

He had advanced science by fundamental experiments on the circulation of the blood, the flow of sap, the chemistry of respiration, and the growth of bone. By his work on ventilation he had established one of the first principles of preventive medicine. He had ministered faithfully to his parish for more than fifty years. In the last scene of his active life we see him triumphant, reducing the mortality among British prisoners exiled in the gaols of France. Thus did Hales serve science and humanity, his King and his country. "He delighted to promote the honour of his God by advancing the best welfare of man-

kind. In this employment, blessed with serenity of temper, he calmly met his death as an acquaintance long familiarised to his mind." Stephen Hales died in 1761 in the eighty-fourth year of his age. His monument stands in Westminster Abbey, but his body lies buried under the tower which he had built himself for the church he had loved so well. There is no epitaph written on his grave, but 250 years after the birth of this great son of this College, let us adapt the words John Wesley wrote of him :

"How well did Science and Religion agree in this man of sound understanding !"

A National Bureau of Information.

By Dr. S. C. BRADFORD, The Science Library, South Kensington.

A READY means of ascertaining what information has been published on any subject is of the highest importance to every worker in science and technology. As Sir Philip Cunliffe-Lister said in a foreword to the Report of Proceedings of the first Conference on Information Bureaux and Special Libraries, in 1924, "The growth of knowledge during living memory has been remarkable and its application evident in every direction. Whilst it is generally recognised that knowledge is power, it is none the less true that a considerable proportion of accumulated knowledge is lying dormant and untapped. An immense amount of extremely valuable information is in existence, if only one knows where to find it. The volume of modern knowledge being far beyond the mental grasp of any individual, it becomes a vital necessity to provide a master-key whereby the common storehouse may be unlocked."

To this end much bibliographical work has been carried out. Perhaps the earliest suggestion to prepare a comprehensive catalogue of scientific papers was made to the British Association in 1855 by Prof. Henry of Washington. Afterwards, the suggestion bore fruit in the production of the "Catalogue of Scientific Papers" issued by the Royal Society from 1867 and onwards, and later, of the "International Catalogue of Scientific Literature" from 1902, which came to an end with the volume for 1914. Both these indexes covered pure science only. However, the increasing importance of science in every-day life has led to a growing demand for a comprehensive index to the printed records of both scientific and technical activity. Many applications for information or lists of books and papers on special subjects have been received at the Science Library from time to time, and recently such demands have increased in number considerably. These applications have been answered so far as possible from the subject-matter catalogue of the books, monographs, and separate papers which are in the Library, and from the extensive collection of bibliographies of every kind that has been gathered together for this purpose; but the labour of preparing such lists is very considerable, and the need for a comprehensive subject-matter card-index from which the desired information

could be ascertained immediately has long been realised.

An information service covering the whole field of science and technology has been in process of organisation for some years, and recently the acquisition of a very large collection of subject-matter index-cards relating to articles and books on science and applied science, published during the period 1902-1914, together with an almost equally large collection of bibliographical slips, which require only to be mounted on cards to bring this index up to date, has placed the Science Library in possession of an exceptionally large card repertory which is now being arranged.

The Library now possesses :

1. A large and increasing collection of the scientific literature of the world, both books and periodicals, which are available for consultation in the Library or for loan to scientific institutions and research associations in Great Britain. (The catalogue of books is in the form of a card-index only, but a list of current periodicals is available, price 1s. 3d. post free.) The Library contains already more than 6000 of the scientific and technical journals recorded in the "World List" and, together with the older series and those acquired after the marking of the List, now possesses more than 7000 such periodicals, which are being added to at the rate of about 1000 periodicals annually.

2. A comprehensive subject-matter card-index to papers in scientific and technical books and periodicals, to be used as a key to recorded information and for the supply of lists of papers on given subjects. This index, which will soon include about one and a quarter million cards, is classified according to the Brussels Extension of the Dewey Decimal Classification, so that all references to information on a given subject can be found in one place under a single classification number, and this can be ascertained from the alphabetical index of subjects.

Bibliographies of special subjects are in course of preparation at very many institutions, but much of the labour expended in this work is only partially effective, because most of these bibliographies are classified on different systems, so that it is impossible to amalgamate them into a single index. To consult them, many volumes and parts must be

requisitioned, each different system of classification must be mastered, and then each part of each volume must be looked through separately.

There are, however, a considerable and increasing number of bibliographies, some of them very extensive, that are classified on a single system, the Brussels Extension of the Dewey Decimal Classification, already mentioned, and, as this system is the one which has been most widely used, and is the most convenient for indexing scientific literature on a large scale and in the greatest detail, it has been adopted in the Science Library. This classification, which has been described recently (*NATURE*, Mar. 19, p. 429), consists essentially of two parts, (a) a more or less logical detailed arrangement of subjects, each class being given a decimal number, and (b) a copious alphabetical index of subjects from which the class numbers can be found without reference to the classification. The new edition of the "Manuel de la classification décimale" is about to be published by the Imprimerie de l'Institut International de Bibliographie, Brussels, rue Piers, 101.

The index-cards are classified by writing on each of them the numbers of the corresponding subjects in the Classification, so that, when the cards are put away in their places in numerical order in the index-drawer, all the entries relating to a given subject fall together automatically. Conversely, to find what information is available on a particular subject of inquiry, it is merely necessary to ascertain the number from the alphabetical index and look at the cards bearing that number.

Practically all the available material that is classified by this system has now been gathered in the Science Library, and it includes:

1. The card repertory (1902-1914) of a well-known continental bibliographical institute that has recently ceased to operate, containing about 350,000 cards.

2. *Bibliographia Anatomica*.

3. *Bibliographia Biologica*.

4. *Bibliographia Paleontologica*.

5. *Bibliographia Physiologica*.

6. *Bibliographia Zoologica*.

These five bibliographies comprise about four hundred thousand printed subject-matter cards from 1896 onwards, published by the Concilium Bibliographicum, Zurich; but the cards for the period 1916-1925 are being acquired gradually.

There are also the following bibliographical periodicals, which are being cut up, mounted on cards, and amalgamated with the above:

7. *Bibliographia Geologica*, 1801-1904.

8. Optical Society, *Transactions*, Index to vols. 1-25 and onwards.

9. *Optician*, Review of optical literature, 1927 and onwards.

10. *Revue de l'Ingénieur et Index technique*, published by the Brussels Institute, 1903-1925.

11. *Bibliographie technique*, 1923-1924. Continued as:

12. Nederlandsch Instituut voor Documentatie en Registratuur, *Meddeelingen*, 1925 and onwards.

13. *Le Mois Scientifique*, 1911-1914, 1919.

14. *Technos*, 1920-1924.

15. Koninklijk Instituut van Ingenieurs, *Aanwinsten van de Bibliotheek*, 1925 and onwards.

16. *Nederlandsche technische wetenschappelijke Literatuur*, 1924 and onwards.

17. *Revue générale de l'Électricité*. Documentation, 1921 and onwards.

18. *Chimie et Industrie*. Documentation, 1920 and onwards.

19. *Sciences administratives et les tablettes documentaires menuisibles* 1925 and onwards.

20. *Photographic Abstracts*, 1927 and onwards.

21. Société française de Photographie, *Bulletin*, 1925 and onwards.

22. *Science et Industries Photographiques*, 1925 and onwards.

It is intended that other important bibliographies that are not classified by this system shall be reclassified gradually, so that their entries also can be intercalated in place in the general card-index with other references to the same subjects.

This great subject-matter index will be comparatively simple to understand and rapid to use. Having ascertained from the alphabetical index of subjects the number or numbers of the classes that relate to the various aspects of the subject to be investigated, all the cards bearing titles of recorded information that is pertinent will be found together in chronological order under the corresponding numbers.

By this autumn the preparation of this subject-matter index will have advanced sufficiently for it to be made available to the public, when its extent will be approximately as follows:

Subject.	No. of Bibliographical References.	Approximate Period Covered.
Mathematics	100,000*	1893→
Physics	15,000	1903→
Geology	48,000	1801-1904
Biology -		
General biology		
Palaeontology		
Zoology		
Anatomy		
Physiology		
}	200,000	1896→
Steam and locomotive engineering	89,000	..
Electrical engineering	61,000	..
Telegraphy and telephony	2,700	..
Motors, transmissive machinery, machine tools, and workshop practices	45,000	..
Mining and economic geology	30,000	..
Bridges, roads, railways	33,500	..
Canals, docks	10,000	..
Hygiene, public health	11,000	1903→
Water and road transport	19,000	..
Aviation	4,500	..
Communications, transport	19,000	..
Chemical technology	76,000	..
Metallurgy	89,000	..
Building construction	10,000	..
Agriculture, economic botany, and forestry	250,000*	1919→
Other subjects	100,000	1903→
Total references	1,112,700	..

* These sections require reclassification and therefore may not be completely arranged until some months later.

For those who are unable to visit the Library, lists of books and papers will be typed from the cards so far as the general work of the Library permits. Photostat copies of articles can also be furnished on payment.