian Trilobites*. Translator and editor of Kayser's *Comparative Geology*. { **Alps: Geology.**
- R. A. S. M.** ROBERT ALEXANDER STEWART MACALISTER, M.A., F.S.A.
Director of Excavations for the Palestine Exploration Fund. { **Acre; Ai; Altar.**
- R. K. D.** SIR ROBERT KENNAWAY DOUGLAS.
Formerly Keeper of Oriental Printed Books and MSS. at the British Museum; Professor of Chinese, King's College, London. Author of *The Language and Literature of China*; &c. { **Alcock, Sir R.**
- R. L.*** RICHARD LYDEKKER, F.R.S.,
Author of *Catalogues of Fossil Mammals, Reptiles and Birds in British Museum*; *The Deer of all Lands*; *The Game Animals of Africa*; &c. { **Amblypoda; Ancylopoda.**
- R. N. B.** ROBERT NISBET BAIN (d. 1909).
Assistant Librarian, British Museum, 1883-1909. Author of *Scandinavia: the Political History of Denmark, Norway and Sweden, 1513-1900*; *The First Romanovs, 1613 to 1725*; *Slavonic Europe: the Political History of Poland and Russia from 1469 to 1796*, &c. { **Aagesen; Absalon; Adolphus Frederick; Alexander Nevsky; Alexius Mikhailovich; Alexius Petrovich; Alin; Andrassy, Count; Andrew II. of Hungary.**
- R. P. S.** R. PHENÉ SPIERS, F.S.A., F.R.I.B.A.
Past President of Architectural Association. Associate and Fellow of King's College, London. Editor of *Fergusson's History of Architecture*. Author of *Architecture: East and West*; &c. { **Aisle.**
- R. S. C.** ROBERT SEYMOUR CONWAY, M.A., LITT.D.
Professor of Latin, Victoria University of Manchester; formerly Professor of Latin in University College, Cardiff. { **Aequi.**
- R. Tr.** ROLAND TRUSLOVE, M.A.
Dean, Fellow and Lecturer, Worcester College, Oxford. Formerly Scholar of Christ Church, Oxford. { **Agriculture (in part).**
- R. V. H.** ADMIRAL SIR RICHARD VESEY HAMILTON, G.C.B.
Senior Naval Lord of Admiralty, 1889-1891. President, Royal Naval College, Greenwich, 1891-1894. { **Admiralty Administration (British).**
- R. W. P.** REGINALD W. PHILLIPS, D.Sc., F.L.S.
Professor of Botany in the University College of North Wales. Author of *Morphology of the Algae*, &c. { **Algae.**
- S. A. C.** STANLEY ARTHUR COOK, M.A.
Lecturer in Hebrew and Syriac, and formerly Fellow, Gonville and Caius College, Cambridge. Examiner in Hebrew and Aramaic, London University, 1904-1908. Council of Royal Asiatic Society, 1904-1905. Editor for Palestine Exploration Fund. Author of *Critical Notes on Old Testament History*; *Religion of Ancient Palestine*; &c. { **Aaron; Abimelech; Abraham; Ahab; Amalekites; Ammonites.**
- S. E. B.** SIMEON EBEN BALDWIN, M.A., LL.D.
Professor of Constitutional and Private International Law in Yale University. Chief Justice of the Supreme Court of Errors, Connecticut. President of the International Law Association. President of the American Historical Association. { **American Law.**
- T. As.** THOMAS ASHBY, M.A., D.LITT. (Oxon.), F.S.A.
Formerly Scholar of Christ Church, Oxford. Director of British School of Archaeology at Rome. { **Adria; Aemilia Via; Agrigentum; Alba Fucens; Alba Longa; Aletrium; Anagnia; Ancona.**
- T. A. I.** THOMAS ALLAN INGRAM, M.A., LL.D.
Trinity College, Dublin. { **Affiliation.**
- T. A. J.** T. ATHOL JOYCE, M.A.
Assistant in Department of Ethnography, British Museum. Hon. Sec. Anthropological Society. { **Ababda; Africa: Ethnology.**
- T. H.** THOMAS HODGKIN, LL.D., D.LITT.
See the biographical article: HODGKIN, T. { **Alaric.**
- T. H. H.** THOMAS HENRY HUXLEY, F.R.S.
See the biographical article: HUXLEY, THOMAS H. { **Amphibia (in part).**
- T. H. H.*** COLONEL SIR THOMAS HUNGERFORD HOLDICH, K.C.M.G., K.C.I.E., HON. D.Sc.
Superintendent, Frontier Surveys, India, 1892-1898. Author of *The Indian Borderland*; *The Countries of the King's Award*; *India*; *Tibet*; &c. { **Afghanistan: Geography; Afghan Turkestan.**
- T. K. C.** REV. THOMAS KELLY CHEYNE, D.LITT., D.D.
See the biographical article: CHEYNE, T. K. { **Adam; Amos.**
- T. W. R. D.** T. W. RHYS DAVIDS, LL.D., PH.D.
Professor of Comparative Religion in Manchester University. President of the Pali Text Society. Fellow of the British Academy. Secretary and Librarian of Royal Asiatic Society, 1885-1902. Author of *Buddhism*; &c. { **Abhidhamma; Ajanta; Ananda.**
- V. B. L.** VIVIAN BYAM LEWES, F.I.C., F.C.S.
Professor of Chemistry, Royal Naval College. Chief Superintendent Gas Examiner to the Corporation of the City of London. { **Acetylene.**
- W.** SIR JOSEPH WALTON (d. 1910).
Formerly Judge of the King's Bench Div. Chairman of the General Council of the Bar, 1899. { **Affreightment.**

- W. A. B. C.** REV WILLIAM AUGUSTUS BREVOORT COOLIDGE, M.A., F.R.G.S., D.Ph. (Bern). Fellow of Magdalen College, Oxford. Professor of English History, St David's College, Lampeter, 1880-1881. Author of *Guide du Haut Dauphiné*; *The Range of the Todi*; *Guide to Grindelwald*; *Guide to Switzerland*; *The Alps in Nature and in History*; &c. Editor of the *Alpine Journal*, 1880-1889, &c.
- W. A. P.** WALTER ALISON PHILLIPS, M.A. Formerly Exhibitioner of Merton College and Senior Scholar of St John's College, Oxford. Author of *Modern Europe*, &c.
- W. Ba.** WILLIAM BACHER, Ph.D. Professor at the Rabbinical Seminary, Buda-Pest.
- W. C. R.-A.** SIR WILLIAM CHANDLER ROBERTS-AUSTEN, K.C.B., D.C.L., F.R.S. See the biographical article: ROBERTS-AUSTEN, SIR W. C.
- W. E. G.** SIR WILLIAM EDMUND GARSTIN, G.C.M.G. Governing Director, Suez Canal Co. Formerly Inspector-General of Irrigation, Egypt. Under-Secretary of State for Public Works. Adviser to the Ministry of Public Works in Egypt, 1904-1908.
- W. Fr.** WILLIAM FREAM, LL.D., F.G.S., F.L.S., F.S.S. (d. 1907). Author of *Handbook of Agriculture*.
- W. F. Sh.** WILLIAM FLEETWOOD SHEPPARD, M.A. Senior Examiner in the Board of Education. Formerly Fellow of Trinity College, Cambridge. Senior Wrangler, 1884.
- W. G.*** WALCOT GIBSON, D.Sc., F.G.S. H.M. Geological Survey. Author of *The Gold-Bearing Rocks of the S. Transvaal*; *Mineral Wealth of Africa*; *The Geology of Coal and Coalmining*; &c.
- W. G. F. P.** SIR WALTER GEORGE FRANK PHILLIMORE, BART., D.C.L., LL.D. Judge of the King's Bench Div. President of International Law Association, 1905. Author of *Book of Church Law*. Edited 2nd ed. of *Phillimore's Ecclesiastical Law*, and 3rd ed. of vol. iv. of *Phillimore's International Law*.
- W. Hi.** WALTER HIBBERT, A.M.I.C.E., F.I.C., F.C.S. Lecturer on Physics and Electro-Technology, Polytechnic, Regent Street, London.
- W. M. D.** WILLIAM MORRIS DAVIS, D.Sc., Ph.D. Professor of Geology in Harvard University. Formerly Professor of Physical Geography. Author of *Physical Geography*; &c.
- W. M. F. P.** WILLIAM M. FLINDERS PETRIE, D.C.L., Litt.D., LL.D., Ph.D. See the biographical article: PETRIE, W. M. F.
- W. M. R.** WILLIAM MICHAEL ROSSETTI. See the biographical article: ROSSETTI, DANTE GABRIEL.
- W. O. B.** VEN. WINFRID OLDFIELD BURROWS, M.A. Archdeacon of Birmingham. Formerly Tutor of Christ Church, Oxford, 1884-1891, and Principal of Leeds Clergy School, 1891-1900.
- W. Ri.** WILLIAM RIDGEWAY, M.A., D.Sc., Litt.D. Disney Professor of Archaeology, Cambridge University, and Brereton Reader in Classics. Fellow of Caius College, Cambridge. Fellow of the British Academy. President of Royal Anthropological Institute, 1908. Author of *The Early Age of Greece*, &c.
- W. S.** WILLIAM SPALDING. See the biographical article: SPALDING, W.
- W. T. S.** REAR-ADMIRAL W. T. SAMPSON, LL.D. See the biographical article: SAMPSON, W. T.
- W. W.** WILLIAM WALLACE. See the biographical article: WALLACE, WILLIAM (1844-1897).
- W. W. F.*** WILLIAM WARDE FOWLER, M.A. Fellow of Lincoln College, Oxford. Sub-Rector, 1881-1904. Gifford Lecturer, Edinburgh University, 1908. Author of *The City-State of the Greeks and Romans*.
- W. W. R.*** WILLIAM WALKER ROCKWELL, LIC.THEOL. Assistant Professor of Church History, Union Theological Seminary, New York.
- Aar; Aarau; Aargau; Adda; Adige; Albula Pass; Alp; Alpes Maritimes; Alps; Altdorf.**
- Abbot; Aix-la-Chapelle; Congresses; Alexander I. of Russia; Ali, of Iannina; Alliance; Ambassador.**
- Abenezra.**
- Alloys (in part).**
- Albert Edward Nyanza; Albert Nyanza (in part).**
- Agriculture (in part)**
- Algebra.**
- Africa: Geology; Algeria: Geology.**
- Admiralty, High Court of; Admiralty Jurisdiction.**
- Accumulator.**
- America: Physical Geography**
- Abydos.**
- Andrea del Sarto.**
- Absolution.**
- Achaeans.**
- Addison (in part).**
- Admiralty Administration (United States).**
- Anaxagoras (in part).**
- Ambarvalia.**
- Adrian IV., V., VI.; Alexander III., IV., VII., VIII.; Ancyra, Synod of.**

PRINCIPAL UNSIGNED ARTICLES

Abbreviation.	Aeronautics.	Albumin.	Alimony.	Ambo.
Acid.	Aerotherapeutics.	Alcohol.	Alismaceae.	Ammonia.
Aconite.	Agapemonites.	Alcohols.	Almanac.	Amsterdam.
Addison's Disease	Age.	Aldehydes.	Aloe.	Ana.
Adoption.	Alabama.	Alexandrian School.	Alum.	Andaman Islands.
Advocate.	Alaska.	Alhambra.	Amazons.	Andes.
Advowson.	Alb.			