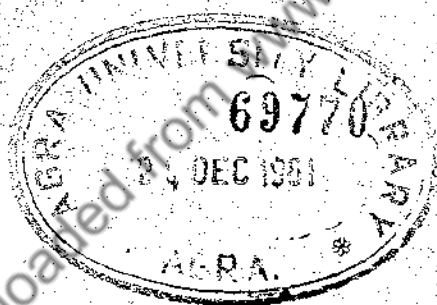


MODERN PUBLIC LIBRARIES  
*THEIR PLANNING AND DESIGN*



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# MODERN PUBLIC LIBRARIES

*THEIR PLANNING AND DESIGN*

BY

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WITH SUPPLEMENTARY NOTES

*WITH PLATES AND PLANS*

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## PREFACE

MY work is intended to deal in the main with Municipal Libraries and particularly directs attention to their design and equipment. Occasional notes have been given of other types of libraries, but only where it is felt that some detail of their planning or design might usefully be adapted for municipal requirements.

During the war period no new libraries have been erected, many libraries have been completely destroyed or badly damaged, and available book stocks have, through destruction, usage, and lack of replacement, been very seriously reduced.

In spite, however, of the severe blow which the war has struck at the library movement, in common with most other forms of civilized institutions, there is this to be said, breathing space has been allowed for a general "stock-taking".

With the outbreak of war as a starting-point we may collate the conclusions which had been arrived at in experimental work up to that time. We may try to analyse the effect of the strain of war on our existing organization, note where failures have occurred, and suggest possible lines of future development based on a study of new methods of construction and of public needs which have become apparent during the past five years of phenomenally rapid technical and scientific progress.

This "stock-taking" has in fact been done from the view-point of the librarian in the Report prepared by Mr. Lionel R. McColvin under the auspices of the Library Association.<sup>1</sup> Mr. Arundel Esdaile has referred to this Report as "The most important publication ever issued by the Library Association" and he urges every member to read it and think it over.

The Report lays great stress on the fact that, whilst many libraries are excellently equipped and well organized, yet there is no generally accepted standard applicable to all libraries throughout the country, and that what is primarily needed is a central "appropriate body" to guide and co-ordinate a nation-wide system of library "units", each of which would be large enough to provide adequate local services proportionate to the number of heads of population which it is to serve.

<sup>1</sup> Lionel R. McColvin, F.L.A. *The Public Library System of Great Britain*, published by the Library Association, London, in 1942.

In a later Report of the Library Association, issued in 1943, support is given to this idea of the co-ordination of local library authorities under an appropriate department of the central government. It is also recommended that :

1. The provision of adequate services by suitable library authorities should be made compulsory.
2. Local authorities should be made financially able to maintain efficiency.
3. Service should be made available to everyone irrespective of where he or she may reside.
4. The composition and size of local government areas should be such that the best results are made possible.

In Mr. McColvin's Report a very detailed description is given of the principles which it is suggested should determine the size and organization of the various "units" of the future library system. Broadly speaking, the proposal is that the disposition of each library unit should be determined by certain natural elements of unity and not necessarily by existing local government boundaries. Economic, geographical, and historical elements would all have to be considered, as would ease of communication and the possibility of basing each unit on a single large town which would serve as the headquarters of the unit. It may be that certain existing Central Libraries would prove adequate to fulfil the larger requirements of the headquarters of a unit, but in other cases they might require to be extended or to be combined with a headquarters office block situated at a convenient distance, perhaps on a cheaper site on the outskirts of the town.

It should be appreciated that the functioning of certain existing libraries of particular types would not be interfered with in any way. These would include big Regional Reference Libraries, Special Libraries, The National Central Library, and such libraries as perform a definite and particular function and which could not be expected to contribute books on loan to a unit system, but which would no doubt be available to supply information or copies and extracts to a unit on application. Government of the unit would be by a joint committee, representative of the various local authorities concerned.

From the foregoing extracts it will be seen that the governing body of the Library Association is keenly aware of deficiencies in its bodily structure and is ready to undertake action as soon as the times are once more propitious. Exactly what form a new organiza-

tion may take we do not yet know—speaking from the architectural point of view, one's part would appear to be to retain an open and receptive attitude and to be ready to fall in with such new conditions as final policy may dictate—having regard to such work as has been done in the past, but keeping the fact firmly in mind that what will be required in the future will, owing to improved technical appliances and the changed condition of the post-war world, be something of an entirely new description.

It cannot be too strongly emphasized that, in the erection of a library, close collaboration between librarian and architect is essential. Under modern conditions the municipal librarian is a highly trained official. He is familiar with the particular characteristics of his town, the direction and scope of his readers' interests, and the policy of the library committee in their guidance of those interests. His position enables him to act as liaison officer between his committee and the reading public, and to encourage this public in an intelligent selection of reading material—which it is his duty to see is made readily available.

The primary function of the architect is to fulfil certain definite and necessary requirements—to provide well-lit reading-rooms, comfortable conditions of heating and ventilation, convenient and economical staff servicing, and the like. The library conceived merely as an architectural problem in the grand manner is foredoomed to failure, and the danger of perpetuating a too rigidly "departmentalized" system of planning must be carefully guarded against. By this is meant that readers should be encouraged to make complete use of the library building and should not be segregated by too sharply defined divisions, into "lending", "reference", or "reading" members.

A question which has been much debated, without any very definite conclusion having been arrived at, is whether or not it is desirable to house a library under the same roof as a museum, art gallery, or other type of educational or recreational service.

A frequent combination, of course, is a building of which the lower floors comprise the library and the upper floors the top-lit rooms of the art gallery. Huddersfield and Sheffield (see Chap. III., pp. 51 and 55,) are buildings of this type and I personally can see little detrimental in the arrangement and much to be said in its favour, providing always that the organization of each unit is kept completely separated, each functioning with its own expert staff and each independent as regards its internal arrangements for heating, lighting,

ventilation, and so on. The latter point is important as the differing requirements of library and art gallery call for special conditions of servicing, and if all are supplied from a common source waste is liable to occur with a corresponding increase in overhead costs. Lighting current may of course quite simply be metered to each section, but heating and ventilating services are not so easily dealt with and should be designed as separate units.

The increased bulk provided by a scheme of the composite type may give a great opportunity for the erection of a building which will be a source of civic pride and importance, but there are excellent examples of both conditions, and it would seem reasonable to judge each case on its own merits. On the flat site of Port Sunlight, for example, the charming little Lady Lever Art Gallery would definitely not gain by being stilted up on the top of a library, but a separate and one-storied library might well be placed as a repeat of the Art Gallery at the opposite end of the vista and would result in a particularly fine grouping.

An interesting fact which has been noted in the course of the war is that the demand for books has become not less but very much greater. Obvious causes are the increased amount of reading time occasioned by sedentary defence duties, and the Forces' demand for reading matter of almost every description. Other, and more enduring causes may be a universal striving for some measure of mental relief, and a sense that through knowledge, whether looked at from the religious, the philosophical, or the scientific point of view, is to be found that comfort and consolation which our present world so badly needs. Be this as it may, the demand is there, and there is little doubt but that it will continue to increase. The books, unfortunately, are not there, and it is particularly regrettable that the general shortage of reading matter should have coincided with a period when, with so many friendly visitors in our island, the opportunity for teaching them something of our domestic problems and ways of life has been so great. In addition, the dearth of up-to-date technical and scientific text-books, at a time when the call for reconstruction is so insistent, constitutes a serious problem for technicians and for teachers of every sort. So rapid has been the war-time advance in all branches of technical research that much recent information has not had time to become incorporated in the various standard text-books and is only to be obtained by reference to a multitudinous collection of trade catalogues—many of which fortunately are excellently produced.

It would seem therefore that a primary post-war need will be for books. Books, and up-to-date books of every description, must be put into circulation in the shortest possible time after the necessary supplies and facilities for production are made available.

In these circumstances, and in view of other reconstructual works which will be proceeding simultaneously, the rapid erection of a large number of simply equipped reading-rooms as distinct from monumentally planned libraries may well be a matter of urgent necessity.

As the essence of a good reading-room is simplicity, and of an efficient library a simple grouping of parts, it follows that the erection of such a building is particularly suited to standardized methods of construction. Rooms, constructed to a standard width of bay, might be easily and cheaply assembled, their preliminary grouping so arranged that further units could be added at a future date when labour and funds are more readily available, and the re-settlement of the post-war population more clearly defined. This point, however, will be dealt with in greater detail in the succeeding chapters.

My gratitude is expressed to the many who have assisted me with advice and the loan of blocks and photographs. To Messrs. Charles Nowell, M.A., F.L.A.; R. J. Gordon, M.A., F.L.A.; J. P. Lamb; and Horace Goulden, F.L.A. (Librarians); and Messrs. C. A. Minoprio, M.A., B.Arch., F.R.I.B.A.; H. E. C. Spencely, B.Arch., F.R.I.B.A.; and H. H. Powell, B.Arch., A.R.I.B.A. (Architects) who undertook the somewhat exacting task of reading through my script. In addition I am indebted to Mr. G. H. Rowledge, A.R.I.B.A., for many of the drawings which illustrate the text, and to Mr. J. Roger Preston, P.P.I.H.V.E., and Mr. A. H. Emerson, A.M.I.E.E., A.M.I.Loco.E., for their help in the preparation of the chapter on heating, ventilation, and lighting.

E. H. ASHBURNER.

LONDON, 1945.



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# INTRODUCTION

## HISTORICAL.

THOUGH the date of the first public library is a matter for conjecture, archæologists have demonstrated that as early as 3000 B.C. collections of clay tablets, on which were recorded wars, decrees, the successes and catastrophies of the ruling monarchs, and so on, were in existence at Nippur and the principal cities of the kingdom of Babylon.

The Assyrian king, Ashur-bani-pal, established a library in his palace at Nineveh in about 600 B.C. The fact that the library rooms were accessible from the outside, without having to pass through the inner apartments of the palace, leads to the assumption that this may well have been the first public library of which any record remains.<sup>1</sup>

There was a public library founded in Athens by Pisistratus about 544 B.C., but perhaps the most famous of these early libraries was that built by Ptolemy Philadelphus at Alexandria in 287-284 B.C. This latter, which was partially destroyed by Julius Cæsar, was said to have contained some 400,000 books. A second library, formed at Alexandria from the remains of the first, consisted of 700,000 volumes, and this also suffered destruction at the hands of succeeding generations.

At Pergamon, in Asia Minor, there was an important library, said by Plutarch to have contained 200,000 books.<sup>2</sup> This library is reputed to have consisted of rolls formed of parchment—a more durable material than the Egyptian papyrus, and was described by Vitruvius as being “open to all”.<sup>3</sup>

Under the Roman Empire, with its highly developed social services, libraries played an important part in the daily life of the community and there are said to have been no fewer than twenty-six in Rome alone. Conveniently placed near the thermæ, temples, and public markets, they formed an agreeable rendezvous for philosophers and students in an age renowned for its delight in the practices of discourse and learning. A feature of these Roman libraries was the colonnade, where students might stroll and engage in conversation away from the “silent” parts of the building. Monastic

<sup>1</sup> L. Stanley Jast, *The Library and the Community*, p. 15.

<sup>2</sup> *Haydn's Dictionary of Dates*, p. 493.

<sup>3</sup> L. Stanley Jast, *The Library and the Community*, p. 16.

libraries possessed a somewhat similar feature in the cloistered court, and the need for some such provision may be felt from noting the use which, in more modern times, is made by readers of the British Museum colonnade or of that outside the circular Picton Reading Room at Liverpool.

With the fall of Rome and throughout the Dark Ages, learning was at a standstill for a period of approximately one thousand years, and when, in the fifteenth century, interest was again beginning to be taken in library matters, we find a very different attitude of mind evincing itself. It is true that a public library was founded at Florence by Nicholas Niccoli and was presented to the public on his death in A.D. 1436. But where, throughout Europe, libraries did occur, they were usually in connection with monastic foundations and their use was largely confined to a minority—the small ruling and privileged class who were sufficiently educated to be able to take advantage of them. The library was small and frequently served the additional purpose of a scriptorium where the scribes might work and copy, and the number of books was infinitely less than had been the case in classic times. Even with the introduction, at the middle of the fifteenth century, of printing from movable type, the number of books produced still remained small and, with certain notable exceptions, it may be said that in this country at any rate it is only within the last eighty years that any serious effort has been made to provide library services which will be adequate to meet the growing needs of the community at large.

The first statutory provision for the establishment of public libraries with free and open access to all members of the public was the Public Libraries Act of 1850.

#### SOCIAL INFLUENCES.

Arising out of a scheme for the establishment of a system of parochial libraries, the Society for Promoting Christian Knowledge and the Society for the Propagation of the Gospel were founded in 1698 and 1701 respectively and still carry on their labours at the present date. The dissemination of knowledge amongst the poorer classes during the eighteenth century gave rise to several similar educational agencies. In 1780 at Gloucester, and in 1784 in London, were founded the first Sunday Schools. The subjects taught in these schools were not entirely religious, membership was not, as now, confined to children, and a scheme of education was followed which sometimes included evening lectures on a variety of subjects.

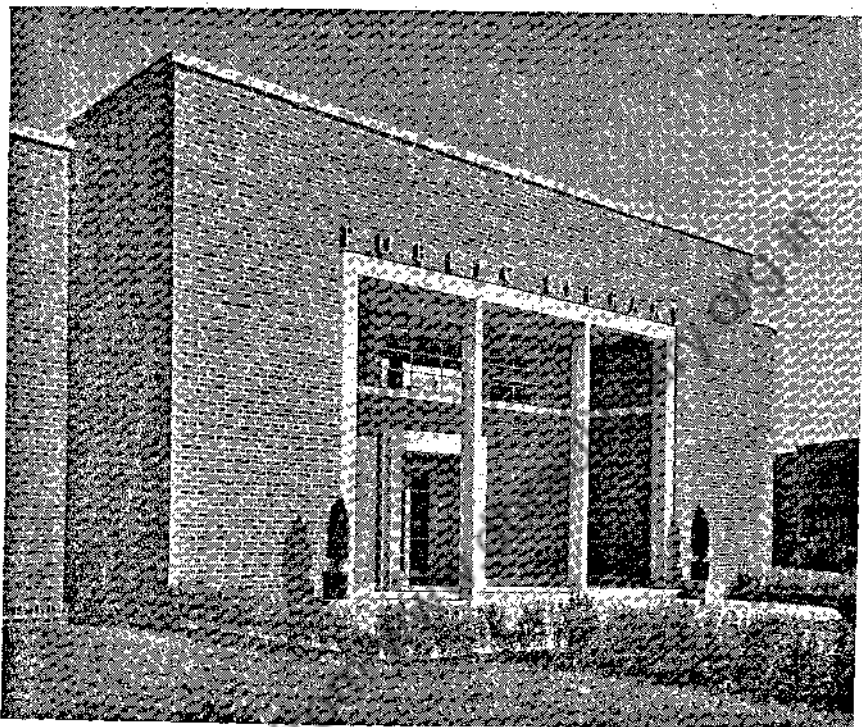


PLATE I.—THE NORRIS GREEN BRANCH LIBRARY, LIVERPOOL. (Front View.)

By L. H. KEAY, O.B.E., M.A.RCH., F.R.I.B.A.

[By courtesy of the Chief Librarian, City of Liverpool Public Libraries.

In later years the National Society for the Education of the Poor (1811) and the British and Foreign School Society (1814) were the chief instruments of public education until pressure of public opinion led to Parliamentary action and the passing of the Reform Bill of 1832. Clauses in the Reform Bill provided for government grants in aid of the building of schools and did much to stimulate a demand for reading matter. The result of this demand was a flood of cheap periodicals and popular journals, many of which were of a high standard of educational value. Some, however, as was natural at a time of extreme political tension, were denounced as being of an immoral and seditious character and an unexpressed desire to bring the supply of public literature under some sort of official control was possibly to a large extent responsible for governmental activities as expressed in the 1850 Public Libraries Act. From the passing of this act until the end of the century was a time of exceptional industrial and commercial activity. Men's minds were turned to the great possibilities opened out by the latest developments in science, engineering, and commerce. Stimulus was given by the Great Exhibition of 1851 and by the numerous societies, many of them of a technical or scientific nature, which were springing up in all parts of the country.

In 1870 the passing of the Education Act provided a further increase in the general thirst for knowledge, which was augmented by the grants first made in 1880 by Mr. Andrew Carnegie and Mr. J. Passmore Edwards for the building and equipment of libraries, firstly in Scotland and later throughout the United Kingdom.

In 1877, at a conference held in London, the Library Association was inaugurated and in 1898 received incorporation by Royal Charter. The work of this association has, since its inception, been of the first importance. Not only has it promoted a course of training in librarianship and raised the standard throughout the country, but it was largely through the efforts of this organization and of the Carnegie United Kingdom Trustees that, after the hold-up in general cultural activities occasioned by the first world war, the important Public Libraries Act of 1919 was, at long last, put on the statute book.

The Carnegie United Kingdom Trustees in 1915 issued a report and made grants to county authorities for the founding and equipping of county libraries, the administration of which comes under the educational authorities.<sup>1</sup>

<sup>1</sup> See *A History of the Public Library Movement*, by John Minto.



## LIBRARY FACILITIES.

*Monastic and College Libraries.*

Such libraries as existed in the earlier ecclesiastical foundations may scarcely be classed as public libraries in that they were largely restricted as regards their use by the laity.

It was usual for the manuscripts or books to be stored in chests and for lecterns to be provided for the use of the readers—though in some examples a single shelf, divided into vertical compartments, housed the volumes, and below this was a reading-desk on which the heavy folios could be laid. As the desk was often of such a height that it would be necessary for the reader to remain in a standing position, and as the folios were frequently secured to the desk or shelving by stout chains, it would be difficult to imagine anything more violently opposed to our present-day conception of what a public library should be.

The cloister library at Gloucester is an early example (about 1400) of the arrangement of the library into carrells, or study recesses. Trinity Hall, Cambridge (about 1600), shows a further stage of a development of library planning which probably reaches its climax in the Trinity College Library, completed by Sir Christopher Wren in 1678.

*Early Public Libraries.*

Probably the first public library to be established in this country was that in the Free Grammar School at Coventry opened in 1601. This is no longer in existence, but that established in Norwich in 1608 is now incorporated in the Norwich Public Library. Similarly, the 1615 foundation at Bristol now forms part of the Bristol Public Library.

In 1623 there was a parochial free library at Langley Marish in Buckinghamshire; Leicester had a free library in 1632, and Manchester in 1653. The Manchester library, founded by Sir Humphrey Chetham, is believed to be the oldest library in England with an unbroken record of free access since its foundation.

*Parochial Libraries.*

Extensive schemes for the provision of libraries, primarily for the use of the poorer clergy, but indeed for the information of any duly accredited persons, have been in operation throughout the United Kingdom since the beginning of the eighteenth century. As these libraries were usually founded by an individual and

possessed no funds or official recognition to ensure the continuity of their work, they have generally fallen into disuse.

### *Subscription Libraries.*

The earliest recorded subscription library is that known as the Edinburgh Circulating Library, founded in 1725 and ultimately sold up in 1832. Similar libraries were established in London about 1750, at Birmingham in 1757, and at Leeds in 1768.

The Liverpool Lyceum (now closed) was opened in 1758 and the Warrington Library (now the Warrington Museum and Library) in 1760.

### *Mechanics' Institutes.*

These institutes, perhaps more than any other agency, have played an important part in the education of the masses from the time of their foundation until recent years.

In 1800 George Birkbeck, M.D., founded in Glasgow his mechanics' class for the instruction of certain artisans with whom he had established a connection. In 1808 a library was formed, a committee was appointed, and in 1823 the new movement was launched by the students setting up under their own control the Glasgow Mechanics' Institution for the Promotion of the Arts and Sciences.

From this date onwards rapid expansion took place, so that by 1863 it is said that there were over one thousand institutes in active operation in the United Kingdom. The conditions in individual institutes varied somewhat; in one the library would be the main feature, in another lectures might be the chief concern. Books were mainly scientific, but works of general interest were also provided. In very many cases the institute formed a basis from which other educational establishments sprang at a later date. I have myself been concerned in the erection of no less than three public libraries on sites once occupied by mechanics' institutes.

### *Early Municipal Libraries.*

Though legislation, directed expressly towards the establishment of public libraries, did not come into operation until 1850, yet in one case, that of Warrington, the Museums Act of 1845 was utilized to establish a museum and library to supersede an earlier foundation. Salford, with local support, opened a library in 1850 and the acts were formally adopted in 1855.

With the passing of the Public Libraries Act of 1850 some activity in library construction took place. The crippling effect which resulted from a clause in the act limiting expenditure to the amount of a halfpenny rate did, however, prevent its being immediately utilized by many municipalities. Norwich, which already possessed rooms equipped as a library, was the first municipal authority to adopt the 1850 Statute and in 1857 a library building was opened. In 1850 Brighton provided a free library, museum, and art gallery under powers given under a special local act. In 1851 Winchester, and in 1852 Manchester, Bolton, Ipswich, and Oxford all adopted the 1850 act and proceeded with their various enterprises.

To Manchester belongs the distinction of being the first authority actually to complete and open a library under the powers of the 1850 act. Other adoptions of the act followed, and by 1860 some twenty-five municipalities were embarked on schemes.

The first library to be provided exclusively for the use of children was that erected at Nottingham in 1882.

It was not until after the first world war and the removal, by the 1919 act, of the rate restriction, that any appreciable forward movement took place. After this date great activity became apparent—an activity which continued without interruption up to the outbreak of the second world war in 1939.

#### LEGISLATION RELATING TO MUNICIPAL LIBRARIES.

In 1849 a Select Committee was appointed to obtain evidence, report, and make recommendations with regard to the desirability of establishing freely accessible libraries throughout the country.

At this date no statutory authority was in existence for the erection of libraries. The Museums Act of 1845 empowered municipalities to erect museums only, and was restricted to towns with a population of not less than 10,000 inhabitants. The local authority was given power to levy a rate of one halfpenny in the pound and to make a charge for admission of one penny per person.

The evidence and reports of the Select Committee are of interest in that they contain a full description of conditions ruling in Continental and American libraries at that time. It was shown that, so far as reading facilities were concerned, the United Kingdom was in a worse position than almost any other important country. Italy, France, and Germany were well served, whilst America possessed, in addition to State libraries, many important foundations

belonging to universities and corporations. It was stated in evidence that there were in this country eight million people who were unable to write, but that with the spread of education a demand for books was already being made manifest by numerous efforts to create reading, lecturing, and social centres.

In 1850 a "Bill for enabling Town Councils to establish Public Libraries and Museums" was introduced in the House of Commons by the chairman of the Select Committee, Mr. William Ewart, M.P. After considerable discussion and opposition the bill was passed and became law under the title of "The Public Libraries Act, 1850". This act repealed the Museums Act of 1845, it was confined to towns with a population of over 10,000 inhabitants, and empowered town councils to establish public libraries and museums, to erect or extend buildings for this purpose, to maintain and staff these buildings—but no power was given to purchase books or specimens! As regards expenses to be incurred the powers of the local authority were limited to the levy of a rate of one halfpenny in the pound. This act was, in 1853, extended to include Scotland and Ireland, and in the following two years acts were passed relating to Scotland, Ireland, England, and Wales. In the case of England the Public Libraries Act, 1855, raised the limit of the rate permitted to be levied to one penny in the pound, and made the acts applicable to towns of over 5000 inhabitants—instead of over 10,000.

Further acts relating to the regulations to be observed in adopting library schemes, and in the government of libraries, were passed in 1861 and 1866 for England, and in 1867 and 1871 for Scotland.

Various amending acts were passed during the following twenty years, when, with the backing of the Library Association, the Public Library Act, 1892, received the royal assent and became the principal act for England and Wales. This 1892 act defined as a library district every urban district or parish in England and Wales. Neighbouring parishes might combine for the purpose of administering the act and library authorities might provide not only libraries, but museums, art galleries, and schools of art and science. The library authority was empowered to appoint a committee and to delegate such powers to this committee as would enable it to carry out the functions of the library authority.

An amending act in 1893, applicable to England and Wales, provided that the local authority might fix, within the limitations of the maximum rate, the amount of rate to be levied for library services.

In 1894 amending acts for Scotland and Ireland delegated the power of adopting the acts to town councils instead of to a meeting of the ratepayers.

Further legislation for the conduct and government of libraries was introduced in 1898, 1899, 1902, and 1911, but until the passing of the act of 1919 and the removal thereby of the penny rate restriction, little appreciable progress was made as regards the services provided. It had been found that the amount raised by a penny rate was totally inadequate for the purpose for which it was intended. Certain authorities (*e.g.* Oldham, St. Helens, and Huddersfield) had, by promoting local acts, either raised the rate limit or had abolished it entirely, but in the case of many boroughs the expense of this method of procedure had proved prohibitive. The 1919 act not only removed any restriction on the amount of rate which could be levied, but it also permitted county councils to adopt the act and to function as library authorities.

In 1920 acts for Scotland and Ireland provided for the increase of the rate restriction to a limit of threepence in the pound, and further legislation for these countries and for England followed in 1914, 1925, and 1929.

[NOTE.—For a more detailed description of early English libraries and the personalities and administrative measures connected therewith, see *A History of the Public Library Movement in Great Britain and Ireland*, by John Minto.]

## CHAPTER I

# LIBRARY ORGANIZATION, ADMINISTRATION, AND SERVICES

### GENERAL.

THOUGH questions of the provision and organization of library services are the province of the administrator rather than of the designer, yet in addition to the very intimate knowledge which should be acquired of the internal servicing of the building itself, an acquaintance with the working of the library system is essential to the architect engaged on such work.

Should the unit system of organization be finally accepted, it would not appear that library buildings themselves would require to be changed in regard to their main fundamentals.

As has already been mentioned, it might be that certain of the central libraries, chosen to function as the headquarters of a unit, would require enlargement or additions to their administrative suites, and no doubt there would be great activity in the construction of extra branch libraries to make up such deficiencies as would exist in certain of the unit areas which are at present badly served. But the general requirements of accommodation would remain unchanged so that a description of existing conditions is still pertinent. The "open access" system of book issue, introduced in the Clerkenwell Public Library in 1894, is now in general use throughout English lending libraries. In this method of issue, the reader is allowed direct access to the shelves for the purpose of making his selection of books. The working of the system will be more fully understood by a reference to the paragraphs on service counters (Chap. V., pp. 81-85.) Returned books are handed in at the counter, either as the reader enters or as he leaves the library. The counter occupies a commanding position for oversight and forms the headquarters of the issue system. Essential requirements which must be provided for are: card tray space with facilities for future expansion, accommodation for the sorting of issue records, desk for the registration of readers, space and cash drawer for the receipt of fines on overdue volumes, and effective supervision of the entrance and exit of members.

In the case of reference libraries and those libraries in which

access to the shelves is denied to the general public, the reader will be dependent, in his book selection, upon the catalogues provided for his use. The drawers containing these should be housed on stands placed conveniently near the entrance to the department, with ample circulating space around so that reference may be easy and unobstructed.

Municipal central libraries will normally be positioned near the centre of a city's activities, and will be in close touch with their dependent branch libraries, to which branches issues of books will be made, and whose staffs will be, to a greater or lesser extent, under the control of the parent library.

In the central library the principal departments to be considered will usually be the lending, reference, and children's libraries, magazine and news rooms, and last, but by no means least, administrative offices for the control of the central library and its branches. Further particulars of these departments will be found in Chap. IV.

Branch libraries may be open either full- or part-time but the following definition is satisfactorily applicable to both conditions: "A branch is a library, housed in premises set aside for the purpose and specially equipped and furnished, housing a stock of not less than 3000 volumes and serving a population, in its immediate vicinity, of about 3000 people or more".<sup>1</sup> Branch libraries, in these days of rapidly expanding urban development, constitute an important problem. In many of the larger cities a daily motor service keeps contact between central and branch libraries and facilitates the interchange of books.

The opening of new branches in outlying suburbs will undoubtedly tend to stimulate fresh interest in the library movement, but the question as to whether or not these extensions will result in such an increase in the general body of readers as will justify their foundation is one which will require very careful study. Obviously the number of new readers attracted to the use of branch services may represent a proportion of members lost to the central library.

As regards the "coverage" of urban branch libraries, the Library Association has accepted as a desirable maxim that there should be a public library within one and a half miles, or twenty minutes' walk, or a twopenny bus ride of every inhabitant. It is also considered essential that the library should be near a transport centre.

<sup>1</sup> Lionel R. McColvin, *The Library System of Great Britain*, p. 17.

Smaller than the branch libraries are the reading centres, or deposit collections of books established in places where the number of readers is not considered to be sufficient to justify the erection of a branch. Such centres would usually be housed in youth clubs, schools, alms-houses, or similar communities.

Special libraries may be described as self-contained libraries devoted to a particular subject—history, science, technology, or the like. They should possess their own special staff and may be isolated from other departmental activities, being housed in a separate room or building.

#### REGIONAL LIBRARY SYSTEM.

For some years a scheme has been in operation throughout the country to provide for cases in which a volume, which may be required for reference or on loan, is not available in a particular library. Under this scheme the country is divided into nine regional areas, one of which, the Yorkshire area, is again subdivided into zones. Each of these regional areas includes the principal municipal, university, and county libraries which are situated in that particular district. If a book is not in stock in any particular library the librarian may forward an application to : (a) a library in the region which is known to contain a copy of the required work, or (b) the National Central Library, London, if the book is not available in the region. The application will then be dealt with by the National Central Library in one of the following ways :

- (a) The Library will supply the book from its own shelves.
- (b) A copy will be bought.
- (c) A copy will be obtained from an outlier library.
- (d) Application will be made to other regional bureaux.
- (e) In certain exceptional cases, application will be made to one or more of the National Centres for bibliographical information abroad.

It will be seen from this brief description that the resources at the disposal of an individual reader in search of some particular work of reference are of a very extensive nature.

#### ADMINISTRATION.

The municipal library is governed, subject to the authority of the town or city council, by a library committee consisting of elected and co-opted members. On this committee devolves the selection of books, the conduct of the library premises and staff, and the



duty of advising the council on such major matters as come within the jurisdiction of that body.

As regards the handling of books it should be remembered that volumes, when delivered from the booksellers, do not immediately appear on the shelves, but go first of all to the staff work room, where the necessary preparation may be made for their being put into circulation. The usual procedure comprises checking, stamping, labelling, classifying, cataloguing, and entering on the accessions and shelf registers. Facilities should be provided for the repair of damaged volumes if this work is to be carried out on the library premises.

### SERVICES OF A SPECIAL NATURE.

In addition to the normal and more generally recognized functions of the library services proper, many extra services of a special nature have been instituted in the past and more will no doubt be found desirable at a future date. The following are some few of the more common of such extra services :

#### *School Libraries.*

Since the passing of the first public library acts it has been recognized that close communication between libraries and schools is essential. Schemes have been propounded whereby cases of books are loaned to schools and re-collected at periodic intervals for purposes of checking and renewals. It is recommended that schools should have a well-equipped library room in proportion to their requirements, and that education and library committees should collaborate in an endeavour to provide efficient equipment for this purpose.

#### *Hospital Libraries.*

The Joint Standing Committee, appointed in 1931 and consisting of representatives of the Library Association and of hospital and medical services, stresses the need for reading interests to be considered both in the treatment of the sick and in the entertainment of a staff, who are, by the arduous nature of their duties, cut off from outside communication for long periods.

This need for well-chosen books as a mental relaxation or stimulus in the case of a long and trying illness is sufficiently obvious, and medical science attaches great importance to the patient's tranquillity of mind, particularly in the case of nervous disorders.

In the equipment of a hospital library several points are worthy of consideration. There should be a stack room, from which books may be distributed by means of wheeled trolleys, and sufficient space should be allowed round the stacks, and doors should be wide enough for patients to be wheeled about the room if necessary. But in addition to the stack room it is very desirable that a reading-room should be provided for such patients as are able to make use of it. This should be a "quiet" room, completely separate from the stack room (where persons will be passing to and fro) and if it were possible for tea to be served here this would be an added advantage. The value of a break in the deadly monotony of hospital routine will be appreciated by all who have had the misfortune to spend a lengthy period in a ward bed. Book trolleys, suitable for wheeling round the wards and from which a bed patient may make an easy selection of books, should be provided. A convenient form of trolley consists of a narrow width of shelf tiers, fixed in an inclined position and mounted on ball-bearing, rubber-tired wheels.

Research work carried out by the Society of Medical Officers of Health has shown that the risk of infection being carried by books is practically negligible. It is, however, desirable to take all possible precautions. Book bindings may be covered with celluloid or one or two coats of good quality shellac varnish, so that the covers may be easily rubbed over and cleaned with a damp cloth. In the case of very infectious diseases, books should be carefully isolated on the shelves and an air-tight cupboard, fitted with open-batten shelving, on which books may be stood with their pages open, should be provided for purposes of fumigation.

As regards the book stock to be provided, the Guild of Hospital Librarians has suggested a minimum of three books per bed, but in the case of hospitals with a majority of long-standing cases (e.g. mental hospitals) this allowance would require to be considerably increased.

#### *Libraries for the Blind.*

Some few of the larger libraries stock a certain number of volumes in the Braille or the Moon type. It has generally been found however, that for this particular service it is better to have one central depot from which volumes may be posted, on application, either to individuals or through the local library. The National Library for the Blind, Westminster, now carries a stock of

many thousands of volumes and comprises a section devoted to music.

In considering the question of accommodation it is to be borne in mind that a work which, in the ordinary library, will be represented by one volume only, may, in the case of a Braille book, consist of some ten or twelve volumes.

### *Lantern Slide Collections.*

The Birmingham Central Library may be instanced as an example of the help which may be rendered to lecturers and educational authorities by the provision of well-equipped and catalogued collections of lantern slides. At Birmingham any duly accredited person will be furnished, on demand, with a catalogue of the slides which are available and which embrace a wide range of educational subjects. Selected slides are supplied in sets on loan at a price to cover the cost of postage only.

It may be anticipated that, in the near future, a similar service for the issue of educational films may be considered a necessity in the principal regional libraries.

### *Cinemas in Libraries.*

Some librarians may perhaps contend that the function of a library is to supply books, and that the institution of services such as the cinematograph or wireless apparatus (for which, being situated in a public municipal building, no charge for admission would be permissible) not only raise difficult problems of staffing and the regulations to be complied with, but tend to create friction with local vested interests. Be this as it may, the educational possibilities of the cinema are such that it is not possible to neglect their consideration. Many modern libraries are fully equipped with screen, projection apparatus, and a room for the storage and re-winding of films. So far as I am able to ascertain, the institution of this service has been, in most cases, an unqualified success.

### *Broadcasting.*

That section of public library work which deals with juvenile and adult educational interests may derive great assistance from broadcasting. Listening groups may be organized, the usual procedure being for the group to meet in a separate room of the library under the chairmanship of an elected "group leader". After listening to a broadcast talk or lecture, discussion takes place

and perhaps a vote will be taken to clinch the result of the argument.

For the convenience of adult study groups it may be advisable to provide rooms situated away from the general reading-rooms of the library, fitted with receiving and loud-speaking apparatus and having sound-proofed doors and windows.

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## CHAPTER II

### READING CENTRES AND DEPOSIT COLLECTIONS

THE smallest units of the municipal library organization are represented by "reading centres" and by the deposit collections of constantly changed volumes which are provided for the use of schools, social centres, clubs, and so on.

The reading centre will usually consist of a room expressly set aside for the purpose of a library, and administered by a member of the central library staff during certain hours of specified days of the week.

A deposit collection, on the other hand, may consist merely of a collection housed in a particular spot (usually under lock and key) for the use of a small section of the community—say for hospital wards, schools, or club rooms. Whilst periodic issues to and from the parent library will be supervised and checked (generally by an assistant specially detailed for the purpose), the actual administration and care of stock will frequently be delegated to a voluntary worker selected for that task.

#### MUNICIPAL BRANCH LIBRARIES.

The design and siting of branch libraries is a problem which deserves very careful consideration as on their "drawing power" may depend the success of the whole library system. Too often in the past has the branch library begun, like a sop thrown to neglected and disgruntled ratepayers on the outskirts of the town, as a mere adaptation of existing premises, originally designed for a different purpose and quite unsuited to fulfil the requirements of a library, both as regards the plan of the building and also the position it occupies in relation to the area which it is supposed to serve. One knows of libraries which have been "temporarily" housed in shops, offices, and domestic buildings, where the period of occupation has gone on and on so as to extend, eventually, over a long term of years. In such cases it is obvious that the difficulties of administration to be surmounted are very considerable.

The branch libraries which are described in the following pages have been selected mainly from the point of view of their interest

as regards plan layout judged from the architectural point of view and each example illustrates a completely different arrangement in the grouping of its units of accommodation. It is admitted that this method of selection has excluded many libraries which, to the librarian, are well worthy of inclusion on account of the excellence of the service facilities provided, but some method of selection had to be followed and the omission of many good examples is unavoidable. The spacious Norbury Library at Croydon is possibly an omission which will be noted particularly. This library possesses excellent "atmosphere" and servicing, but from the point of view of planning it was felt that it did not illustrate any particular departure from other typical examples described. The same remarks apply to the Rotherham Public Library, which may be referred to as one of the best examples in the country of an urban library to serve a town of a population of under 100,000.

The Norris Green Library, Liverpool (Plate I and Fig. 1), is illustrated as a plan type which demonstrates the way in which a corner site seems to lend itself to the convenient arrangement of branch library planning. Not only does the site give great prominence and accessibility to the entrance to the building, but the main lines of the plan, radiating from the corner with the layout of the lending library, tend to simplify the problem of easy staff control. Placed centrally, the service counter has direct supervision down the radially placed stacks of the fan-shaped lending library, and, by reason of the glazed screens provided in the division walls, observation of the reading-rooms is clear and unobstructed. In this connection it need scarcely be pointed out that, unless, as in this case, the shape of the room itself suggests a radial arrangement of the furniture, the placing of the stacks in this way will give a disordered effect to the interior—a case in which the librarian's desire for "supervision" may sometimes conflict with the architect's striving for internal architectural effect. Not that it is suggested for a moment that a general accusation of "supervision mania" may fairly be levelled at librarians. As one librarian expressed it to me, "I know that, owing to theft and wilful damage, I can each year write off a certain percentage of books. If I take excessive precautions it may be possible to reduce this percentage by as much as one-half. I prefer, however, to write off the full percentage as a dead loss rather than lose conscientious readers by introducing an atmosphere of suspicion into my library."

The Norris Green library provides a separate entrance for the

children and the librarian's room is placed well away from the public parts of the building.

Externally the building is finished in Jacobean sand-faced bricks

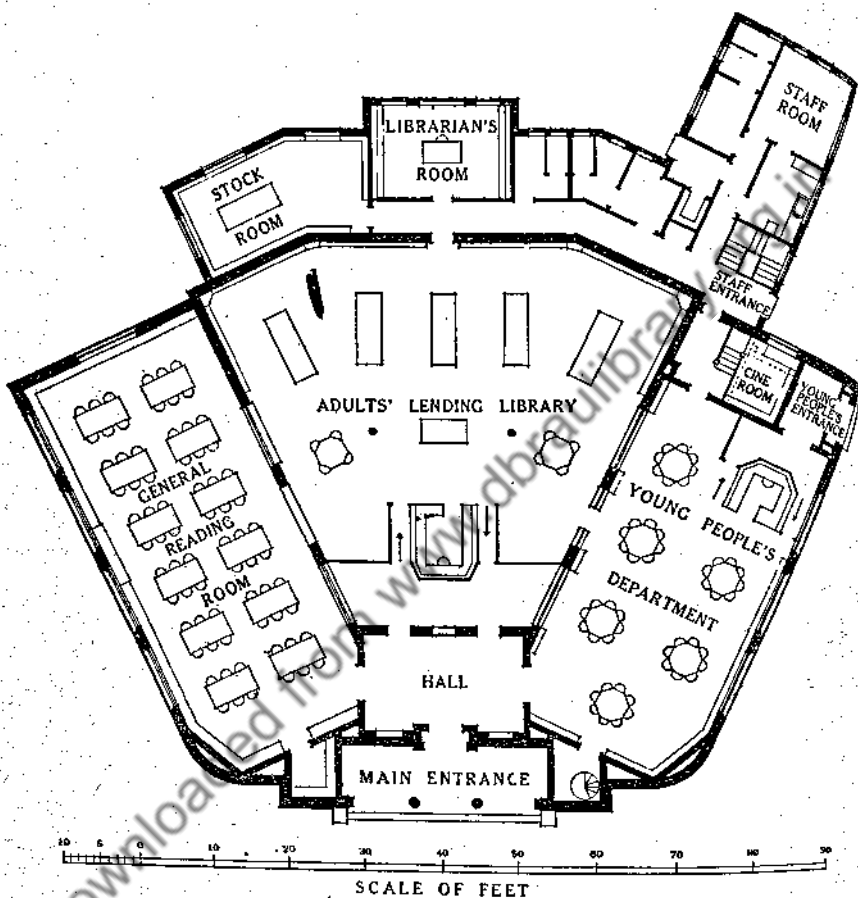


FIG. 1.—THE NORRIS GREEN BRANCH LIBRARY, LIVERPOOL.  
Ground-floor Plan.

By L. H. KEAY, O.B.E., M.A.R.C.H., F.R.I.B.A.

[By courtesy of the Chief Librarian, City of Liverpool Public Libraries.]

with ivory-coloured cement joints, the window surrounds and columns being of Portland stone.

At the St. Barnabas Branch Library, West Humberstone, Leicester (Fig. 2), the architects, Messrs. Symington, Prince & Pike, F.F.R.I.B.A., have virtually achieved all the advantages of the

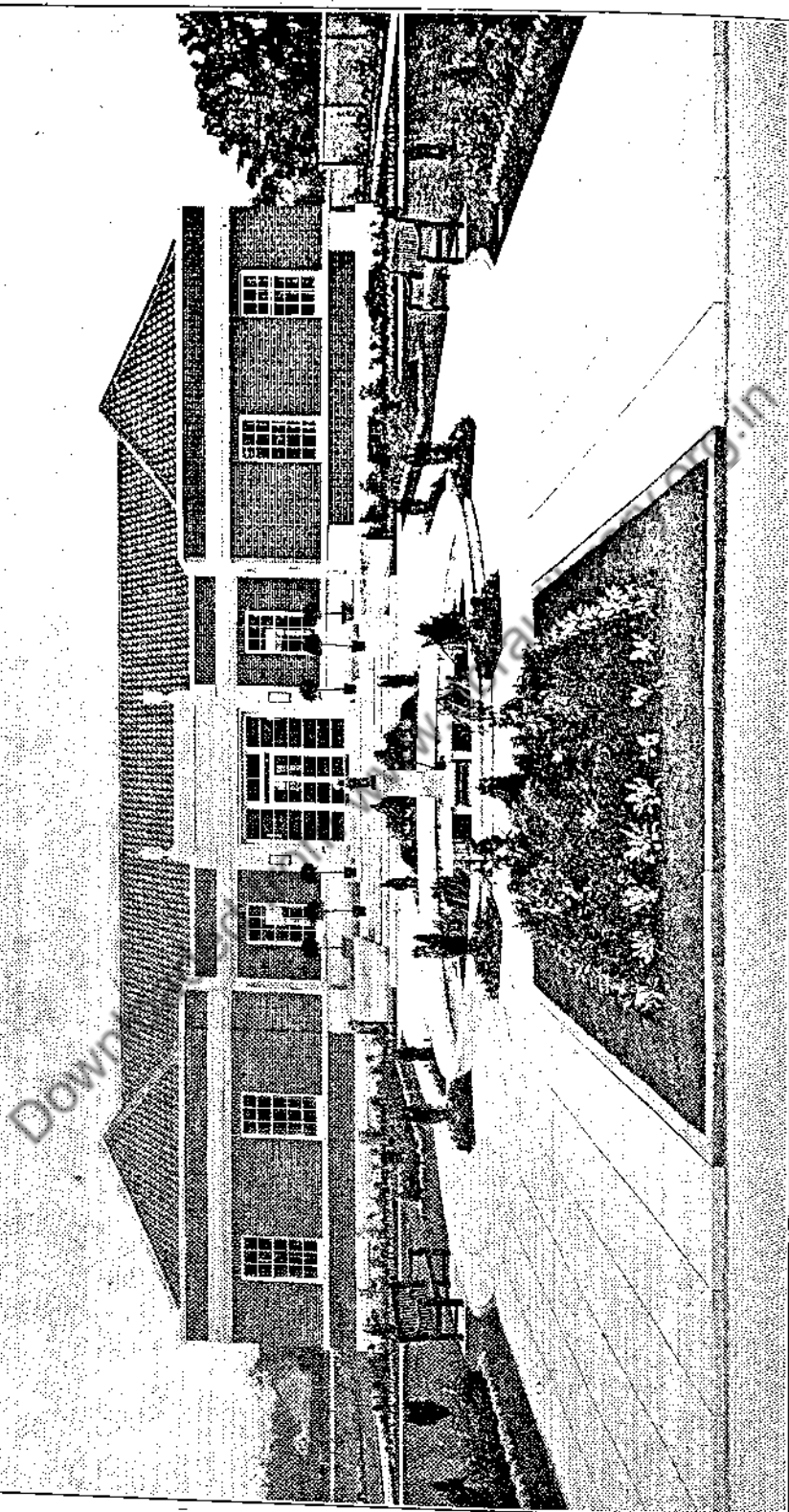


PLATE II.—WALLINGTON PUBLIC LIBRARY. (Front View.) By ROBERT ATKINSON, M. ARCH., F.R.I.B.A.





PLATE III.—WEIR HALL BRANCH LIBRARY AND CLINIC, EDMONTON. (Front View.)

By A. WILKINSON, A.R.I.B.A.

[By courtesy of the Librarian, R.I.B.A.]

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corner-site plan, but on a rectangular-shaped site fronting on to the main road. The circular lending department is treated as the major element of the plan, and, with its clear-cut and well-defined mass, pierced by long rectangular-shaped windows, successfully dominates the elevations.

One might suggest that a circular shape for the lending library (as opposed to a fan shape) results in a certain waste of floor space

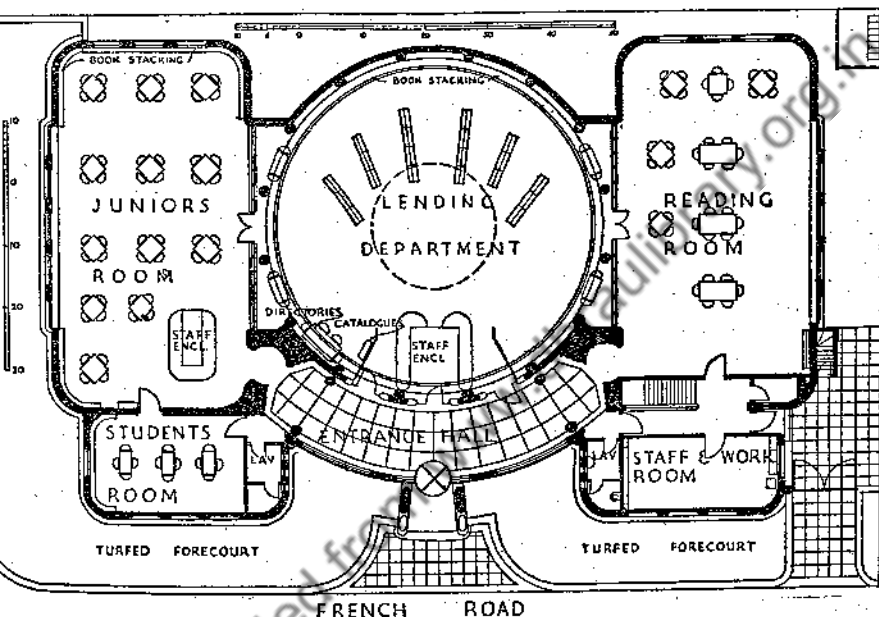


FIG. 2.—WEST HUMBERSTONE BRANCH LIBRARY, LEICESTER.  
Ground-floor Plan.

By MESSRS. SYMINGTON, PRINCE AND PIKE, FF.R.I.B.A.

[By courtesy of the Architects.]

round the service counter, and that a separate entrance for children (which could have been easily arranged) would be thought desirable by most librarians. The low windows of the entrance hall give an extremely inviting appearance to the front elevation and this is accentuated by the turfed forecourts bounded by low brick curb walls. Top light is provided to all departments.

The building is faced externally with  $2\frac{1}{4}$ -inch sand-faced Staffordshire bricks of an orange tinge, and stonework generally is of Empire artificial stone.

The circular type of plan is not easily applicable to lending libraries owing to this fact of the probable loss of floor space.

In a lending library the place for the service control counter is normally not in the centre of the room but at a point adjacent to the main entrance and exit openings—where supervision has to be maintained. Reference stocks present an entirely different problem of servicing which makes the circular plan eminently suitable—as may be seen at the British Museum Library, the Picton Reading Room, and many others.

Another library by Messrs. Symington, Prince & Pike is the Southfields Branch Library, which was completed as one of a group of Leicester branch libraries in 1939.

The general feeling of this design corresponds very closely to that of the West Humberstone library. Here again the circular lending library dominates the elevations, rising above the other departments and receiving light from a low-pitched dome and from clerestory windows arranged in the perimeter wall. The dome is concealed externally by a low parapet wall and internally by a flat lay-light set in a false ceiling under the dome.

The clover-leaf type of plan is very interesting and supervision is unobstructed by the glazed screens which divide the reading and junior departments from the central portion of the building.

Separate entrances are provided for each department. There are staff and students' rooms and a room is available for meetings.

Externally the plain brick surfaces give added expression to the bold and sweeping lines of the general massing of the plan units so that the whole effect is pleasing in the extreme.

The library at Wallington (Plate II), by Mr. Robert Atkinson, M.Arch., F.R.I.B.A., is reproduced as an example of a very charming combination of library and forecourt lay-out. The library entrance is given prominence by the use of a low podium and strongly defined flights of steps, whilst the spacious treatment of the approach lends an added dignity to the scholarly design of the building. This example seems to supply a strong argument, if such is needed, for the siting of libraries in parks and open spaces where advantage may be taken of the external amenities provided.

There is much to be said for the policy of combining the library with buildings erected for other forms of social service or recreation. To my mind the Weir Hall Branch Library at Edmonton (Plate III and Fig. 3) is an extremely interesting example of this type of development. Here the library, of simple design and of an attractive

and cheerful appearance, is combined with the medical clinic—surely a very happy service of both bodily and mental needs. In this example the building is set back from the main road, with a grassed forecourt intervening. The five windows of the reading-room, adjacent to the entrance and fronting on to the forecourt, are carried down to within two feet of floor level, so that the cheerful interior is clearly visible from the main road. Dropping the window-

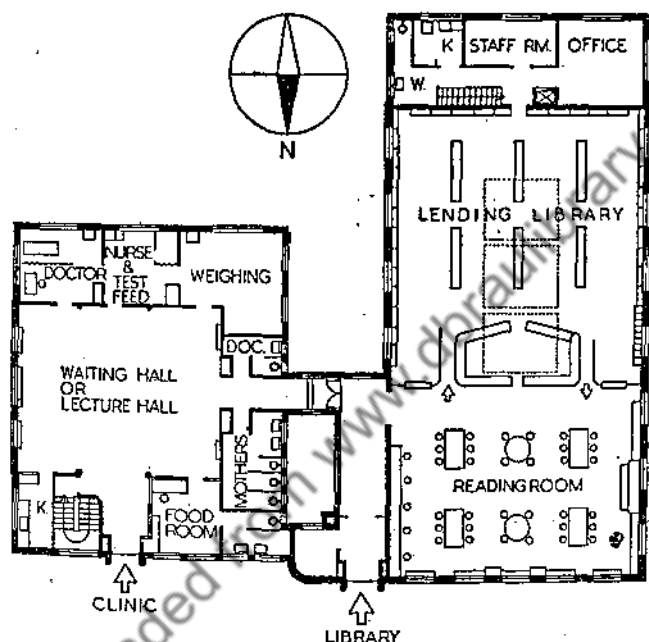


FIG. 3.—WEIR HALL BRANCH LIBRARY AND CLINIC, EDMONTON.  
Ground-Floor Plan.

By A. WILKINSON, A.R.I.B.A.

[By courtesy of the Architect and of the Secretary, R.I.B.A.]

sill level below the usual 6 ft. 6 in. height of the wall shelving is bound to sacrifice shelving space and often results in the ragged appearance of the reading-room interior, but in this particular case the result would appear amply to justify the means.

The Yardley Wood Branch Library (Fig. 4), opened in 1936, illustrates a logically thought out development of the radially arranged type of layout. This library was built after the recent erection of several other branches had provided opportunity for determining the essential requirements for which it was necessary

to make provision. These requirements were found to be rapid service, supervision, and economy. It will be seen that there is effective supervision, from the service counter, of all parts of the reading-rooms. The entrance is spacious, the news and magazine

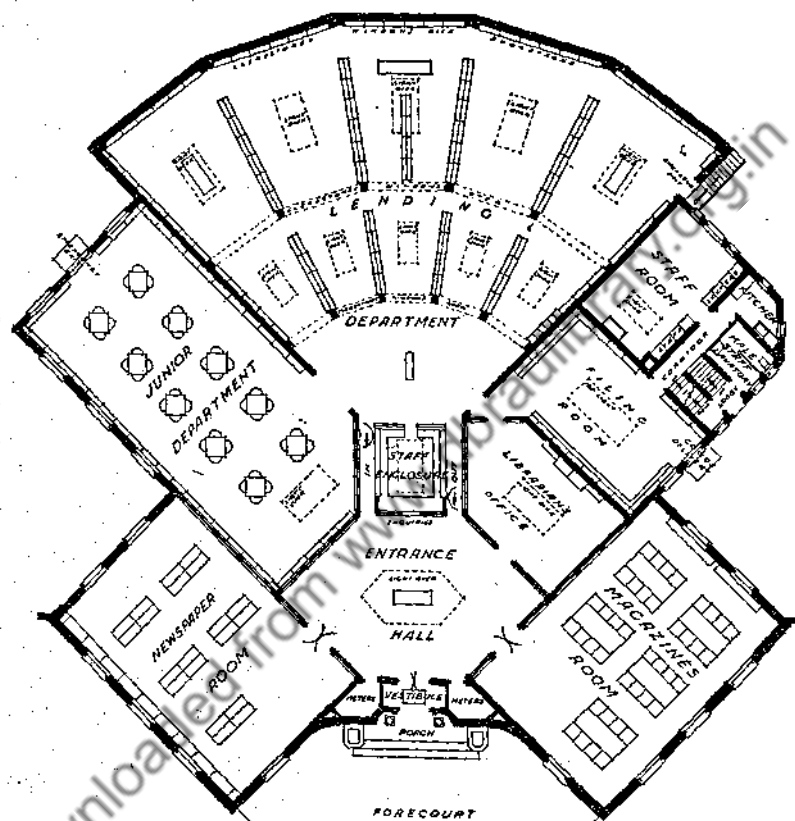


FIG. 4.—YARDLEY WOOD BRANCH LIBRARY, BIRMINGHAM.  
Ground-floor Plan.

By MESSRS. JOHN P. OSBORNE & SON, A.A.R.I.B.A.

[By courtesy of the Architects and of City Librarian, Birmingham.]

rooms conveniently accessible from the street, and the recessed arrangement of the outer wall line allows of the maximum amount of light being admitted to the interior of the building.

A charming intimacy has been achieved in the little one-room Belsize Branch Library, Hampstead. The plan shape is a rectangle, finished with a semicircular apse in which are five lofty windows.

These have long curtains falling to a low settee at window-board level, giving a feeling of spaciousness which is further accentuated by the informal arrangement of the few small reading-tables which are provided. Provision is made for juniors in a portion of the room, partially screened off from the general reading space.

Though largely an adaptation of existing premises, the Bethnal Green Library provides an excellent solution of the problem presented. The ground floor plan closely resembles that of the Birkenhead Central Library in the general arrangement of its various parts.

The lending library, with curved outer wall and shelving, measures 70 ft. by 47 ft., is of good proportions and arrangement, and amply lit by means of overhead lay-lights. To the right of the entrance hall there is a commodious juvenile department with separate entrance and divided into reading and lending sections. To the left is the newspaper room with a special table, provided for the use of ladies, pleasantly placed in a convenient recessed portion of the general news room.

Possibly the most interesting of the little group of branch libraries proposed and planned by the progressive Council of the City of Sheffield during the period 1924 and onwards to the outbreak of the second world war, is that erected at Firth Park, a pleasant suburb on the outskirts of the city boundaries (Plate IV and Fig. 5). The shape of the beautifully wooded site has allowed a triangular type of plan to be adopted, in which the lending library (2300 square feet in area) is placed centrally, flanked on the one side by the reference study room and the junior department and on the other side by the general reading-room.

A staff work room is placed over the entrance hall, where it has complete oversight of the reading-rooms. Children make their entrance direct from the main porch without having to pass through any part of the adult departments. A flood-lit exhibition case provides a point of interest in the main entrance hall and flood-lighting is also provided from sources concealed behind the entrance gate piers, so that the façade may be illuminated after darkness has set in.

In spite of the overpoweringly heavy superstructure which seems to threaten to crush the rather charming and delicately detailed columns of the entrance portico, the evening effect of the light-bathed front with its background of green foliage is delightful and most attractive to the passer-by in the main street.

Internally all rooms have a dado of glazed tiles—which have proved to be most agreeable in appearance and most economical from the point of view of labour saving. Radiator heating is provided in the main reading-rooms and one might suggest that the

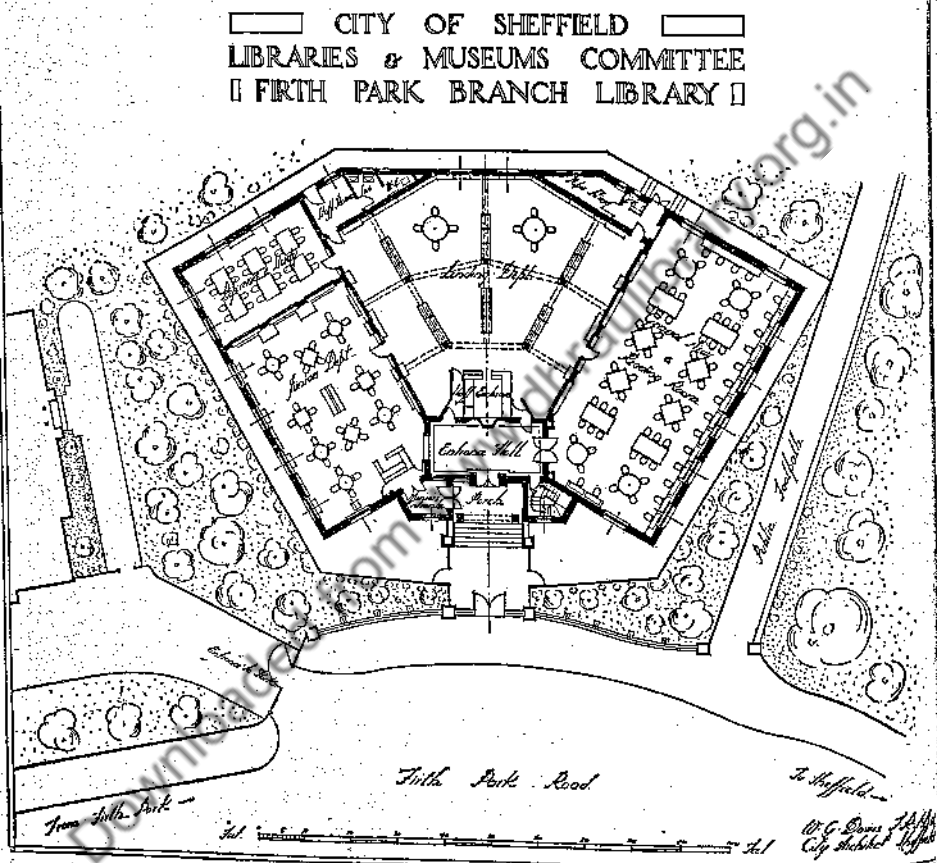


Fig. 5.—FIRTH PARK BRANCH LIBRARY, SHEFFIELD.  
Ground-floor Plan.

By W. G. DAVIES, F.R.I.B.A.

By courtesy of the City Librarian, City of Sheffield Public Libr.

extra cost of concealed panel heating is usually more than justified by its elimination of such unpleasant and dust-harboring obstructions.

In the junior department linoleum has been used to protect

the bases of the reading-tables from the scratches of carelessly placed little feet. As in all the Sheffield branches, particular care has been lavished on this department and all the furnishings and decorations have been carefully thought out.

The Percival Leigh Branch Library, Cross Gates, Leeds (Fig. 6), was officially opened to the public in December, 1939. The five-year programme for the erection of branches which had been prepared by the Leeds Libraries and Arts Committee was unfortunately interrupted by the outbreak of hostilities in 1939. This comprehensive programme was to provide for small libraries where the area to be served was curtailed by the fact of the site being situated in one of the narrow valleys which are a feature of this district, and large libraries where the site was flat and so could conveniently serve a bigger area. The largest of these branches, and one which has been designed to provide for an expanding population which will eventually reach a total of about 60,000 persons, is the Percival Leigh Branch Library, which it was found possible to complete after the third month of the war.

The library, which is conveniently placed adjacent to an important road junction and traffic circus, is a one-storey structure the floor of which is elevated three feet above ground level in order to give prominence to the otherwise rather low proportions of the 165-ft. length of the front façade. This façade is faced with 2-in. hand-moulded sand stock bricks of a brownish tint. The grouping of the elevational masses is very pleasing and the long windows of the junior and reading-rooms, reaching almost to floor level, give that inviting appearance which is so desirable in a library of this type.

Internally there is an impression of space and ample room for the future expansion of the stock which has obviously been anticipated. Additional light has been provided to the main rooms by the arrangement, in the ceilings, of sixty-five circular dome lights set in the flat concrete roof and rather reminiscent of Alvar Aalto's treatment of the ceiling in his little library at Viipuri, in Finland (Fig. 18).

The main entrance hall forms an impressive feature of the plan. It measures 50 ft. by 20 ft., gives access to the three main departments of the library and is furnished with illuminated bronze display cases, notice board, and commemoration plaque.

To my mind, and this is purely a personal opinion, the use of black-fluted and silvered rough-cast glass for the wall linings of



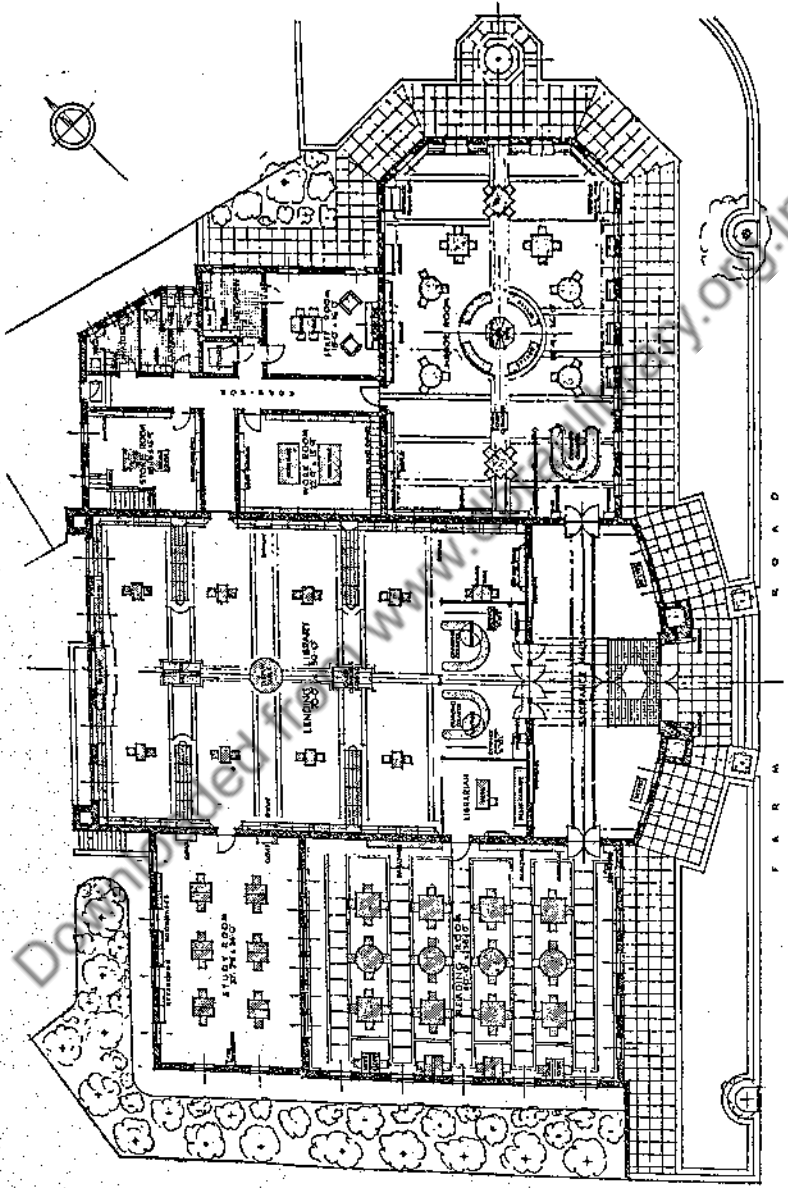


FIG. 6.—THE PERCIVAL LEIGH BRANCH LIBRARY, CROSS GATES, LEEDS. BY C. CASTLELOW, A.R.I.B.A.

Ground-floor Plan.

By courtesy of the Secretary, The Library Association.

this hall is hard to justify in a library. The building is thereby too apt to be definitely "dated" and the use of such finishings is dangerous in that the character of a cinema or rather "flash" type of restaurant is only too liable to predominate.

The lending library, 70 ft. by 50 ft., will accommodate 10,000 volumes, and a unique feature of this room is the service by means of circular turntable charging desks inside two horseshoe-shaped counters. Two entrance services are thus provided, one for surnames A—M, the other for surnames N—Z. The disadvantage of the turntable charging service has been held to be that there is no room for expansion when once the table is full, but here the anticipated increase has apparently been carefully thought out and due allowance made so that the result is held by the librarian to be entirely satisfactory. Lending library fittings are of Indian silver greywood and Indian laurel, and interchangeable title plates in attractive plastic lettering are arranged over each book tier.

The reading-room measures 50 ft. by 38 ft., provides eight news slopes for seated readers, periodical racks, and tables for forty-eight readers, arranged four to each table. Fittings and panelling are in English oak.

The junior room, with wall shelving for 2000 volumes, is divided into two sections, of which one comprises the open-access lending library and the other the reading section. In the centre of the room is a specially designed fitting for the story-telling period which is a feature of this library, in common with most others where importance is attached to the interests of the little people. This fitting comprises a central electric fire surrounded by a circular settee with seating for twenty children. Mural paintings, by a local artist, Mr. Edward da Lister, adorn the two longer walls and portray scenes from the better known children's classics. Fittings are in Australian silky oak.

A study room, separated from the reading-room by a screen wall, provides double study desk-seating for twelve readers and book shelving to carry a stock of 350 reference volumes. The fittings and panelling here are in English walnut.

The library throughout is heated from a basement boiler fired by an automatic stoker and burning coal beans. Panel heating is installed, working on the low-pressure accelerated hot-water principle.

Woodwork is all of its natural colour, being merely wax-polished. Linoleum, laid to pattern, is the floor covering in the principle rooms and entrance hall, whilst staff lavatory and entrance vestibule are tiled.

## CHAPTER III

### MUNICIPAL CENTRAL LIBRARIES

THE factors which govern the requirements of a central library will differ considerably in each individual town or city and depend not only on the type and inclinations of the public served, but also on the nature and extent of other educational facilities provided in the vicinity.

As an example of this "suitability to environment" one may note that in the case of the Sheffield Central Library the manufacturing interests of the city, which are essentially concerned with the steel and cutlery trades, have called for representation in the form of a very large library room devoted exclusively to commercial, scientific, and technological works. At large central libraries, such as Sheffield and Manchester, the arrangements for the receipt and dispatch of books are of such importance that special loading bays, where books may be received or discharged under cover, have been considered a necessity. Similarly, in the case of a district particularly rich in historic, architectural, or geographic interests, the library will certainly be made a storehouse of such local records as pertain to these subjects. It is in fact impossible to select any particular library building and to say "Here is the perfect and typical example of the ideal solution of the central library problem"—each city presents its own problem, which is, of course, only capable of its own individual solution.

The libraries which are described and illustrated in the following pages have been selected as demonstrating widely varied types of programme requirements with a corresponding difference in design solution. It has been thought desirable to describe each building in some detail as regards its planning, services, and constructional arrangements, and to offer criticism or comment on such features as seem worthy of note.

The selection of the most suitable type of heating, the most easily cleaned finishings, hard-wearing floor coverings, and so on, are matters so vital to the successful running of a public building required to withstand hard usage over a long period of time, that

brief notes of the methods adopted in recently erected libraries seem worthy of inclusion.

It will be noted that, of the libraries illustrated, those at Birkenhead, Sheffield, and Manchester were all opened to the public in 1934. The ten years prior to the second world war saw a tremendous impetus given to the library movement, particularly in the north of England, and in addition to the municipal examples here described, attention might also be directed to libraries of other types which were being developed simultaneously. Of these, the University Library at Cambridge, the Brotherton Library at Leeds University, the National Library of Wales at Aberystwyth, the Radcliff Science Library at Oxford, and the University Libraries at Manchester and Liverpool, are probably the most outstanding examples.

The increased attention which was being given to library services during the above-mentioned ten years may not be entirely explained by the facts of the increased number of publications, the removal of the rate restriction, or a greater thirst for knowledge on the part of the general public. Social factors also enter into this question. People no longer live in large-roomed houses fitted with massive bookcases containing bound volumes of encyclopedias and other bulky works of reference. The modern flat or corporation dwelling contains little space for the storage of articles which are only used occasionally—even works of fiction, except in the homes of real book-lovers, will probably be found to be obtained from the nearest circulating library. It has therefore become essential that facilities for quick and easy reference to up-to-date works on every conceivable type of subject should be made publicly available, and that the supply of fiction should be ample, including, in addition to the popular "best seller", classical and other works of a high intellectual standard.

#### HENDON CENTRAL LIBRARY.

The illustrations reproduced on Plate V and Fig. 7 show a library (by Mr. T. Millwood Wilson, F.R.I.B.A.) of great civic dignity and charm yet with a simplicity of character which well expresses the purpose for which the building is intended to be used. The exterior does in fact, conform to the general treatment of other official buildings which flank the library on either side.

The plan follows orthodox lines, with a central lending library of an area of 2160 sq. ft. furnished with radiating book stacks 7 ft. 6 in. high. The shelves have a carrying capacity of 17,000

volumes and are equipped with strip lighting along the tops of the uppermost shelves. At rush hours there is a good deal of congestion behind the barrier rails in the "IN" service counter, and with the ample entrance hall and effective draught-excluding vestibule doors, it would be worth while considering bringing forward the service counter to the line of the main screen wall so that queues would form in the actual entrance hall itself.

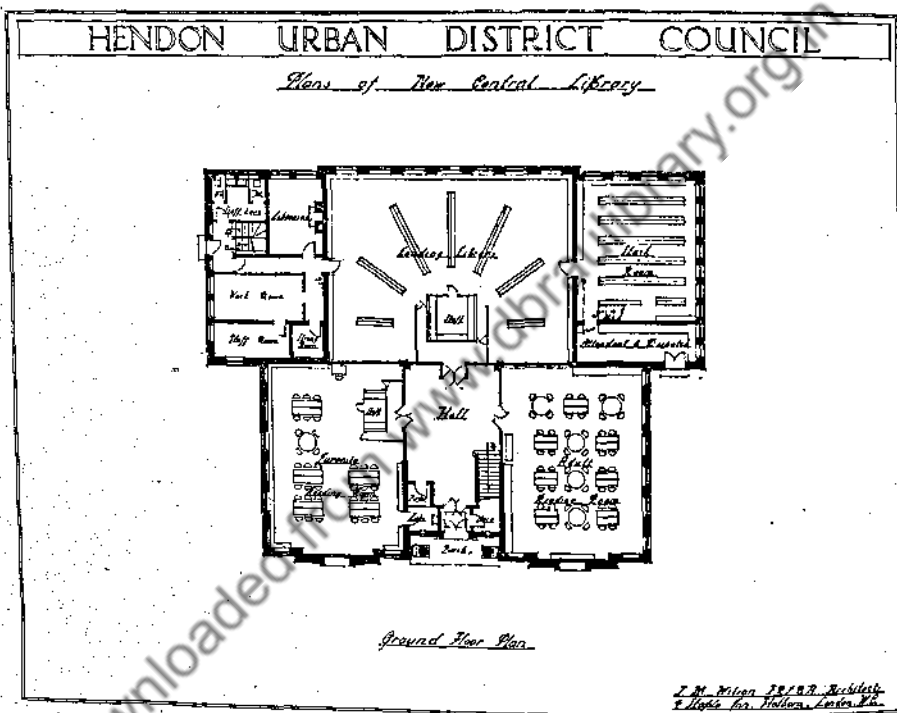


FIG. 7.—HENDON CENTRAL LIBRARY. By T. M. WILSON, F.R.I.B.A.

Ground-floor Plan.

[By courtesy of the Librarian, Hendon Central Library.]

Flanking the lending library are staff rooms and offices on the one side and stack rooms (28,000 volumes) on the other side. The stack room height contains two tiers of steel stacking with glass gangways between the tiers and with a connecting stairway—which, for greater convenience, might well have been carried up to the filing and work room above. Also on the ground floor are the junior library (2000 volumes, seating for forty readers,

and a lavatory recess fitted with wash-basin—a very useful provision) and the general reading-room with seating for forty-eight readers.

On the top floor are the reference room (4000 volumes and with seating for thirty-two students), the lecture room (seats for 140 persons), the filing room (also used as a work room), and the caretaker's flat.

Wood-block flooring is laid to the floors of the reading-rooms, whilst the entrance hall is of Travertine tiles with non-slip strips in between.

When it was completed in 1931 this library was very generally quoted by librarians as being an example which very nearly approached the ideal of what a conveniently planned library should be. I had heard great accounts of the building from several librarians and was not disappointed when I had the opportunity to visit it.

#### ST. MARYLEBONE PUBLIC LIBRARY.

The provision of a library to serve the needs of an ancient and important Metropolitan Borough such as is St. Marylebone calls for the solution of rather unique problems. Here is a restricted area, rich in associations and reminders of the great periods of Wren and the Adam Brothers. In this densely populated area the people are housed vertically rather than horizontally—or, in other words, they are living in flats and not in bungalows. Hence the library services must be concentrated at one point (the Marylebone library has no branches), must be of a high standard of perfection and be housed in a building of such civic dignity as will harmonize with its surroundings and of such scholarly design as will conform with the historical antecedents of the neighbourhood. Although the Marylebone library forms only a part of the building in which it is housed, yet one may say that all requirements of its setting have been fully realized.

The new building (Fig. 8) (which was opened in May 1940) is an extension of the existing Town Hall, to which it is linked by a bridge at second-floor level. Accommodation provided includes the public library, public health department, general extension of the Town Hall services, and three committee rooms at second-floor level.

The public library forms the main element of the plan, is placed symmetrically on the major axis and is approached direct, by steps, from the great thoroughfare of Marylebone Road.

The lower ground floor contains the children's library, with access by means of a downward flight of steps from a side entrance in Upper Montague Street. Ample side light is available from a

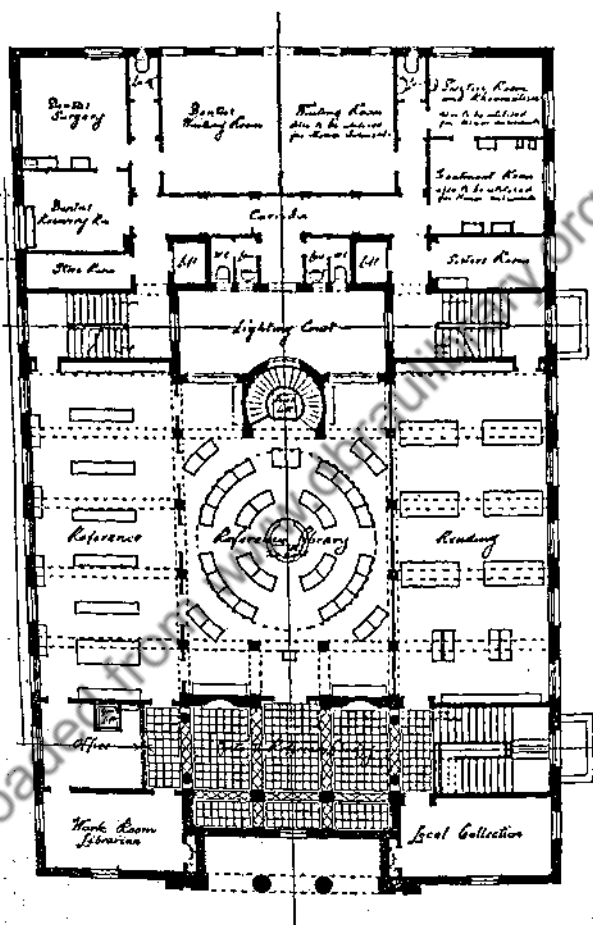


FIG. 8.—ST. MARYLEBONE PUBLIC LIBRARY.  
First-floor Plan.

By SIR EDWIN COOPER, R.A., F.R.I.B.A.

[By courtesy of the Architects and the Librarian, Marylebone Public Library.]

five-foot wide area extending along the Upper Montague Street front, and much thought has been expended on the amenities of this particular department. There is a projection room for lantern talks. All fittings are movable and on casters so that the room

may be cleared in a very short space of time and seating provided by means of stackable metal chairs—for the storage of which space is provided under the main entrance hall. No washing facilities are offered as it has been found more salutary to send children home if their hands do not pass the test of inspection. The little blow to pride inflicted by this procedure will most likely ensure that it does not happen a second time, and when the area is so thickly populated and homes consequently so near at hand, this seems a right solution of the problem. If facilities are there it is certain that they will be taken advantage of, and extra labour in library servicing will result. On the Town Hall side of the building there is a ramp down for perambulators and storage space is allowed for these. Another interesting innovation is a low desk and bench, placed just inside the entrance to the children's library, where "toddlers" may be left under supervision of the service counter attendant—a collection of rag books is available for their delectation. The remaining portion of this lower ground floor is mainly devoted to stack storage and there is further stacking space at basement level, under the central portion of the building.

At ground-floor level the entrance hall, with oak-lined walls and polished stone and marble paving, gives access to the main lending library, which occupies the full width of the building.

The reference library and reading-room repeat, at first-floor level, the shape of the lending library below, and over the central portion of the reference library a low plaster dome suggests, in its period decoration, the traditional style with which the neighbourhood is so closely identified. The predominating wall-finish in the reading-rooms is panelled oak with floors of Rhodesian mahogany blocks, and stairs are of oak or of green granolithic-finished concrete.

The general heating of the whole building is by means of the low-pressure radiator system, supplied from a 5-inch take-off from the electrically heated boilers of the Town Hall itself. There is a small system of duct-work supplying ventilation to the smaller rooms and three extract fans are situated at roof level, but one has the feeling that the central portion of the building, in particular, is under-ventilated. I should imagine that the reference library would be stuffy during the summer months, though I have not actually had experience of it at this time.

The Marylebone Town Hall was the outcome of an architectural competition held some thirty-odd years ago and won by Sir Edwin Cooper, R.A., F.R.I.B.A. The design, at the time of



the award, attracted much attention in architectural circles and this later extension, carried out in a similar style and built of stone to match up with the existing work, forms a fitting sequel to a great municipal enterprise.

#### BURNLEY CENTRAL LIBRARY.

The Burnley Central Library, designed by the Borough engineer, Mr. Arthur Race, was opened to the public in July 1930.

The two-storied building is steel-framed, faced externally with Darley Dale stone, and the outside appearance is decidedly heavy and monumental, particularly as regards the treatment of the main entrance portico and its superstructure. One feels that in the front elevation too much has been sacrificed to monumental effect—the single windows of the two side walls seem to owe their presence to this preoccupation and more window area would certainly be desirable from the point of view of internal amenities. The fenestration of the side elevation is much better in spacing and consequently in appearance.

Internally the whole of the basement area (6950 sq. ft.) is devoted to book storage, and lifts serve from this level to the floors above.

The ground floor is approached by steps from a forecourt, the steps giving access to the entrance hall by means of a circular revolving door. The librarian's room is conveniently placed at the side of the entrance vestibule and on the other side, steps lead up to the first-floor hall and library.

The lending library is slightly tapering in shape, measuring 58 ft. long by an average of 44 ft. wide, and is lit from above by means of a barrel-shaped glass roof placed over the central portion of the library. Wall and island book-shelves provide a carrying capacity of 30,000 volumes. Plate-glass screens in the division walls give oversight, from the service counter, of the departments on either side of the lending library. On the left of the main entrance hall is the children's library (47 ft. by 27 ft.) and behind this is a music library (27 ft. by 23 ft.) in which the volumes are stored flat in uniform-sized cases, four or five volumes to a shelf. To the right of the entrance hall is a ladies' room and behind this, approached by a very inadequate passageway, the magazine room. The projecting portion of the library at the back of the ground-floor and first-floor plans, is largely given up to stairs and a central entrance from the back street. One would suggest that central



PLATE IV.—FIRTH PARK BRANCH LIBRARY, SHEFFIELD. (Front View.)

By W. G. DAVIES, F.R.I.B.A.

[By courtesy of the City Librarian, City of Sheffield Public Libraries.]

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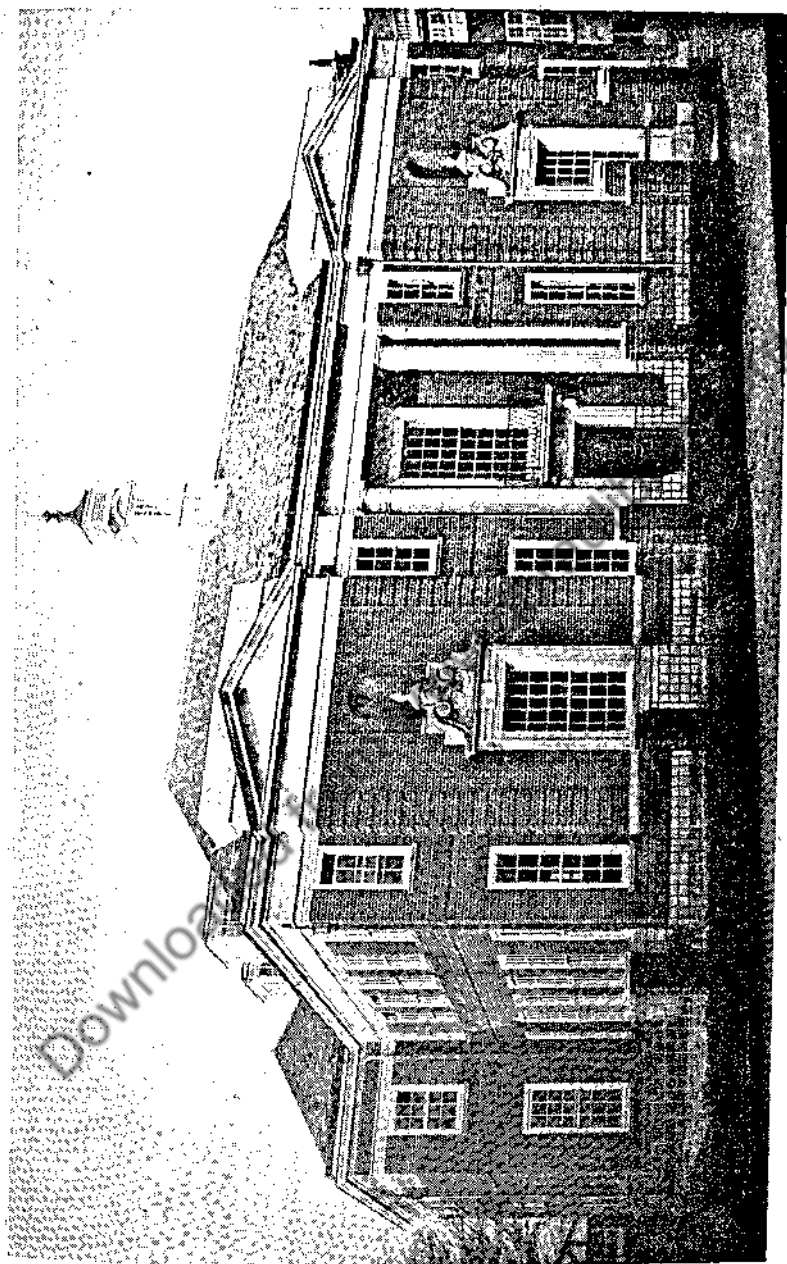


PLATE V.—HENDON CENTRAL LIBRARY. (Front View.)

By T. M. WILSON, F.R.I.B.A.

[By courtesy of the Librarian, Hendon Central Library.]

entrances from the streets on either side of the building would improve the servicing of both children's library and magazine room, would obviate the need for the magazine room passage and free the back of the lending library so as to allow of the provision of a useful amount of direct light from windows which could be introduced in the wall over the book-shelving.

On the first floor the reference room (top-lit so as to prevent the distraction of external noises) is balanced by a similarly placed and top-lit exhibition hall. Tables in the reference library are of three types: (1) flat for large books, (2) sloping, with centre rail for general use, and (3) students' tables for two readers. The shelving provides for a total of 8000 volumes and island stacks are on roller bearings so as to be easily movable. The library is heated by means of the low-pressure radiator system and lighting is supplied from pendant fittings—no desk lights are provided.

## THE COUNTY BOROUGH OF BIRKENHEAD.

### *Characteristics.*

Birkenhead is situated on the south-west bank of the river Mersey, immediately opposite to the great seaport of Liverpool, with which it is connected by tunnel, tube, and ferry. The trade and cultural activities of the two cities are closely interwoven, and as regards the latter, Birkenhead is well within the orbit of the University of Liverpool and of the important group of libraries, art galleries, and museums which serve that city.

Of industrial activities, by far the most important are those connected with shipbuilding, engineering, and the sea-going trades.

THE BIRKENHEAD CENTRAL LIBRARY (Litho. Plate No. 1) which was the subject of an architectural competition, was opened to the public in 1934. The library occupies a commanding site in Borough Road, with its entrance set well back from the traffic route and with short flights of approach steps giving an added dignity to the rather massive scale of the severely classic entrance portico.

The building consists of two principal floors with a subground floor below. The accommodation provided includes lending, reference, and children's libraries, a magazine room and lecture room.

The lending library, which is one of the largest in the country, has accommodation for 46,000 volumes. It is approached direct from the entrance hall and forms the main feature of the ground-

floor plan. The back wall of the lending library is built in a long, shallow curve, with continuous book-shelving no less than 240 ft. in length extending round the back and side walls, and with the enclosed floor space occupied by island stacks radiating from a central service counter. The lighting and general effect of space in this department are extremely good, but it is a pity that it was decided to re-use the existing shelving for the island stacks. These are of the old-fashioned standard metal type, 7 ft. 6 in. high—a height which obstructs observation and completely spoils the ordered appearance of the room.

On the left of the entrance hall is a lecture room to seat 130 persons—this is at present adapted for use as a staff work room.

To the right is the magazine room with accommodation for 100 readers.

The children's library, situated at subground-floor level, carries a stock of 8000 volumes and is provided with a separate entrance. At this level also are the filing, stack, and work rooms, the heating chamber and the goods entrance.

The floors of the lending and children's libraries are of hardwood blocks.

On the first floor is the reference library, with adjacent stack room accommodation for 55,000 volumes. Also on this floor, but to the left of the entrance stair landing, are the librarian's room, cloaks, ante, and committee rooms.

For heating the building an automatic oil-burning plant was installed, but owing to the increase in the cost of oil fuel this has been replaced by a gas-fired boiler. The building generally is warmed by the invisible panel pipe system.

Time is recorded in the various departments by means of electric clocks.

Internally, the entrance hall forms an imposing feature, with its floor and columns of grey and golden Travertine and its richly coffered plaster ceiling. The treatment of the lending library ceiling is worthy of note. Natural illumination is provided through hipped lanterns with lay-lights of obscured glass below. Over these lay-lights are suspended powerful electric lamps for night use. Each of the eleven lanterns is fitted with electrically controlled opening side casements, which exclude or admit fresh air by means of ducts between the lay-lights and the lanterns. Each electric motor may be controlled independently from the staff enclosure.

I always feel strongly that in a library, perhaps more than in

most buildings, it is incumbent on the architect to do his utmost to beautify his building by making it a permanent record of the best examples of contemporary art, sculpture, and other arts or crafts which are available. If artists of sufficient note are obtainable locally, then so much the better—a further source of civic pride will be provided. At Birkenhead the architects (Messrs. Gray, Evans, and Crossley, A.A.R.I.B.A.), have been particularly fortunate, and the various pieces of sculpture embodied in the design of the building bear testimony to the skill of the Liverpool sculptor, Mr. Tyson Smith.

Externally, the building is faced with Portland stone, the main feature of the front elevation consisting of the two massive Doric columns which run through two stories in height and which, with their surmounting entablature, surround and lend emphasis to the main entrance doorway.

## THE COUNTY BOROUGH OF HUDDERSFIELD.

### *Characteristics.*

Huddersfield rose to prominence with the introduction of the woollen industry in the seventeenth century, and now ranks as one of the chief centres of the wholesale clothing trade.

There are also silk, cotton, and spinning mills, and quite extensive heavy engineering interests. The Technical College, affiliated to the university of Leeds, has a high reputation for instruction in subjects concerned with the woollen trade and its processes. This college, which has recently been enlarged, is about three hundred yards distant from the new library.

Huddersfield abounds in musical, dramatic, and other societies, the standard attained by the former being of a particularly high order.

THE HUDDERSFIELD PUBLIC LIBRARY (Litho. Plate No. 2) was opened in October 1939. It faces on to Ramsden Street, with its frontage set back 25 ft. from the general building line; a set-back which has permitted of a spacious treatment of the main entrance steps being adopted.

A fall in the level of Ramsden Street has allowed of access being gained from the side street to a paved courtyard extending under the main entrance steps and across the front and west side of the building. Access may thus be had from the paved court to the lower ground floor and to the children's library and newspaper

room—departments which it was deemed desirable to isolate from the other reading-rooms of the library. Separate staff and goods entrances are provided at the rear of the building, where also are placed the fan, fuel, and switch rooms, and, in a sub-basement chamber, the heating and vacuum cleaning plant.

Stack rooms are symmetrically placed, with book lifts serving to departments on the floors above. The floor-to-floor height of the stack rooms is 13 ft. 6 in. Another 2 ft. of height would have allowed for two full heights of standard stacking (with intermediate floor) to be provided, the stack standards supporting the floor above, with a consequent economy in the section sizes of upper ground-floor beams. Although, at the time, the amount of stacking provided was held to be sufficient, I regret that an opportunity to increase the stacking capacity was lost.

Also at lower ground-floor level is a hall, approached either directly from the entrance hall above it or alternately from the vestibules of the children's and newspaper departments. The hall was designed for special displays of selected works, for lectures, and for the meetings of approved study groups or societies.

The lending library (Plate VII), with accommodation for 20,250 volumes, forms the main feature of the upper ground-floor plan. Opening off the lending library are an extensive music library and a special library, where are housed the collections of several local professional societies. The librarian's office and the committee room are placed adjacent to the main entrance hall, whilst at the back of the building is a spacious work room for the use of the staff.

On the first floor is the reference library, with provision for thirty-four readers at individual desks, and with wall shelving to accommodate 5000 volumes. Adjoining the reference library are the patents room and the local collections room, the walls of the latter being lined with glass-fronted bookcases containing selected works of particular local interest. The main reading-room provides seating for eighty readers at the tables, and adjacent to it is a separate ladies' room fitted with news slopes, periodical rack, and reading-tables.

Four study rooms, for the use of such members as are engaged in a course of intensive reading or research, are situated on the first-floor landing.

Provision is made for a staff kitchen, a dining-room, and the necessary cloakrooms and lavatories.

The second floor is devoted entirely to the functions of an art gallery, and receives natural light from above by the top-side-lighted method. Continuous trough reflectors with electric bulbs space at 12-inch centres are installed for the purpose of night-time illumination. The central panel of the gallery ceiling has been kept at the level of the underside of the main cross girders, thus giving an unbroken level throughout the length of the gallery. In wide galleries where the cross beams are of a deep section a very discordant note is struck if the heavy cross beams are allowed to protrude downwards and thus cut the gallery into definite bays. Space is allowed for the handling and storage of pictures and statuary, and a large-size sink is provided for the washing of marble busts, etc.

General heating is provided by four coke-fired sectional boilers fitted with overhead gravity feed hoppers. Rooms are heated by means of the low pressure and temperature accelerated hot-water panel system, the pipes being embedded in the ceilings of all rooms.

Particular attention has been paid to the layout and switching of electric light points and special louvred 4-point box fittings have been designed for the principal rooms. In reading-rooms a general light intensity of 12-foot candle power at desk level has been provided, but where there are individual desk lights, as in the reference and newspaper rooms, the general light intensity of the room is reduced to 8-foot candles. External-flood-lighting points are accommodated in recesses formed in the front boundary wall. An emergency system of lighting is provided in case of a failure of current. The wiring is on the balanced three-phase system, the circuits being run in welded screwed steel conduit embedded in  $2\frac{1}{2}$ -in. concrete screeding over hollow-tile floors.

In view of the divergence of conditions in the art gallery and in the library proper, two separate and distinct systems of ventilation are provided for these departments. The main inlet vent duct circles the outer walls at subfloor level and serves to contain all pipe mains—to which access is gained by means of doors at suitable points. Similarly the main extract duct circles the centre stack room walls, and from these two mains, vertical rising ducts, constructed in the thickness of the walls, communicate with the floors above. This arrangement is more fully described in Chapter VI, and is illustrated on Litho. Plates Nos. 11 and 12.

The floors of all reading-rooms are covered with  $\frac{1}{4}$ -inch thick cork carpet, whilst those of the art galleries and the central area



of the lending library are laid with  $\frac{1}{2}$ -inch cork tiles set in mastic. The children's library and reading-room (both of which are on the solid) are laid with 1-inch hardwood blocks, the stack rooms and staff corridors being finished in grano treated with silicate of soda. To facilitate the cleaning of the white glazed brick walls of the central area, a light traveller and hoist is provided, spanning the area and working along tracks set in the tops of the side coping walls.

The general equipment of the building includes vacuum-cleaning plant, internal telephones, electric clocks, and lifts for the accommodation of passengers, goods, books, and pictures.

Internally, a simple, easily cleaned treatment of plaster decoration and wood fittings has been adopted throughout. The entrance hall is lined with San Steffano marble, with Swedish Green skirtings and a chequered paving of Bianco del Mare. The central area of the lending library is emphasized by a treatment of clear-cut fluted columns of Swedish Green marble. In the children's library the inner wall is brightened by a series of mural frescoes illustrative of local legends. For the design of these frescoes a competition was organized through the auspices of the Principal of the Huddersfield School of Art, and the work was carried out by the successful contestant, Mr. C. R. Napier.

In the art gallery section the picture-hanging space is lined with tongued and grooved boarding fixed to battens and covered with selected fabrics, horizontal metal slots being provided for the easy alignment and hanging of the pictures. The double turnstiles at each side of the gallery landing are of a type which comprises a three-arm barrier rotating on an inclined axis so that the arms move downwards as they rotate and thus make it possible to reduce considerably the working width as compared with that required for the old circular rotating type turnstile. By a slight adjustment the turnstile may be made recording or non-recording and may be fixed so as to work in either direction.

No binding or repairing rooms are provided in this library, these works being carried out locally by contract.

Externally, walls are faced with Crosland Moor stone, a very hard local Yorkshire grit-stone (Plate VI).

Flanking the main entrance steps are two large-size sculptured figures, symbolical of the Spirits of Literature and Art. These, and the low-relief panels between the first- and second-floor windows of the front elevation, are the work of Mr. James Woodford, R.A.

## THE CITY AND COUNTY BOROUGH OF SHEFFIELD.

*Characteristics.*

So intimately is the name of Sheffield connected in the mind with the finest products of the steel and cutlery industries, that mention of this part of the city's activities is largely superfluous. In this connection, however, it should be noted that the concentration of heavy steel industries along the banks of the river Don has resulted in the city becoming congested within a series of steep-sided valleys. Suburban expansion is therefore difficult, and the scheme of city development which is now being followed consists in the formation of a number of small outlying satellite towns, crowning the slopes of the hills around, and connected with the central areas by means of fast tram and bus services. The fact that these towns are to be largely self-contained units has resulted in the very excellent group of branch libraries which now serve the area. As the planning of several of these branches immediately preceded the construction of the Central Library, it was found possible for many experiments in fittings, floor furnishings, lighting effects, etc., to be tried out on a small scale before incorporation in the larger scheme, and this preliminary experimental work proved of much value.

The Applied Science Department of the University of Sheffield, together with the facilities offered by the steel and cutlery works, draw students from every part of the globe for study and training. The technical and engineering departments of the public library are of corresponding importance, and it will be noted that generous allowance has been made for research in all branches of these sciences.

THE SHEFFIELD CENTRAL LIBRARY AND GRAVES ART GALLERY (Figs. 9 and 10) was opened to the public in July 1934 by Her Majesty the present Queen. At present the great mass of the building appears rather smothered in the narrow confines of Surrey Street, but re-planning schemes are afoot for the whole of the central area of the city and it is to be hoped that the library will eventually be included in an extensive layout of civic buildings and open spaces.

The main entrance is from Surrey Street, and is expressed by a projecting porch, placed centrally in a seven-bay façade of Ionic-capped pilasters. A separate entrance, leading to the children's



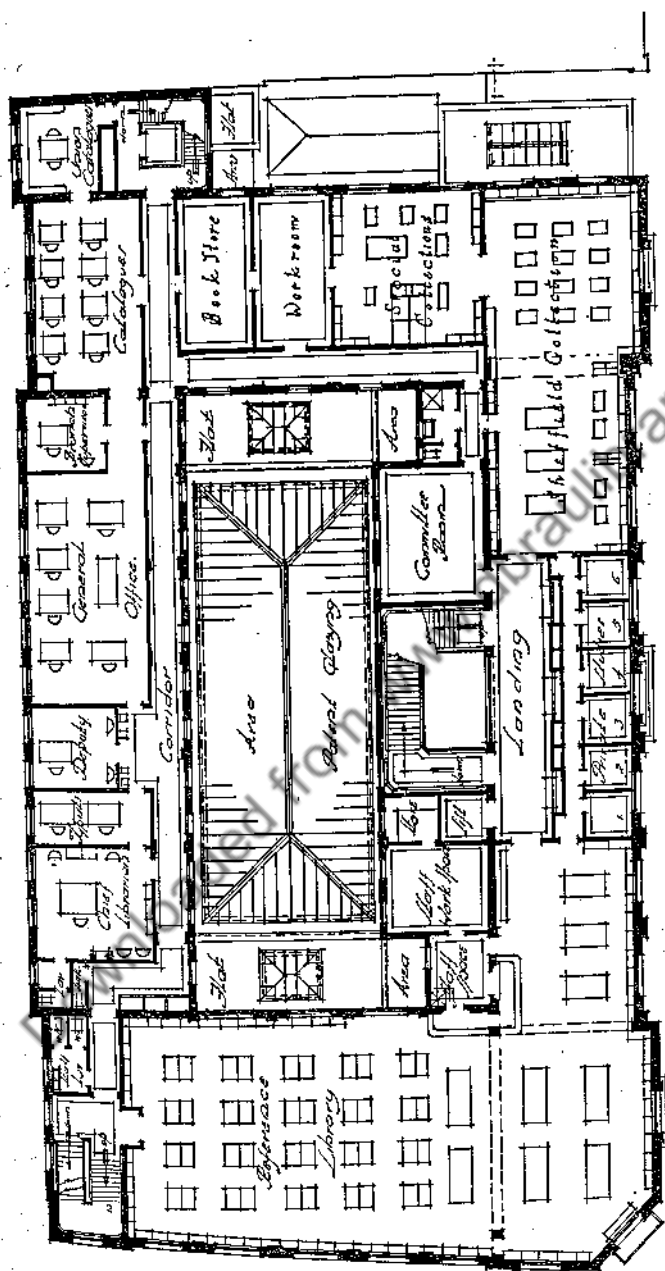


FIG. 10.—THE CENTRAL LIBRARY AND GRAVES ART GALLERY, SHEFFIELD.  
First-floor Plan.

By W. G. DAVIES, F.R.I.B.A.

[By courtesy of the City Librarian, Sheffield.]

library, the newspaper room, and the magazine room, is provided from Surrey Street, whilst staff, lecture hall, and goods entrances are situated at the rear of the building, opening off Tudor Place. The entrance hall gives access, by means of stair and lift services, to a basement lecture hall, to the main reading-rooms of the library, and to a top floor, the entire area of which is devoted to the purpose of an art gallery.

In order to obtain the maximum possible depth for the big lending library, the entrance hall and stairs have been, to a certain extent, restricted in plan. The short flight of approach steps from the narrow pavement of Surrey Street has had to be projected into the entrance hall and the main stair itself is a one-flight affair, passing from right to left over the entrance to the lending library—which is not too satisfactory an arrangement although the raking angle of the stair flight has been screened by means of a projecting, boxed-out entrance to the lending library. It is a pity that space could not have been spared for a more imposing approach to the important rooms and galleries above.

The basement is constructed as a reinforced concrete tank, of a height to accommodate two tiers of stacking. Here are situated the lecture hall, the children's library (both of which are used mainly in the winter evenings so that the fact of the small amount of natural light available is of minor importance), and the book-stack. The lecture hall has a separate entrance from the back, in Tudor Place; it provides seating for four hundred persons and is fully equipped with stage, dressing-rooms, and projection apparatus. The children's library has a special reference section which provides adolescent readers with a more advanced type of book than is usually found in junior libraries. From the top of the book-shelves to ceiling level a continuous mural panel portrays "The Story of Civilization" and links the library with the activities of the Sheffield School of Art, which occupies premises just across the road.

The children's library also contains the teachers' and parents' library, where an exhibition of one thousand selected editions of the best books for children is permanently on view. This exhibition may be referred to for the purpose of choosing books for school prizes, distribution, or presents, and has proved the object of much interest.

Metal book stacks provide accommodation for 250,000 volumes in the stack room, and adjoining this room are two strong-rooms for the storage of valuable manuscripts.

The ground floor houses the busiest departments—the lending library, reading-rooms, commercial, science, and technology libraries. The lending library service counter is described on page 83 of Chapter V and is illustrated on Litho. Plate No. 5, Fig. 1. The central area of this lending department is treated as an open circulating space with enquiry desk, catalogue stands, and display cabinets arranged as isolated fittings (Plate X). Here readers may “browse” freely, and every encouragement is given them to do so, the centre of the library being given importance by its distinctive lighting, marble flooring, and the arrangement of the furniture. Shelving is provided for 30,000 volumes, and is arranged round the walls and in projecting stacks which form alcoves for the convenient isolation of various sections of the book stock.

Of the two reading-rooms, the magazine room, with seating for sixty readers, is now devoted to use as school library and education department, whilst the news room (seating sixty-four readers and with wall reading slopes for thirty-eight newspapers) caters for the more casual of the news-reading public.

The commercial library shelves 2500 books, has seating for forty-two readers, and is placed and designed so as to facilitate quick reference. Adjoining this department is the science and technology library with shelving for 5500 volumes round the walls (Plate XII).

On the first floor are the main reference library (Plate XI), six study rooms, the Sheffield and special collection rooms, the committee room, and the administrative offices of the library staff. The reference library carries a book stack of 8500 volumes.

An intermediate floor (not shown on the plans illustrated) contains office accommodation for the Art Gallery Director and his staff, picture storage space for the galleries, library staff catering and recreation rooms, and rooms allotted to certain societies and study groups for purposes of lectures and meetings.

The second floor consists of the Graves Art Gallery and comprises eight well-proportioned rooms, naturally lit from above and equipped with trough-light reflectors for night use.

Without the closest collaboration between the architect and the librarian, such a library as the Sheffield Central Library would have been impossible. It is, from the point of view of the librarian, a very good library indeed, and points which may be particularly noted are the grouping of the rooms round the service points based on service book lists and also the way in which the most used departments are concentrated on the ground floor, where they are

easy of access from the main entrance. The design of the various fittings has also been very favourably commented on by librarians. This result was not achieved by any haphazard method—sketches were made, altered, and re-designed. In some cases model fittings were knocked up in rough timber, tried out in position, and their disposition and measurements carefully checked before detail drawings for the actual fitting were put in hand.

For general heating an oil-burning plant was installed, but, the increased cost of oil proving prohibitive, a change-over was effected to a plant burning graded coal, and feeding, by means of two automatic stokers, to the two horizontal sectional boilers. The main rooms are heated by low-temperature hot-water ceiling panels and the offices and corridors by radiators.

Artificial ventilation is provided, one inlet fan serving to both library and art gallery, and small extract fans being positioned at various points on the flat roofs. Ventilation ducts are of galvanized metal trunking concealed in the thickness of the walls.

Reading-rooms generally are floored with  $\frac{1}{4}$ -inch thick cork carpet to deaden sound. Office floors are of hard-wearing battle-ship lino, and corridor floors of lino, but of a softer composition.

The art gallery has floors of  $\frac{1}{2}$ -inch cork tiles set in mastic, and basement floors are of hard-wood blocks or grano, according to the purpose of their use.

Metal cleats, for the fixing of temporary bracket stays, are provided at intervals round the central area walls just below coping level. From these brackets a cradle may be suspended for the purpose of cleaning the white glazed brickwork where this is not accessible from window openings.

The building is equipped with vacuum-cleaning plant, electrically controlled clocks, and lifts for passengers, goods, books, and pictures. The post-office telephone serves the major departments and has now been supplemented by the installation of an internal system.

The entrance hall walls and floor are of Travertine, and the coffered plaster ceiling of this hall is tastefully picked out in colour.

Carved ornaments on the building itself and also on the low-relief panels which occur at various points are the work of Messrs. Frank Tory & Son of Sheffield.

The building is of steel frame construction faced externally with Portland stone.

## THE CITY AND COUNTY BOROUGH OF MANCHESTER.

*Characteristics.*

It is fitting that a city which has been referred to as "the cradle of the public library movement" should now, at long last, have become possessed of the largest municipal library in the British Isles.

The city and port of Manchester, Radical since the days of Peterloo, is rightly proud of its intellectual attainments, of Owen's College, Miss Horniman's Gaiety Theatre, the modern University, Chetham's Hospital, the Free Trade Hall, and all the collection of famous names which have been associated with the city throughout its long and varied history.

It should be appreciated that, in addition to the importance attaching to Manchester by virtue of its size, the added factors of precedent and position have established the city as the main central headquarters for an area which includes the greater part of Lancashire and the neighbouring counties.

For these reasons the form which the library has been given resembles that of no other library of its kind. Other great cities (*e.g.* Liverpool, Birmingham, and Glasgow) possess municipal libraries in which emphasis has been given to the reference rather than to the lending section, but at Manchester the grouping of the various elements of the plan is unique and, in the opinion of many librarians, not successful. The circular Great Hall of the main reading-room dominates the first-floor plan and strikes a note for the character of the whole of the rest of the building. It follows automatically that the commercial, music, and lending libraries and the departments devoted to periodicals, collections, and exhibition are relegated to positions on the outer ring of the circle, where their curved shape makes proper oversight almost impossible of attainment. The circular shape has also resulted in bad natural lighting to the enclosed Great Hall, and whilst the subdued artificial light thrown up into the dome from light standards on the floor is, to my mind, impressive in the extreme, yet one must admit that the general effect is sombre and somewhat depressing if one is in the room for any length of time. A further point which might be noted in regard to this dome-crowned circular plan is the tendency to echo which is apparent. (This is not the case in the Picton Reading Room although the structural shape is similar. In the Picton the extent of the book-shelving which lines the inner wall face and the



buttresses of shelving which project forward into the room have successfully deadened any effect of reverberation.) The circular type of plan is particularly suited to the method of book service, whereby the books are served by means of vertical lifts from stack rooms on the floors below. In addition, the shape of plan has been conditioned by the layout of the streets, which surround the site on three sides, and by the fact of the relationship of the library to the existing Town Hall and its recently completed extension. Local historical associations are strong, so that the building has already become firmly established, not only as a library, but as an intellectual resort for a very large area, freely utilized for purposes of conference, lectures, meetings, and exhibitions.

THE MANCHESTER CENTRAL LIBRARY (Fig. 11) formed the subject of two architectural competitions, on the result of the second of which, Mr. E. Vincent Harris, O.B.E., R.A., F.R.I.B.A., was appointed to carry out his winning design. Before a stone was laid, however, a deputation consisting of the chairman of the Libraries Committee, the Chief Librarian, and the City Architect visited America with a view to collecting ideas and suggestions. The building was opened by His Majesty the King in 1934.

The executed design consists of a circular building, approached by way of a projecting Corinthian portico facing on to St. Peter's Square and having as the main element of the plan a circular "Great Hall" 127 ft. in diameter with seating accommodation for over three hundred readers.

The entrance portico opens directly into the Shakespeare Hall (Plate XIV), the ceiling of which is richly decorated in heraldic colours and displays the arms of famous Lancastrians and institutions connected with the county. Among the former are included Henry V, Margaret of Anjou, "old John o' Gaunt, time-honoured Lancaster", and many others. From this hall access is provided by lift and stairs to all floors of the building.

The basement floor is equipped with a lecture theatre, complete with projection apparatus and having seating accommodation for three hundred persons. It also contains the lower tiers of stacks, storage, packing, and provision for the heating, ventilation, and electrical equipment of the building.

The book stack is arranged under and supporting the floor of the circular Great Hall and has a vertical service by means of lifts and message tubes to the central service counter above. This

service is such that, according to tests carried out, it is estimated that the average time taken to deliver a required book to a borrower at the service counter is two and a half minutes.

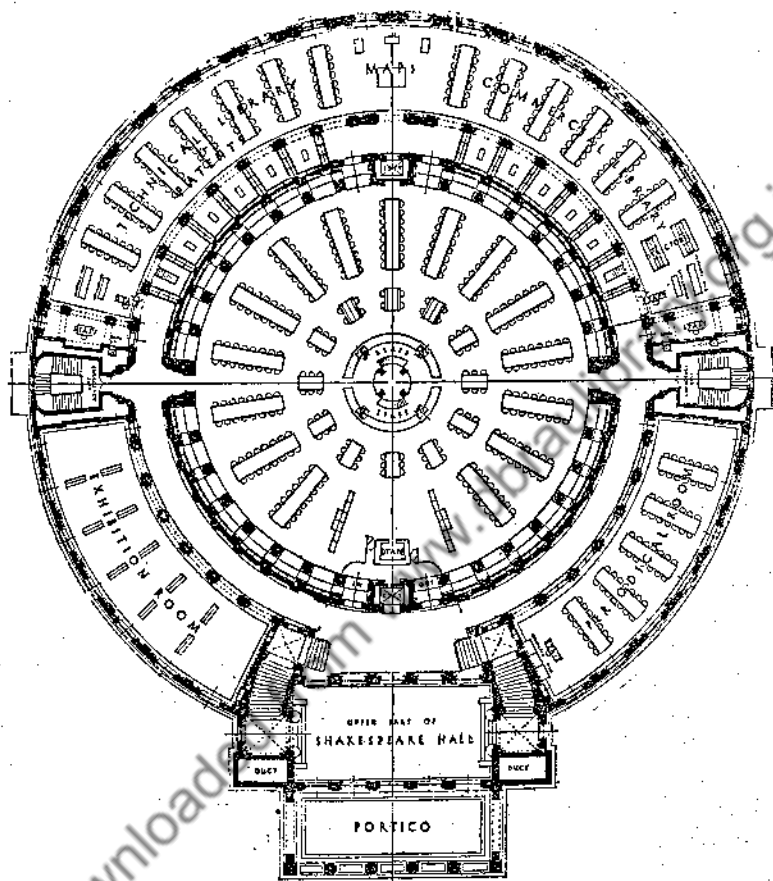


FIG. 11.—THE MANCHESTER CENTRAL LIBRARY.  
First-floor Plan.

By E. VINCENT HARRIS, O.B.E., R.A., F.R.I.B.A.

[By courtesy of the Chief Librarian, City of Manchester Public Libraries.

NOTE.—The departments marked Technical Library, Maps, and Commercial Library are now used as the Central Lending Library.

The ground floor provides, over its greater area, for two tiers of the book-stacks. It also contains the Shakespeare Hall, the Henry Watson music library, the commercial library, and an ample loading dock for external and branch library services.

The first floor displays a studied magnificence of plan. It contains the Great Hall, or main reading-room, with its circular colonnade of twenty-eight scagliola columns and responds, and its crowning dome with eye-lighting from above. In this room, 127 ft. in diameter, seating is provided for over three hundred readers, the reading-desks radiating from a central circular service counter in the middle of which is an open well providing light to the stack superintendent's desk below. Arranged in shallow alcoves between the wall pilasters are shelves to carry 10,000 volumes.

In view of the great height of the dome (61 ft.) individual desk lights are provided, whilst general lighting is supplied from twelve 10-foot high bronze floor standards, just sufficient to throw a subdued light, which reflects from the under surface of the dome and is most pleasing and restful to the eye.

On the outer circle of this floor are the central lending library and the periodical and exhibition rooms.

The second floor is largely devoted to one large room in which are housed some of the special collections of the reference library, with seating accommodation for about thirty students. Twelve study rooms are provided for the use of special research workers. Also on this floor are the Barclay room, a small lecture room, the Lancashire and Manchester rooms, and accommodation for reception, and for members of the Committee.

The third floor houses the administrative offices of the library, staff rooms, cloakrooms, and the offices of the chief librarian and his immediate staff.

The fourth floor contains the printing and binding departments, with the remaining space devoted entirely to storage which will provide, if necessary, overflow accommodation for about half a million volumes arranged in a two-tier stack.

The library is equipped with an electrode heating installation, combining a plenum system of ventilation with thermal storage. Rooms are heated partly by direct radiators and partly in conjunction with the balanced system of air inlet and extract ventilation. A minimum temperature of 60° F. is maintained throughout the building during the night, and this is increased to 65° F. with 60 per cent. to 70 per cent. humidity for the time the library rooms are in occupation.

An emergency system of lighting is provided for, run off trickle-charged accumulators and supplying 125 light points situated at strategic points throughout the building.

Floors generally are of hard-wood blocks, which, in the case of main traffic ways, are laid with rubber to prevent slipping and to eliminate noise. Corridor floors and wall linings are of Hopton Wood stone.

The vacuum cleaning apparatus serves to 200 points distributed on the various floors. The internal telephone system combines thirty-two sub-stations, there are electric clocks (on the impulse system) and lifts are provided for all purposes.

The building is of steel-frame construction faced externally with Portland stone.

To avoid the necessity for frequent internal re-decoration, the public rooms are, as far as possible, finished in permanent wall coverings.

## CHAPTER IV

### THE LIBRARY DEPARTMENTS

IN the following chapter it is proposed to treat each unit of the library plan separately and in some detail as regards its functions, general requirements, and position in the library scheme as a whole. It need scarcely be said that only in rare instances would all the departments of which mention is made be found in the selfsame building, nor need it be stressed that, at a future date, the accommodation here given will doubtless require to be augmented in certain directions. For example, the radio and television present unique educational possibilities and may have an influence on the library plan of the future, the results of which it is difficult to foretell with accuracy.

Some librarians would defend the view that it is a mistake to introduce "stunt" services as these serve to detract from the main purpose of the library and are in no way the librarian's business. A similar criticism might well have been made in regard to the collections of lantern slides which have been made a feature of some libraries—and have proved very useful and successful. To my mind these extraneous services deserve full consideration—in some libraries they may be desirable and in others quite out of place.

The fact that each town has its own particular library problem makes it difficult to generalize on matters of detail—in any event generalizations are invariably dangerous. The department which will, in the case of one library, be of sufficient importance to be treated as a major element of the plan may, in another library of identical size, be of small consequence or may even be omitted altogether. The writer's opinions should be taken as personal only, and should be referred to any given problem only in so far as they may be judged to apply to the particular case.

#### PUBLIC ROOMS.

##### *The Lending Library.*

In most municipal libraries this department will be the dominating feature of the plan and should be treated as such. As approach

is usually direct from the entrance hall, on the main axis of the building, opportunity is given for a generous layout, often with top-lighting from an area above. Advantage should be taken of this opportunity and the central portion of the lending library may well be treated as an architectural unit, with overhead lay-lights, the floor paved in a distinctive manner and the furniture consisting only of isolated display fittings and catalogue cabinets whilst the major part of the book stock is carried on shelving round the walls. An atmosphere will hereby be created in which the casual reader will be encouraged to linger, his attention will be attracted by the various book displays, and his interest will be capable of direction, by the skilled librarian, into ever-expanding sources of absorption. To take an example of this direction of interest. Supposing that the film *Henry V* is being screened at the local cinemas; not only will the librarian see to it that copies of the play are prominently displayed, but there will also be historical novels and biographies, illustrations of contemporary costume design and architecture, heraldic reproductions, and so on. For the purpose of these displays specially designed fittings will be necessary and convenient tables will be provided where selected books may be laid out flat for perusal.

It should be noted that in the lending library silence is not a matter of primary importance. The movement of the public will be continuous, circulating round the faces of the book-shelving, so that dead silence for close study is neither attainable nor indeed is it desirable. Here, more readily than in any other department, may a free-and-easy atmosphere of unrestricted enquiry be cultivated.

In the majority of cases the lending library is the casual reader's first port of call. It is suggested therefore that a certain laxity in regulations as to silence might be allowed, and that the feeling of a convivial reading club might be aimed at in order that the reader's first impression should be one of interest.

It is permissible, and has indeed been done in many lending libraries, to adopt a type of floor covering which is not strictly of the silent type. Marble, tiles, or terazzo paving may be used and will have a more ornamental effect than the standard reading-room floor covering of rubber or cork lino. Note, however, that these cold hard finishes should not be extended so as to include such places as the space behind the staff service counter, where the staff will have to be on their feet for the greater part of their working hours.

The radiating arrangement of island book stacks is now held

to be obsolete unless the shape of the room definitely imposes such a treatment. In this case the distance apart of the stacks, at their closest point, should never be less than 9 feet.

If the book-shelving consists of island stacks arranged in parallel lines, the minimum distance apart, to permit of an unobstructed passage when readers are grouped about the faces of the shelving, should be 12 feet.

Speaking generally, an alcoved arrangement of wall shelving is not desirable owing to the resultant interference with free circulation round the room.

### *The Children's Library.*

Probably no department of the library will provide so much interest in its planning as does the children's library.

Every effort should here be made to get right away from any suggestion of a dry-as-dust "institution" and to create an attractive and homely interior which children will not be afraid to enter, and from which they will be encouraged to cultivate, at their most impressionable age, the habits of reference and ordered study.

It should be said at once that the work now being done for children in most libraries is excellent. Selected members of the library staff are specially trained and detailed to this duty alone, with the result that many interesting ideas are being formulated and developed.

What then are the qualities in a library which are most likely to gain a child's interest, and thereby, at a later date, secure enthusiastic supporters for the adult departments?

I suggest one of the first essentials is that appeal should be made to the child's sense of responsibility and pride in personal ownership. The library, then, should be the child's own individual property. Obviously the provision of a separate building for children is a degree of perfection which is not always attainable—though an isolated block, including facilities for the showing of educational and general interest films, should not be beyond the capabilities of the larger municipalities. In most cases, however, the best that will be possible will be the provision of a separate children's entrance, placed at a distance from other entrance doors and, preferably, on a different façade of the building. Psychologically, as well as from the point of view of traffic control, the separate entrance for children is a matter of considerable importance, and its provision should never be neglected.

On gaining access to the interior of the library, the process of catalogue reference, book selection, and checking in and out, should be identical with the processes of the adult departments. Explanatory talks may be given on the system of cataloguing, the organization of the library services, and other subjects likely to be of help to young readers. In many libraries a special corner is set aside for such talks. Chairs are grouped around some attractively designed feature (a fireplace, illuminated alcove, or the like), and against this background informal talks and discussions are held, presided over by a member of the library staff. In a similar manner, educational broadcasts or cinema displays may be arranged at stated times. Sometimes displays of plants, aquatic or bird life, etc., are given conjointly with an exhibition of nature books devoted to those subjects.

A member of the library staff who is of an artistic turn of mind may prove an invaluable adjunct to the children's department in view of the scope provided for the production of coloured display cards, graphs, posters, descriptive lettering, and the arrangement of exhibits and models.

As regards actual planning, an informal layout of furniture and attractive colour decorations will add greatly to the charm of this department. Mural panels may often be utilized with effect, and it is a good thing to provide one or two electric plugs at suitable points in order that illuminated displays may be arranged if desired.

Special exhibitions of books suitable for school prizes, textbooks, or presents may be held in the children's library itself or in a separate room permanently set aside for that purpose. These exhibitions are intended primarily for the guidance of teachers and parents.

In these days of wholesale broadcasting, and when so many people seem quite unable to exist except to a continuous accompaniment of blaring, discordant noise, many librarians are finding a real call for the incorporation of a "home-work room" in the library system. At Walthamstow there are numbered cubicles which scholars may reserve in advance, whilst Cheriton, Lambeth, Bootle, and Dewsbury may be mentioned as a few of the large number of places which have found it necessary to provide facilities for this section of juvenile activity.

#### *The Newspaper Room.*

The news-reading public will usually consist of a more varied collection of types than are to be found in other departments of



the library. Especially will this be so in libraries where racing news is not blocked out before the papers are placed on the news slopes. In this event a rather paradoxical situation will be created in that the attendant may rightly censure a reader who is seen exposing betting slips, but is unable to protest against the same reader's monopolizing a paper for a length of time whilst he copies out lists of likely winners from a paper provided by the library authorities. I have found that, on the whole, librarians prefer to delete the racing news, as this tends to eliminate a certain undesirable element from use of the library.

Whether or not the racing news is displayed, however, it is desirable that a separate entrance should be provided to the news room. It is preferable that this entrance should be at some distance away from the entrance to the children's library, and that, from considerations of both convenience and cleanliness, it should immediately adjoin the street.

One section of the news readers which merits consideration is that composed of persons who are unemployed or are seeking other employment. In large cities it is usual to have several copies of the "Situations" pages of the local press issues prominently displayed near the entrance doors of the news room.

Effective supervision of the newspaper room is essential, as also is the provision of a type of floor covering which will stand up to hard wear and which is easily cleaned.

#### *The Reference Library.*

Precautions should here be taken to ensure that, so far as is possible, all unnecessary noise is eliminated. The reference library should preferably be placed in that part of the building which is farthest away from noisy thoroughfares, not immediately adjacent to lifts, and generally isolated from the movements of the staff and public. Where the department must be, of necessity, adjacent to a busy street, double windows should be fitted, consideration being given to the method of their cleaning and to the efficient ventilation of the room. With a view to obviating unnecessary movement, all books which are in frequent demand, directories, traders' compendia, guides, and the like, should be placed in a position immediately adjacent to the entrance door.

Good lighting at reading-table level is essential, and if the reference room is of some considerable size and height, the attainment of the necessary light intensity by means of the general

lighting points of the room is likely to prove a heavy charge on current consumption. In this event an economy in overhead charges will usually be effected by the provision, over all reading-tables, of individual light points which are capable of being switched off when not in use. It will not then be necessary for the general lighting system of the room to be of such intensity as would be the case if table lights were not provided.

The degree of seclusion which is desirable in a municipal reference library is a subject which might be debated at some length by librarians. Is it desirable to isolate the reader from his surroundings, to line the walls with books to ceiling height, and to provide no view of the outside world save that which can be obtained through the skylight illumination above? This would seem to be an ideal treatment to adopt, perhaps, in a university library or in one devoted only to very serious study—I would instance the British Museum Library as an example of this conception. In a lesser degree the Manchester Central Library, though definitely a municipal library, presents a case where the reference section is of such importance that it seems right to emphasize its function—which is one of serious study and not concerned too directly with questions of popular appeal. As a general rule, however, I think that librarians incline to the view that a library, provided for the ratepayers as a whole, should be treated with a somewhat lighter touch, that it is not out of place for the reference room to be lit by long windows, extending from the top of the book-shelving to the ceiling, and that, for the convenience of more serious students only, private study rooms should be provided. These study rooms would be placed adjacent to the reference library and would be available for use by any approved student on request.

It will be appreciated that in large reference libraries only a relatively small proportion of the necessary book stock will be able to be accommodated in the room itself. The remainder will have to be shelved elsewhere and ought to be conveniently placed as regards the reference library—if not immediately adjacent to it then quick service must be ensured by means of lifts or conveyors.

### *The Reading and Magazine Rooms.*

In the planning and design of these rooms the greatest care should be taken to provide for the convenience and comfort of the public. Separate ladies' reading-rooms are provided in some libraries, equipped with certain of the daily papers and a selected

assortment of the current magazine issues. I know librarians who work on the principle that the size and shape of the reading-rooms are best determined by first plotting out the arrangement of the furniture. This is a commendable practice and should result in a tight and economical plan. It will be found that, allowing a convenient amount of table and corridor space, each reader will occupy approximately 30 sq. ft. of floor area. If possible, reading desks or tables should be so arranged that their blank ends, and not the sides occupied by readers' chairs, abut on to the main traffic passages. Where this point is neglected an unnecessarily wide passage will have to be provided to allow for chairs being carelessly pushed back and left so as to form an obstruction to the traffic circulation.

In rooms where there is ample seating accommodation available, magazines and periodicals may be secured to the reading-tables, each with its distinctive title permanently displayed. Where accommodation is limited, however, periodical racks should be provided, from which readers may select their papers, returning them after perusal.

### *Special Collections.*

It will often be found that the provision of separate library rooms, suitably furnished, will result in valuable collections being made over to the library, either on loan or as gifts. Accommodation should therefore be provided for such an event, and it should be considered whether the collections are likely to be of such a nature as to make a general appeal to the public, or whether (as in the case of a legal collection) their appeal would be to a limited section only.

Some particulars of the type of furnishing which would probably be suitable for this department are given in the chapter on Library Furnishings (Chap. V., p. 87).

### *The Music Library.*

In cities where the public are keenly interested in musical matters the section of the library devoted to this art may be of such importance as to merit a separate room, attendant, and card index system. In this case, a sound-proof trial room, equipped with a piano or gramophone and records, may also be deemed desirable.

### *Carrells.*

These consist of small enclosures, about 6 ft. by 4 ft. 6 in., and are equipped with a reading-table, table light, and a case or shelf for the storage of books in use. The carrell is for the use of special research students and for this reason is situated immediately adjacent to the stack storage.

In some modern libraries (*e.g.* Manchester, Sheffield, and Huddersfield) small study rooms replace the carrell and fulfil a similar function though they do not necessarily open off the stack. The student may be provided with a key and have the use of the room over a period. At Sheffield glazed doors and screens are provided for supervision, but at Manchester the rooms are solidly built, with solid doors which ensure complete privacy.

### *Map Room.*

Maps may be folded and stored flat, they may be bound into volumes and stored vertically, or large maps, in frequent demand, may be hung suspended from spring rollers or from metal rods hinged to a socket in the wall and opening out, like the leaves of a book, for purposes of reference.

Where maps are likely to be in frequent demand for purposes of tracing, a separate map room may be desirable, fitted with desk, stool, and drawing instruments.

### *Lecture Room.*

Accommodation for lectures should undoubtedly be provided, but the extent of this provision is apt to vary considerably. Mention has already been made of the type of informal gatherings which are likely to prove an attraction in the children's library. Similarly, reading and discussion groups may be made a part of the routine of the adult departments, and for this purpose a number of folding or interlocking chairs, capable of being easily and quickly set out or removed, may prove a convenience. A good type of chair for this purpose is that consisting of a tubular metal frame upholstered in rexine or leather. These chairs may be locked into units of a required length by means of a metal bar. They may also be nested together into a compact stack which is readily transported from place to place by means of a small trolley into which the whole stack is designed to fit.

Where the requirements of the library justify the permanent use of a separate room for lectures, this should be conveniently

placed in regard to the main entrance hall of the library. A suitable position may sometimes be found in the basement, at which level the isolation of noise is likely to be a simpler problem than it would be in the case of a lecture room on the higher floors.

Where there is a large library staff, it may be desired that the lecture hall should be of such size as to be suitable for the performance of staff plays. Stage and dressing-room accommodation will then be necessary, and it may be an advantage to have an additional entrance from the street.

It may here be noted that, subject to certain conditions, public libraries are exempted from Income Tax under the Income Tax Act of 1842. The conditions laid down cover any building, the property of a literary or scientific institution, used solely for the purpose of such institution and in which no payment is made for any instruction afforded, by lectures or otherwise, provided also that the building be not occupied by an officer of the institution nor by any person paying rent for the same. It seems probable therefore that any charge made for letting a lecture hall or any other room of the library premises would, in a contested case, negate any claim for Income Tax exemption.

### *Lavatories.*

The supervision and upkeep of extensive public lavatory accommodation is a duty from which the library staff should be exonerated as far as possible. No doubt some limited accommodation will be considered necessary in most libraries, but where there are external public conveniences comparatively close at hand it would be advantageous to eliminate this service from the library.

## ADMINISTRATIVE AND STAFF ROOMS.

### *Stack Rooms.*

In the case of libraries with important reference sections the position of the stacks in relation to the reference rooms is obviously of primary importance. It is for this reason that Appendices I and II have been devoted to a rather miscellaneous collection of existing libraries, both British and foreign, from which examples of the various positions and forms which have been given to the stack accommodation in libraries of the past may be studied and compared. Illustrations show the stacks placed under, behind, or enclosing the main focal point of the reading-room and variously grouped in

wings surrounding it. They also show the method of storage in which the stacks are housed in a tower, feeding by vertical lift service to below. It is for the architect to keep an open mind on this question of positioning the stacks, basing his final decision entirely on conditions ruling in the particular case under consideration. The extent of site available, the nature of the sub-soil (solid rock might definitely rule out any possibility of storage in an excavated basement), and other factors of a practical nature will all require to be balanced with æsthetic values before a satisfactory decision can be arrived at.

In order that the book stock may be kept in proper condition and free from mildew it is essential that efficient ventilation should be provided. This does not mean, however, that windows must of necessity be situated in an external wall—artificial ventilation will amply suffice, and by its instalment far greater latitude will be allowed the architect in his planning arrangements.

The librarian's job is to ascertain, to the best of his ability, the maximum number of books which it is necessary to house and *will* be necessary to house after a stated and definitely agreed number of years. It will be convenient if this estimate can be made under three headings, as follows :

- (a) Number of volumes to be immediately housed and to be available for frequent reference.
- (b) Number of volumes to be immediately housed and to be available for occasional reference.
- (c) Number of volumes to be housed within a period of  $x$  years.

Having been furnished with such information the architect is in a position to arrive at the fixed and definite dimensions of his stack blocks, and it only remains to fit them into his plan—which may be a work of comparative ease or of extreme difficulty as the case may be. There should be no waste space at all in a stack room—the dimensions of length, width, and height are exactly conditioned by the similar measurements of the standard metal stacking and its dividing passage ways. Particulars of the usual type stack, of which there are several makes on the market, are given in Chapter V, pp. 89-92.

#### *Strong-rooms.*

Where manorial records, or other valuable documents are required to be housed, the provision of strong-rooms is essential. These rooms should be equipped with fireproof doors and ventila-

tors, fitted with steel shelving, and situated, preferably, in the basement.

### *Librarian's Room.*

The positioning of the chief librarian's office will naturally be determined by the general requirements of the planning problem, and will be largely influenced by the size and organization of each particular library. In small branch libraries, especially in those built on corner sites, the lending library service counter would normally be central on the main axis, with the reading-rooms radiating from it. Here a librarian's room adjacent to the counter, or arranged on a first floor over it, might be planned so as to have complete supervision over staff and public rooms alike, and would be conveniently near the main entrance.

In the larger type of library, however, personal supervision by the chief librarian is not essential. This supervision would, in this case, be the responsibility of the various departmental chiefs, and the chief librarian would be more conveniently situated adjacent to his secretary, waiting-room, deputy, general office, and administrative rooms, and definitely away from the public part of the library. A private lavatory is essential, and there should be provision for a safe, and store space to house past volumes of library association periodicals, etc. The wall fittings should provide ample accommodation for books, and might also embody plan and filing cabinets. An electric fire to supplement the general heating of the room is also a convenience.

### *The Committee Room.*

This room may be contained in the administrative block or may be conveniently placed in proximity to the main entrance to the library.

Seating should be provided for the mayor and the chairman of the finance committee (who will be *ex-officio* members of all committees), and for the full number of committee members, co-opted members, librarian, and committee clerk, with extra seating for persons who might be required to be present for consultation or interview.

Provision should usually be made for the display of plans, drawings, or books, and special lighting might be arranged for this.

If a special chair is designed for the chairman, it is suggested that this should be placed in the centre of the table rather than at

the head. This position gives easier control at a full meeting, and enables the chairman to have next to him those persons who are directly concerned with the business in hand, with more table space available for documents than would be the case if the principals were distributed round the end of the table.

If it can be so arranged, the chairman is best placed with his back to the main source of light and directly facing a blank wall surface on which drawings or illustrations may conveniently be displayed for the consideration of the committee.

Cloakroom and lavatory accommodation should be available immediately adjacent to the committee room.

### *The General Office.*

The administrative suite, usually comprising the general office and the offices of the librarian, librarian's secretary, and deputy, should be isolated from the public rooms of the library, and, preferably, be approached by a separate staff entrance from the street. This isolation will serve largely to prevent the nuisance likely to be caused by the sound of clicking typewriters being audible in the reading-rooms.

The general office should be of such size and adaptability as to provide for all possible future requirements. These requirements may necessitate the provision of extra office accommodation to deal with increased branch library services, cataloguing, publicity, and the like.

### *Binding, Printing, and Packing Rooms.*

Book trolley services from these rooms to all other departments of the library must be carefully considered, but particularly that service which connects them with the stack rooms and goods entrance. Corridors are to be direct and free from steps, and if departments are situated at different floor levels lifts must be provided.

Power plugs, in positions convenient to the work benches, should provide for the heating of glue pots, electric irons, or other apparatus which may be required.

### *Staff Work Rooms.*

It is advantageous to have the staff working rooms or alcoves arranged immediately adjacent to the service counters, but screened from the public view. The staff are then conveniently placed for



relief service at the counter, or they may retire, during slack periods, to routine duties in the work rooms.

#### *Staff Dining-room.*

In small branch libraries "snack" lunches will probably be taken in the most convenient spot—usually in the staff work room—and little can be done beyond providing pleasant room accommodation and facilities for heating a kettle. In the larger libraries, however, a proper dining-room with service facilities from a small kitchen should certainly be provided.

#### *Staff Rest Room.*

A room of sufficient size to enable a table-tennis set to be installed and furnished with comfortable chairs and provision for rest and recreation will be much appreciated in any scheme of importance.

#### *Cleaners' Rooms.*

In addition to a room for the storage of soap, brushes, and cleaning materials generally, cleaners' rooms, fitted with bucket sinks, should be arranged at each floor level.

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## LIBRARY FURNISHINGS

## GENERAL.

THOUGH all-steel shelving and special fittings have admittedly been brought to a high degree of excellence, yet they have not so far succeeded in ousting hard wood as the most popular material for the internal furnishing of public rooms. The use of metal (one says metal advisedly for one would here include the old-fashioned type cast iron stack-ranges which still do yeoman service in many libraries) has, in the main, been confined to stack rooms, where the standard repetition of shelving units particularly lends itself to this type of construction; and to staff service rooms where metal sheeting and mechanical equipment provide so clean and economical a system of servicing.

This is not to say, however, that wood will continue to enjoy its popularity. Aesthetically there can be nothing wrong with sheet steel or aluminium, finished in plastic (or merely painted), hard, so as to be easily cleaned, and tinted, so as to harmonize with the colouring of the surrounding walls. Practically, metal is not subject to twisting and shrinkage to such an extent as is wood.

Certainly wood offers advantages when it comes to the question of a specially designed fitting (*e.g.* a service counter) to fit into a space, the dimensions of which are predetermined by the exigencies of the plan. But even in this case it is often wise to consider whether it might not be beneficial to incorporate certain metal units in the frame-up of the wooden structure. One has spent hours which one now considers to have been largely wasted in designing wooden card catalogue drawers, card trays, and such like fittings where the advantages of metal are obviously apparent, and where the price of metal fittings, allowing for mass production, would probably be much less than the laboriously designed and possibly less efficient wooden article. In the designing of timber-work one feels that we architects are apt to err on the side of heaviness. It might be a good idea if, before detailing our lending counter, we spent an hour or so in some antique showroom, studying the timber sizes of, say, a Chippendale chair or a French *escritoire* of the Directoire period. It is not necessary for the sides of a drawer

to be very thick for it to be strong—providing that the timber from which it is made is sound and well seasoned. The use of plastics has not yet been fully developed in its application to library furniture and, with no precedent to go upon, one can only forecast that this is one of the materials which, in the not too distant future, will present us with a whole host of possibilities, fully developed by experimental work during the course of the war.

## SERVICE COUNTERS.

### *Lending Library.*

The service counter forms the pivot on which the whole work of the library hinges, and calls for particular care in its treatment. Most librarians have very definite ideas as to the design and equipment of this counter, which ought usually to conform to their individual requirements down to the most minute detail. One of these requirements will no doubt be the important one of economy in staffing. In small branch libraries the lending library counter may well be the only place at which there is a permanent point of staff service, in which case supervision of all other departments will be necessary from the counter, and the control services (telephone, light switches, etc.) may well be grouped therein for the sake of convenience. In cases where the service counter is adjacent to an outside entrance, provision should be made for the exclusion of draughts. This purpose may be achieved by the fitting of self-closing doors on both the inner and the outer sides of the vestibule entrance, but frequently it will also be necessary to fit a glazed screen along the entrance side of the service counter itself. A screen of  $\frac{1}{4}$ -in. plate glass, secured by metal clips, is efficient in use and unobtrusive in appearance. Its height should be sufficient to effectively prevent down-draught on the head of the attendant serving at the counter.

As the amount of light required by the staff in their almost continual reference to the book cards is nearly double that required by the public in their brief references to book titles, it follows that provision for extra counter lighting is desirable. If possible, this should be arranged for from above, and not from standard lights, which offer a serious obstruction when placed on the card tray counter.

For the counter service space, where the staff will be standing for a great part of the day, floor coverings of marble or tiles are not

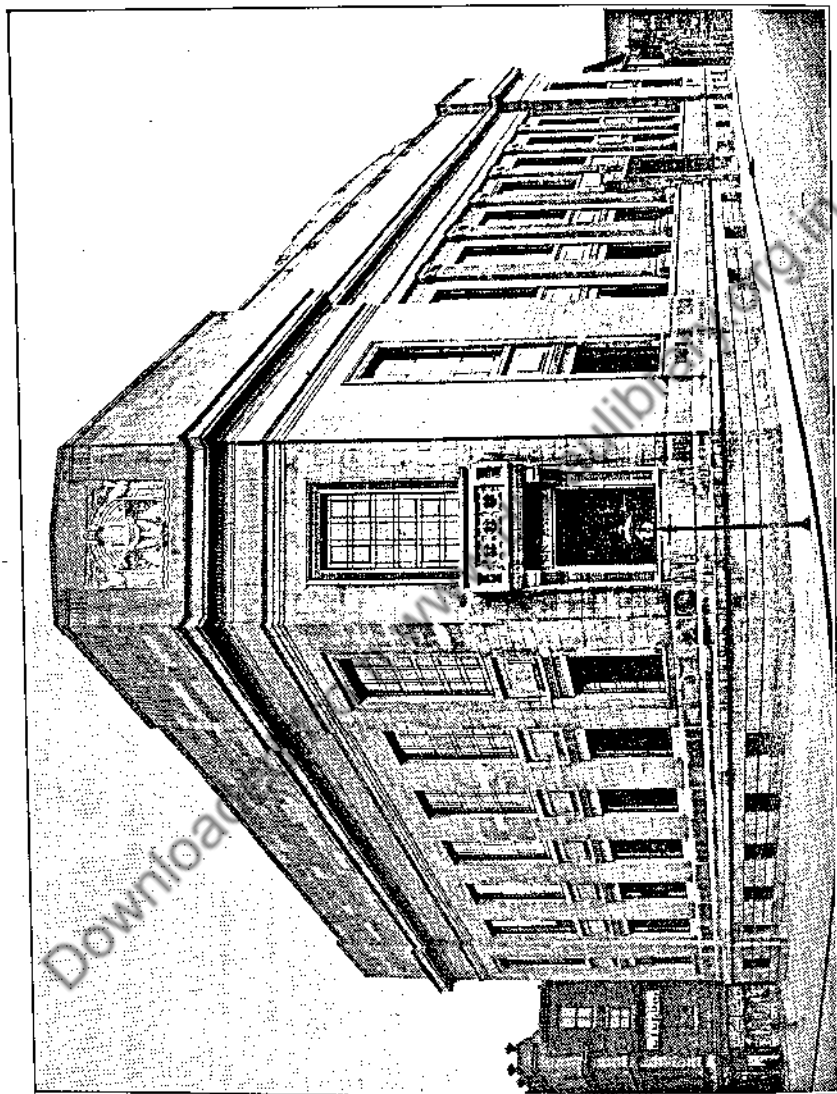


PLATE VIII.—THE CENTRAL LIBRARY AND GRAVES ART GALLERY, SHEFFIELD. (South and West Elevations.)

By W. G. DAVIES, F.R.I.B.A.

[By courtesy of the City Librarian, City of Sheffield Public Libraries.]

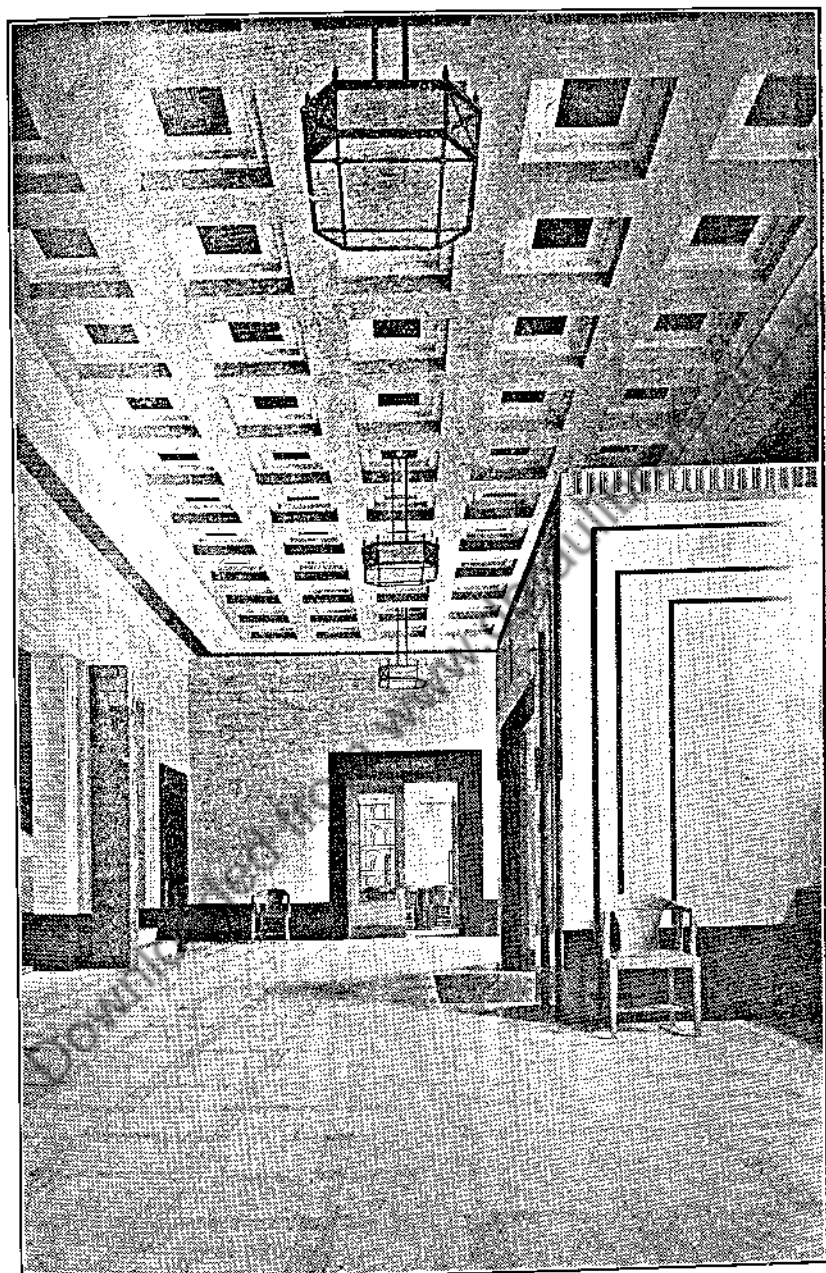


PLATE IX.—THE CENTRAL LIBRARY, SHEFFIELD.  
The Main Entrance Hall with the Vestibule on the right.

By W. G. DAVIES, F.R.I.B.A.

[By courtesy of the City Librarian, City of Sheffield Public Libraries.

suitable, even should floor heating be provided. These types of finishings are cold and hard, whilst if heat is provided it dries and tires the feet. Cork lino or cork tiles are good, both as regards comfort and durability.

The counter entrance should be sufficiently wide (2 ft. 3 in. minimum) as to allow of the easy passage of a book trolley, storage space for which may be provided under the counter itself. Provision should be made for the receipt and disposal of returned books, pending their sorting and replacement on the shelves, and for the storage, in an accessible place, of roll tickets, fines slips, book covers, stationery, etc. A cash drawer, fitted with a bowl, will be required for fines.

If controlled wickets are desired, they may be operated by means of a pedal, a continuous foot bar extending the length of the counter, or a continuous bar fixed at desk level and operated by the assistant's pressing against the bar with the body. In all these cases the act of pressure, operating a cranked rod, has the effect of withdrawing a catch from contact with its socket in the wicket gate framing, thereby allowing the gate to be opened. The continuous foot-bar control (see Litho. Plate No. 6, Fig. 4) seems to have several advantages, whereas the body control bar is apt, in a short time, to have a decidedly detrimental effect on the fabric of clothing. Actually many librarians nowadays prefer to dispense with the control wicket altogether as being unnecessary.

As the counter should never for one moment be left unoccupied, it must be remembered that some means of summoning a relief should be provided for in case of necessity. In the larger type of library this would doubtless be done by means of the interdepartmental telephone, but in the case of small libraries electric buzzers might be fixed.

The type of counter illustrated on Litho. Plate No. 3, Fig. 1, whilst it reduces the staff movements to a minimum, is not suited to positions where space is a primary consideration. This particular example is in the Scarborough Library, where it happens that there is a sufficiency of open space at the lending library entrance. The principal feature of this counter is a pair of sliding metal issue trays, which, mounted on pressed metal runners, may be readily moved to and fro by the assistant, who remains seated. Books returned by readers are received on the shelf over the card trays, dates are checked, and the books passed over to the book trolley, ready for sorting and replacement on the shelves.

Fig. 2 shows the type of counter adopted in the Leeds Central Library and the more recently erected Percival Leigh Branch Library. Here also the attendants remain seated and gain access to the card trays by rotating a circular issue tray on its pedestal stand. It will be noted that there is no barrier provided between the staff and the general public, and that each issue tray may be operated by one attendant only. Exit from the central library is by way of a separate door opening situated at some little distance from the main entrance and served by a small exit counter fitted with a controlled wicket (see Fig. 3). If such an arrangement as this is contemplated (and this type of servicing is very popular with some librarians) it should be remembered that full provision should be made in the size of the table for any possible increase in the number of readers to be served. Obviously when once the table is full to capacity there is no means of further expansion save by the provision of a larger table.

It is very desirable to have some space where the staff may work undisturbed, screened off from the public view and yet immediately adjacent to the service counter. This is provided for at Huddersfield (Litho. Plate No. 4), and at Sheffield (Litho. Plate No. 5, Fig. 1).

In the Huddersfield Library the public pass right round the counter, entering at one side and leaving at the other, by separate entrance and exit doors. Both entrance and exit wickets are fitted with foot-bar control, and an emergency counter is provided for use during the short rush-hour periods, which occur from about 6 to 8 p.m. each evening.

Roll-top covers protect all card trays from dust at times when the library is closed, and as these covers are fitted with lock and key the responsibility for the order and arrangement of the cards is placed entirely on the member of the staff concerned. The section at E shows the table and rack where issue records are sorted out into their various partitions prior to being replaced in the card trays.

The Post Office telephone switchboard, interdepartmental telephone sub-station, and light control switches are located in the staff space arranged under the main stair landing.

An unusual feature of the counter is the two-tier arrangement of card trays (see section at A). The small table in the exit corridor alcove is for the use of readers who desire to parcel up their books before leaving the building.

The Sheffield Library (Litho. Plate No. 5, Fig. 1) has a length of card tray space of no less than 38 ft. Access is direct, on the centre-line of the building, to the public space situated under the main stairs. From the public space, readers may pass through free-swinging turnstiles, placed on either hand, into the interior of the lending library. That is to say, they actually enter the lending library before they approach the long double counter to hand in their returned volumes. As names beginning with letters of the first half of the alphabet are dealt with at one counter, and those beginning with letters of the second half at the other counter, it will be seen that returns are well distributed, and queuing is avoided. Returned volumes, which are placed by readers on the flat shelf of the counter top (see section at B), are then flicked over into an upright position on the reading-slope by the attendant, who has convenience for his checking, prior to passing the returned books to the shelves or to a wheeled trolley behind the counter.

The registration of new members is provided for by angle counter desks at the extremities of the card tray counters. Three sliding wickets give access for book trolleys through each counter, and hinged wickets to the public space permit intercommunication of staff.

Exit is by way of one or both of two isolated counters fitted with pedal-controlled wickets and screened from the entrance hall draughts by  $\frac{1}{4}$ -in. plate-glass screens.

Adjoining rooms give ample accommodation for working staff, and these contain the telephone and light control services. Tables and seats provided for the convenience of the public are set in small alcoves off the public space.

Always, in fixing the plan position of the service counter, consider the queue length which will require to be accommodated at rush hours—it is unpleasant and most inconvenient to find a waiting queue which stretches across the entrance hall and into the draughts of the vestibule opening.

Where "IN" counters are not provided with roll-top covers, sometimes another and more simple device is employed. The card charging trays are sunk in a recess in the counter top with a plate-glass slide which serves to cover them from dust when not in use.

Service counters are normally about 2 ft. wide across the top. If two attendants are to work back to back, a space of 5 ft. 6 in. (minimum) between the counters will be required.



### *Children's Library.*

On Litho. Plate No. 5, Fig. 2, a typical children's counter is illustrated in plan and section. The example shown has a length of card tray space of 6 ft., which is as much as is likely to be required in most libraries.

The various requirements already noted for lending library counters apply in like manner to the children's service. In the latter case, however, the height of the shelf for the returned books should not exceed 3 ft. 6 in.

Conveniently near to the children's counter, lavatory accommodation for both sexes should be provided. The attendant's tactful suggestion as to the use of a little soap and water before passing through the wicket will sometimes save much damage to books from sticky or dirty fingers.

### *Reference Library.*

Whereas in the open-access lending library the book stock will be largely carried on the shelves, in the reference room the greater part of the stock will no doubt be housed in the stack rooms, from which store a means of quick delivery of books to the reference counter must be provided.

Litho. Plate No. 6, Fig. 1, shows a simple type of reference service. Here there is direct access from the counter to a small staff working space in which is situated the book hoist giving service from the stacking rooms above or below.

Fig. 2 illustrates a counter which has been used successfully in many public, reference, and university libraries, where the reference department is of great importance, and is circular in plan. In this example the staff are isolated from their work rooms and offices, but they do occupy a central position of supervision, and have direct communication, by means of book hoists and gravity message tubes, with the stack rooms below.

In the Picton Reading Room at Liverpool, the book stacks are in three heights, lining the inside face of the circular enclosing wall. There is no service lift and no central counter, but books required are brought by hand—a small staff of page boys being retained for this purpose.

In Fig. 3 is shown a type of book hoist suitable for service from reference and other departments to the stack rooms. It will be noted that a weight of 2 cwt. is provided for and that the dimensions

of the cage are such as to conveniently take large newspaper folios (measuring up to 25 in. by 19 in.).

The foot treadle system of control, already referred to, is illustrated in Fig. 4. Fig. 5 shows, in isometric projection, the usual type of card index drawer, whilst Fig. 6 similarly illustrates the standard card tray, which may be of either wood or metal.

### *Music Library.*

In some libraries the public have open access to the whole of the music folio stock, in which case the music may be serviced through the ordinary card system of the lending library counter. In other libraries the music department is largely closed to the public, in which case a counter somewhat on the lines of that shown on Litho. Plate No. 10, Fig. 9, would be suitable. Half of the counter is devoted to working space—the attendant will need plenty of room for the sorting and arrangement of packages of musical scores, which are often sent out in complete series of orchestral parts, twenty or thirty folios at a time. Card index trays occupy the remaining half of the counter, and there is a continuous ledge for the receipt of the returned music folios.

### BOOK SHELVING.

The question of window-sill heights in the various reading-rooms and the consequent fixing of the height of the wall book shelving, is more fully discussed in the Conclusion (Chap. VIII. p. 128). If it should be decided to provide the maximum height of shelving in the reading-rooms, the dimensions of fittings shown on Litho. Plate No. 7, Figs. 1-6, and Litho. Plate No. 8, Fig. 1, would be suitable.

### *Lending Library.*

The dimensions given of 1 ft. 2 in. to the lowest shelf and about 6 ft. 3 in. to the highest shelf (Litho. Plate No. 7, Fig. 1) have been found by experiment to give the most convenient and accessible range of wall shelving for a person of average height. It will be noted in this example that tiers of seven shelves are shown, with a recessed plinth, and with the two lower shelves projecting 3 in. to 4 in. forwards. The former prevents damage from kicking, and the latter allows of an easier selection of books without stooping.

Title cards are usually made to be easily removable, and may be

accommodated in special bronze frames screwed to the fascia of the capping. Fig. 1 shows a neat type of title, covering the screw heads and completing the appearance of a frame by having a  $\frac{1}{4}$ -in. wide bronzed strip fixed to its top edge. More popular perhaps in recent years are the plastic letters which may be obtained in a variety of colours and which present a very neat and otherwise attractive appearance when pinned direct to the wood fittings.

Shelves of 3 ft. span should be  $\frac{7}{8}$ -in. minimum thickness, and may be of laminated board, or, if in one piece, should have the ends cross-tongued to prevent twisting. Fig. 1 shows the fixing of the "Tonks" type of adjustable shelf support. The slotted metal strips are sunk flush with the woodwork to prevent damage to books, and are set back from the face of the shelf not more than  $\frac{1}{2}$  in. to avoid the danger of the whole shelf tipping up when a row of returned books is dropped suddenly on to its front edge. A thickness of  $1\frac{1}{2}$  in. for the vertical divisions will allow of the "Tonks" strips being placed opposite one another, but if a thinner upright is used it will be necessary for the strips to be "staggered" (see Fig. 1 (a) and (b)).

Island stacking in the lending library will follow the same general lines as does the wall shelving. It is very desirable to avoid, if possible, the great 7 ft. 6 in. high stacks which were so common in old lending libraries, and which obstruct the view and destroy the general proportions of the room. Four shelves high is considered a desirable maximum for island stacking, if the required amount of shelving accommodation can be provided in this height. This arrangement would give a total height, with title strip, of about 5 ft., and would permit of an uninterrupted view over the top of the stacks. The substitution of wire mesh divisions to the upper shelf space, instead of  $\frac{1}{4}$ -in. plywood backing as elsewhere, makes for easier supervision by the assistant.

#### *Children's Library.*

Here a shelving height of five shelves should not be exceeded. The lower shelf may be rather nearer to the floor than in the other reading-rooms, so that the total height of the shelving will be about 5 ft. 7 in., as illustrated in Fig. 2. To retain the scale of the fittings, it is a good plan to reduce the spacing of the bays from the usual 3 ft. standard width. Those illustrated are shown 2 ft. 9 in., with a narrower bay forming a cupboard, on the lino-covered door of which coloured illustrations or posters might be displayed.

### *Reference Library.*

The illustration which is shown in Fig. 3 might normally accommodate seven heights of shelving, but it should be remembered that in this room there is likely to be a proportion of larger volumes, so that the height of the fitting should, for purposes of calculation, be assumed to house six shelves only.

### *Patents Library.*

Access to this room will normally be granted only to members of the staff, so that appearance of shelving finish is not a primary consideration (Fig. 4). In many libraries the patents shelving consists of plain deal stacks, extending to the full height of the room, and with only narrow passages between each row of stacking.

The patents specifications to be accommodated consist of paper leaflets,  $11\frac{1}{4}$  in. by 8 in. These are either periodically bound up into volumes, or are filed loose into cardboard box containers of dimensions  $11\frac{1}{2}$  in. by  $8\frac{1}{4}$  in. by  $2\frac{1}{2}$  in. thick. Containers are packed in a vertical position on the shelving, and one of the size given above would accommodate about one hundred copies of the patent specification. Provision should also be made for the annual indices of the patent specifications. These consist of bound volumes approximately 11 in. by 8 in. by  $1\frac{1}{2}$  in. thick.

### *Special Collections.*

If possible, it is very desirable that these should be housed in separate rooms, where students may work undisturbed, and where, by the use of superior woods and tastefully designed fittings, the atmosphere of a private study room may be achieved. The collections may consist of works on one or on a variety of subjects; art, law, technology, matters of local historical interest, and the like. As these works will probably be of some value, protective glazed doors fitted with lock and key should be provided. These doors may be designed to slide open on metal tracks, or may be hung on hinges, as the circumstances demand. In all such cases as this, where books are enclosed, it is essential that proper ventilation be provided, and serious damage to the volumes may result if this is neglected. The necessary air current may be provided by the insertion of small bronze grilles in the bottom rail of each glazed door, the notching of the back of the shelves, and the provision of escape air-holes in the top of the cupboard framing. Naturally the type of volume to be housed will largely determine

the proportions of the bookcase in each special collection. The cases shown in Fig. 5 were found suitable for a collection which consisted of works on local, historical, and geographical topics, and which also included valuable art folios of considerable size.

### *Music Library.*

A shelf 12 in. high and 12 in. deep, front to back, will be found to accommodate the general run of the music folios, but shelving should be adjustable and some few deeper shelves provided for possible out-size folios (Fig. 6). The shelves are divided into short lengths by vertical uprights, the distance apart of which is usually about 18 in.

### NEWSPAPER SLOPES.

#### *Wall Slopes (standing).*

Litho. Plate No. 8, Fig. 1, shows a typical range of wall news slopes for readers in a standing position. This type of fitting is considered suitable for a position where a fairly brief perusal of the daily papers is encouraged, and it is probably more popular with librarians than the type where readers are able to sit comfortably, and so encouraged to monopolize a popular paper for a length of time. Chair accommodation may be provided for elderly or infirm persons at stands or tables in the centre part of the news room, the more robust readers standing to the news slopes extended round the walls. There should be individual lighting with a separate switch (of the silent type) to each newspaper, and by each switch a small brass plate with the words "Please switch off when not required". It is a good plan, too, in the case of a long length of slopes, to have a "master" switch at one end of the length, in order that the attendant may switch off all lights at once, instead of having to walk along the whole range of switches. The titles of the various papers are removable, and fixed on a fascia with the light shining on them from above, or they may be made a part of the light fitting itself by being "fretted" into the metal shades.

Papers are best secured by means of a standard pattern rod, fastening automatically, and unlocked by means of a key.

#### *Isolated Slopes (standing).*

This slope (Fig. 1), which is normally of not more than two desks in length, is similar in general design to the wall slopes described above.

### *Wall Slopes (seated).*

A limited number of these are sometimes provided in addition to the general standing type slopes of the newspaper room, or they may be provided in special rooms such as the ladies' room.

Fig. 1 illustrates the fitting and the usual standard dimensions worked to. Also shown is an enlarged detail of a type of bracket fitting where the news slope itself works on a pivot so as to be adjustable—a feature which may be of advantage to near-sighted readers.

### BOOK STACKS.

Economy in storage space and interchangeability of units will be achieved by the use of one of the several standard systems of patent metal book stacking now on the market. Several of these patent systems reach a very high standard of excellence, both from the point of view of efficiency and appearance, and from the fact of the provisions made for lighting, indexing, and servicing.

Metal book stacks may be generally described under two headings: (a) the bracket type, and (b) the standard type. Both of these may be used for single-tier or multi-tiered stacking (Litho. Plate No. 8, Fig. 2). In the bracket type (a) the steel columns only form a permanent fitting, on which skeleton frame shelves may be fixed of a desired height or width, and if necessary, working or study desks may be incorporated by the use of special component parts. The bracket type stack is shown at (c) with a reading-desk provided on one side of the columns. Solid ends and a shelf base may be fitted if desired, and free-standing stacks may be screwed to the floor or kept in position merely by their own weight.

The standard type of stack (b) is of a superior appearance and better suited for rooms where there is open access to the stacking. It will be seen that there are solid division panels and that the stacks are finished with a corniced cover plate and a continuous skirting at floor level. There is, of course, the same adjustability of shelving as in the bracket stack, and by the use of specially constructed parts, exhibition cases, periodical racks, etc., may be incorporated.

To obtain the maximum amount of shelf space, a "rolling case" method of stacking may be adopted. In this method the stack units are mounted on ball-bearing rollers which permit of their being moved about the floor without difficulty. They may thus be packed quite tightly, side by side, any required stack being pulled out for access by means of the handle provided at one end of each case (Fig. 2).

*Multi-tiered Stacks.*

Where the principle of multi-tiered construction is adopted, the metal stacks may serve not only to carry the stack deck floors, but also to help in supporting and stiffening the building structure itself.

Of the several types of stack deck floor, probably the best is the type consisting of a continuous concrete slab,  $2\frac{1}{2}$  in. to 3 in. thick, covered on the upper surface with linoleum, asphalt, or other sound-deadening material, and having the lower surface either plastered or finished smooth and distempered. All wiring for lighting points may be embedded in the concrete slab, and prismatic light reflectors may project only 1 in. below the level of the ceiling. In stacks of several stories, artificial lighting is naturally a matter of first importance, and close attention must be paid to this and to the method of convenient and economical switching.

Ventilation will also need to be carefully considered, and a complete circulation of air through the whole of the stack ranges must be maintained. Litho. Plate No. 12, Fig. 3, shows one method by means of which this object may be achieved.

All systems of multi-tiered stacking provide for the incorporation, in their steel framing, of access stairs, lift enclosures, and the like.

## NEWSPAPER STACKS.

Newspapers, bound or unbound, may be stored flat on wide shelves, or the bound volumes may be stored vertically in special racks. When bound, newspapers generally average about 25 in. by 19 in. by  $2\frac{1}{2}$  in. thick, but these dimensions are, of course, variable, and allowance should be made for this. A good plan is to construct the stack in 3-ft. wide bays, with slotted divisions to slide in between, say, every fifth volume. By keeping the volumes upright, these divisions serve to prevent damage to bindings and at the same time are adjustable to any required width.

## STACKING DATA.

By the courtesy of Messrs. Luxfer Ltd., the following excerpts have been made from their trade publications :

*Height.* 7 ft. and 7 ft. 6 in. from surface to surface of deck floors.

*Aisles.* Main, 3 ft. to 5 ft. or more.

Range, 2 ft. 6 in. to 3 ft. or rather more.

*Ranges.* Lengths, preferably not over 30 ft. in even multiples of shelf lengths. Depths, single-faced,  $8\frac{1}{4}$  in. to  $12\frac{1}{2}$  in. for books,

19 in. to 23 in. for newspapers; double-faced, 16½ in. to 24½ in. for books, 37 in. and 44½ in. for newspapers.

*Shelves.* Lengths, as required, usually 3 ft. but not more than 3 ft. 6 in.

Depths, 8 in., 9 in., 10 in., and 12 in. for books, 18 in. and 22 in. for newspapers.

*Stairs.* Straight runs, well lengths, 8 ft. to 9 ft., 12 risers; width, 2 ft. 6 in. or more.

Return runs, well length, 6 ft. 8 in., 12 risers; width, 5 ft. or more.

*Deck Floor.* Rough plate-glass slabs, ¾ in. thick.

Marble, 1½ in. thick.

Ribbon black slate, 1½ in. thick.

Stone substitutes, 1½ in. thick.

Reinforced concrete slabs, 2½ in. to 3 in. thick.

Floor covering, Rubbertile, cork, linoleum, etc.

#### *Width and Capacity of Shelves.*

The number of volumes that can be housed per lineal foot obviously depends on the character of the books. The following table has been prepared by averaging the data collected from a number of general and special libraries :

KIND OF BOOKS.	VOLUMES PER FOOT OF SHELF.	RECOMMENDED WIDTH OF SHELF.
Circulating . . . . .	10	8 in.
Fiction . . . . .	9	8 "
General . . . . .	8	8 "
Reference . . . . .	8	8-10 in.
Technical . . . . .	7	8 in.
Scientific . . . . .	7	8-10 in.
Medical . . . . .	6½	10 in.
Law . . . . .	4½	8 "
Bound periodicals . . . . .	5½	10 "

For double-faced ranges, multiply number of volumes, as listed by two.

#### Unit Stack Weights :

Books. 25 lb. per cub. ft. of ranges.

Stack Construction. 8 lb. per cub. ft. of ranges.

Steel Floor Framing. 4 lb. per sq. ft. of gross deck area.

Deck Flooring (3-in. concrete slab with linoleum and plastered soffit). 46 lb. per sq. ft. of gross area.



Live Loads. 100 lb. per sq. ft. of aisle area.

For columns, assume 40 lb. per sq. ft. of aisle area for live load, and reduce the figure by 5 per cent. for each deck below.

### STACK LOADS.

The following table illustrates the general variation of stack loads for from one to twelve tiers of stack construction.

Loading as per table of unit stack weights.

A = Typical aisle end support.

B = Typical intermediate support.

C = Typical wall end support.

#### 8-INCH SHELVING.

Including stacks, books, live load, and heaviest deck floor.

TIERS.	A	B	C
1	495	990	495
2	2,130	2,860	1,470
3	3,730	4,710	2,430
4	5,310	6,550	3,400
5	6,870	8,370	4,340
6	8,400	10,170	5,280
7	9,910	11,950	6,210
8	11,400	13,720	7,140
9	12,870	15,490	8,060
10	14,320	17,230	8,970
11	15,760	18,970	9,880
12	17,170	20,690	10,790

#### 10-INCH SHELVING.

Including stacks, books, live load, and heaviest deck floor.

TIERS.	A	B	C
1	620	1,240	620
2	2,360	3,320	1,700
3	4,070	5,380	2,770
4	5,760	7,430	3,840
5	7,420	9,470	4,890
6	9,060	11,490	5,940
7	10,680	13,500	6,990
8	12,290	15,500	8,030
9	13,870	17,480	9,060
10	15,430	19,450	10,080
11	16,980	21,410	11,100
12	18,510	23,360	12,120

## TABLES.

*Flat-topped Reading-tables.*

On Litho. Plate No. 9, Fig. 1, is given a schedule of table sizes which have been deduced from those measured in a large number of libraries, and which are considered to give a sufficiently generous allowance for reading-rooms generally.

The material and design of the table is, of course, a matter of individual choice, but these points should be borne in mind :

- (a) Supports to be arranged in such positions as to avoid, as far as possible, chance kicks and scrapes.
- (b) No cross rails near floor level, on which readers would be apt to rest their feet.
- (c) Seats to be so spaced as to ensure that a reader is not forced to encircle a table leg with his knees (a point so obvious that it is often neglected).
- (d) All mouldings to be subdued, and all arrises to be rounded.

Also in Fig. 1 are illustrated two alternative methods of table arrangement. It will be seen how, by thought given to the relationship of gangway and chair space, a general tightening up of the plan may be attained.

*Sloping-top Tables.*

Fig. 2 illustrates a double-sided sloping-topped table with a central division on which are arranged slotted frames to take the titles of newspapers or magazines which are secured on the slopes. This table is suitable for use only where ample seating accommodation is available, as it is obvious that the number of papers displayed (which is usually considerable), fixes definitely the number of readers' chairs.

In cases where seating accommodation is limited, no fixed position for papers would be defined on the tables, but all papers and magazines would be accommodated in separate periodical racks, from which they would be selected by readers and taken to the nearest convenient seat for perusal.

*Children's Tables.*

The general design of these naturally follows that of the adult tables, but the dimensions should be as those given in Fig. 3. It is suggested also that in this room an informal layout of furniture should be aimed at, and that this will be helped by the avoidance of

the use of one standard type of table throughout. It is better to have small tables of several shapes: round, square, and possibly oblong.

### *Special Tables.*

These may be designed to comply with any particular requirements, and they usually provide a good exercise in the display of ingenuity. The tables illustrated in Fig. 4 were designed for the display of recent works of fiction. They were placed in a prominent position in the lending library, where they proved a popular feature with the public.

### REFERENCE ROOM.

#### *Double-sided Study Table.*

Some librarians object to the double-sided type of study table on the ground that, in a public room, it is psychologically disconcerting for two students to be seated directly facing one another. Idiosyncrasies of habit or appearance are apt to cause irritation and lack of power of concentration. Be this as it may, the use of tables of this type is an economy in space, and, in the opinion of most librarians, well worthy of consideration.

In the table shown at (a), Fig. 5, there is a boxed division between the two readers. This serves as a shelf for books of reference which are not actually in use, and carries, on either side, concealed strip lights controlled by individual switches on each desk. A good measure of personal privacy is thus attained, and, the seats being staggered, the readers are not directly opposite one another. In addition, the rows of desk tops present a neat and ordered surface, and the unsightly appearance of a series of rows of metal light standards is avoided. The table illustrated, in addition to having two book-shelves within easy reach of the reader's right hand, is fitted with a pull-out board at desk level for the receipt of additional books of reference.

Also illustrated in Fig. 5 (b) is a single-sided flat-topped table of similar design to that described above. The question of whether or not the study table tops should have a sloped or flat surface is one of preference, as is also that of whether a lino-covered inset is desirable. If desk standards of the type shown at (c) are provided, one light may be made to serve two desks, the switch being fixed either on the standard or on the desk midway between the readers.

## CHAIRS.

The dusting of several hundred chairs presents a considerable problem in the time spent if the chair design contains any moulded work, turned spindles, or legs. Whatever type of chair is selected, therefore, it should be strong, with simple members, and all arrises rounded, so that a quick flick over with a duster will be all that is necessary in the way of cleaning. In the reference and principal reading-rooms it is pleasant to have arm-chairs with coloured leather seats, and in the case of the reference rooms the seats should certainly be padded, for here the readers may be sitting for long periods. If the leather seats, the lino table tops, and the floor covering are considered at one time as a combined colour scheme, harmonious effects may be obtained. It is sometimes convenient to provide a ledge under the chair to take hats or small parcels.

## MISCELLANEOUS FITTINGS.

*Directory Stands.*

These stands, which will usually be situated in a prominent position in the reference library, may be incorporated in the wall shelving, or may form an individual fitting, as shown (Litho. Plate No. 10, Fig. 1).

The lowest book-shelf should be 3 in. above desk level, so that books may be taken from the shelf without interfering with other volumes which may be lying on the desk itself.

Cupboard space under the desk is useful for the storage of out-of-date or duplicate directories.

*Periodical Racks.*

Two types of periodical racks are illustrated in Fig. 2. In the first of these examples the periodicals are placed vertically, being separated by thin sheet-metal or glass divisions. These divisions may be numbered, and one or more index charts placed in positions convenient for reference. Cupboards below the rack may be useful for storage of past issues or may be used for display.

In the second type of rack illustrated, the rack is sloping and recedes back from solid projecting ends which may be used to form a termination to the general wall shelving.

Each receding face forms a 1-in. shelf on which periodicals may rest in a sloping position, held upright by means of a metal bar, or by a narrow strip of plate-glass, slotted, at either end, into

the wood fitting. By placing the smaller periodicals in front and the larger ones at the back, several thicknesses may be carried on each shelf, their titles still remaining visible.

In all cases ample circulation space should be provided in front of the periodical racks, and direct, unobstructed gangways should converge thereon from every reading-table.

### *Catalogue Cabinets.*

Various firms supply these to standard sizes to take 3-in. by 5-in. cards.

Illustrations and dimensions are given (Fig. 3) of both single-sided and double-sided cabinets. The drawers are tilted downwards at an angle of  $5^{\circ}$ , and each drawer is fitted with rod, stop-block, safety catch, card frame, and pull.

### *Display Cases.*

Of the infinite variety of these, two only are illustrated. Fig. 4 shows a wall fitting which may with advantage be designed with concealed strip lighting fixed so as to illuminate the shelving. Also illustrated is an isolated fitting which, if desired, may be arranged with a movable, double-sided display board, slotted into fixing holes provided in the top of the fitting.

### *Folio Tables.*

It may be desirable to provide a special case for the housing of large volumes of an unwieldy character—e.g. atlases, works on art, history, architecture, decoration, etc.

Such a case is illustrated in Fig. 5. The top, at ordinary desk level, may be used as a table, thus eliminating the necessity for carrying the heavy volumes for any distance. Sliding shelves, 3 in. apart, are designed to carry the volumes.

The central partition may be staggered so as to suit varying requirements of width.

### *Ordnance Map Chests.*

The standard ordnance sheet measures 41 in. by 29 in. The sheets are sometimes stored loose in a plan chest (Fig. 6). They may also be folded in the middle and bound up into volumes or may be rolled and stored in tubes placed in racks having vertical and horizontal divisions at 9-in. to 12-in. centres.

As in the case of the folio table, the top of the plan chest should

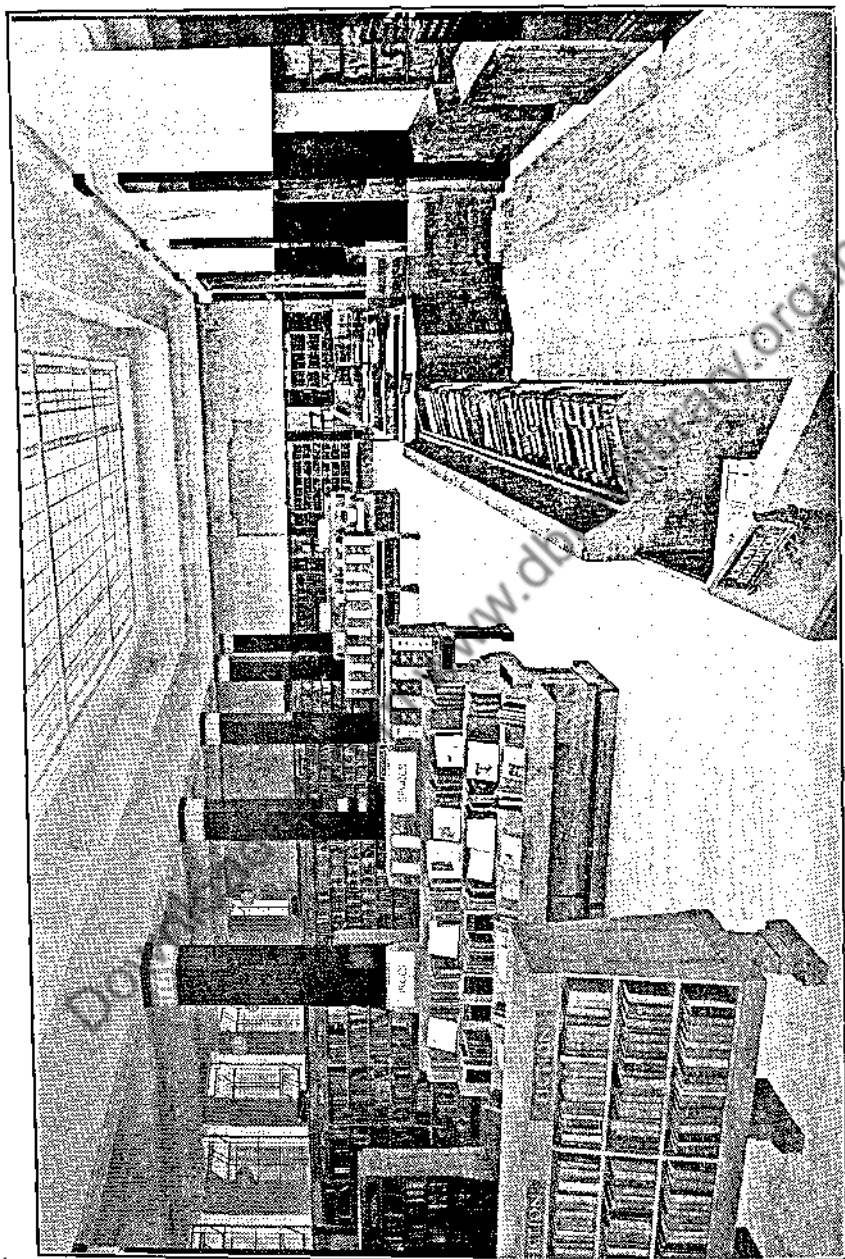


PLATE X.—THE CENTRAL LIBRARY, SHEFFIELD. (The Central Lending Library and Service Counters.)

By W. G. DAVIES, F.R.I.B.A.

[By courtesy of the City Librarian, City of Sheffield Public Libraries.]

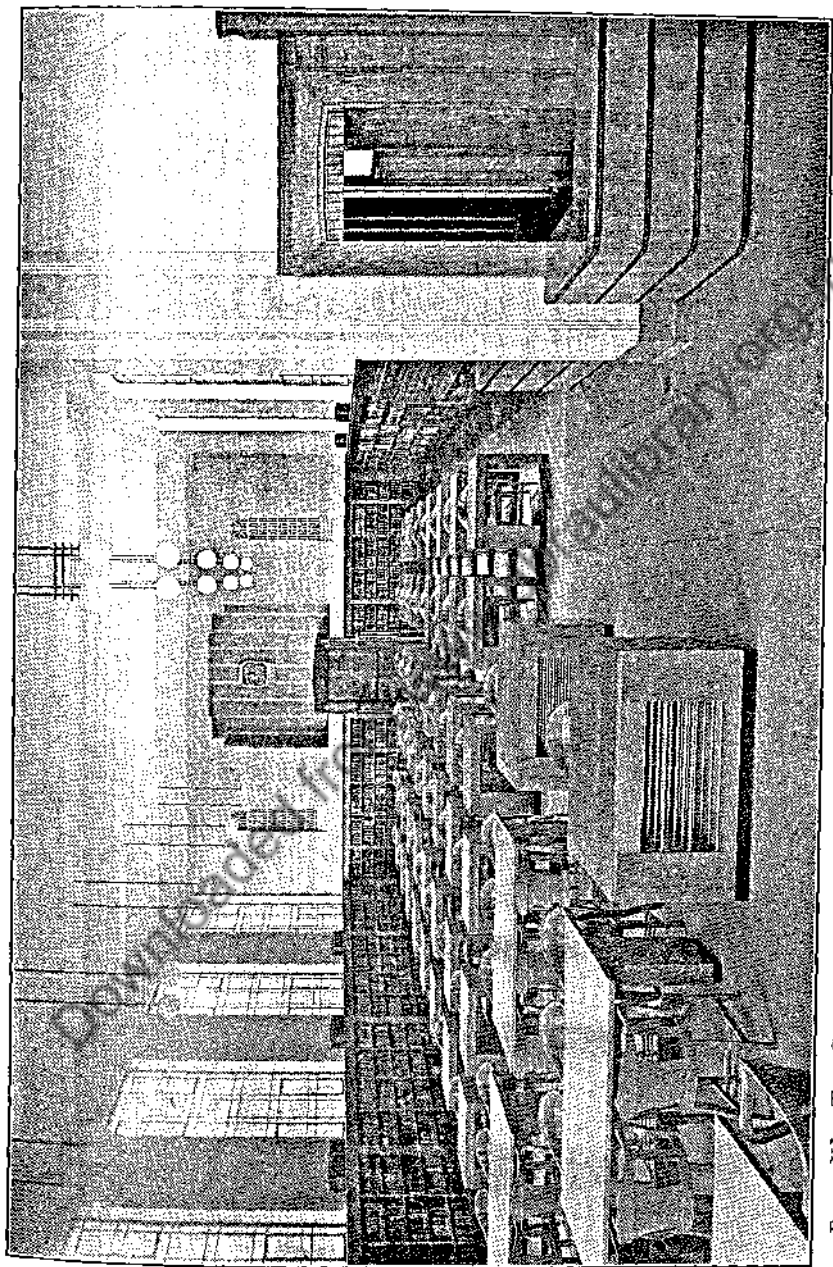


PLATE XI.—THE CENTRAL LIBRARY, SHEFFIELD. (The Main Reference Library with Service Counter on the right.)

By W. G. DAVIES, F.R.I.B.A.

[By courtesy of the City Librarian, City of Sheffield Public Libraries.

be treated as a desk on which to place any selected map. Usually the public will be allowed access to the maps, and will be permitted to take tracings from them if desired. Facilities should be provided for this, and in some libraries a small room is set aside for the purpose, equipped with draughtsman's stool, desk, and appliances.

#### *Book Trolleys.*

Fig. 7 shows a double-sided trolley. The castors should be sprung and rubber tyred, and rubber angle pads may be fitted to the corners to prevent damage to wood furniture.

#### *Reading Centre Bookcases.*

In small reading centres where cases of books are sent out from the central library at periodic intervals, and where shelving space may be limited, it is sometimes desirable to pack the books in a box which, itself, may be used to form a display trough. Such a fitting is illustrated in Fig. 7, and is a type which has been adopted with success in several large distributing libraries. The case, which may be up to 3 ft. long and 10 in. wide, is made to open on check hinges, so as to form a two-tier display trough.

#### *Book Troughs.*

A simple book trough is illustrated in Fig. 8. This may, of course, be made either single or double sided, of any required proportion or design, and may be fitted with a distinguishing title strip if desired.

#### *Music Library Table.*

This fitting (Fig. 9) has already been described under the heading of service counters (see p. 85 of this Chapter).

#### *Combined Stool and Ladder.*

A useful stool for staff use consists of a simple wooden stool of the usual office type, but having, pivoted inside two of its legs, a framing which, when folded outwards, forms a miniature but convenient step-ladder (Fig. 10).



## CHAPTER VI

### HEATING, VENTILATION, AND LIGHTING

It cannot be too strongly emphasized that the question of annual running costs should be considered a matter of paramount importance in its application to the equipment of a municipal library. It will be appreciated that, of the various amenities which are usually provided by a municipality, the public library service constitutes one of the few which may be reckoned as almost a dead loss from the point of view of a Finance Committee. Transport, baths, gas, and electricity departments, all are revenue-producing, and may, circumstances permitting, be made to show a profit. Libraries come under a different category. Expenses, in addition to salaries and the upkeep of the library and its branches, include a heavy annual charge for books, periodicals, and repairs. Receipts consist of a comparatively small annual income derived from fines and other incidentals, leaving a debit balance which constitutes a direct charge on the local rates. There is, therefore, apt to be a regrettable tendency to view the library services rather in the nature of an expensive luxury, on which economies may be conveniently effected at times of financial stress, without any very pronounced effect being made obvious in the facilities provided. This feeling will undoubtedly be accentuated, and adverse criticism encouraged, if the construction and equipment of libraries are such as to necessitate heavy and recurring expenses having to be met out of the Library Fund.

The fact that membership of the library for a full year may usually be obtained for less than the cost of an evening at the cinema may not be entirely sufficient to refute adverse criticism of the library department's balance sheet. It seems desirable therefore, that, so far as is consistent with efficiency, all running costs should be kept as low as possible. Fundamentally, the essential thing would appear to be that as much money as possible should be left available for the initial and enduring purpose of the building—the supply of books.

In considering problems of heating, lighting, and servicing, it

should be noted that a solution of these problems which would be ideal when applied to certain other types of building may be far from satisfactory when considered from the point of view of the librarian. In this chapter, therefore, an attempt will be made, avoiding highly scientific data, to deal with the various services simply and solely as regards their application to the particular requirements of library construction.

Of what then do these particular requirements consist? Generally speaking the main reading-rooms of the library should show a section somewhat on the lines of that illustrated on Litho. Plate No. 12, Fig. 2. To accommodate the maximum number of volumes, all within easy reach of the reader, the height of the lowest shelf should be 14 in. to 16 in. above the floor level, and the shelves, extending continuously round the walls, should be, with their 4-in. or 5-in. title strip, of a height of about 7 ft. 6 in. from floor level. The top of this title strip may well determine the height of the window sills, so that above the shelves the major part of the wall surface will consist of window area, extending, for reasons of light distribution, to as near the underside of the flat ceiling as is practicable. Effective light may be calculated as extending into the room for a distance equal to one and a half times the height of the window. With properly proportioned windows and correctly spaced floor spans there should seldom be need for a greater height than 15 ft. from floor to ceiling of a reading-room—unless (as is the case in important reference libraries) such height is desired for the sake of architectural effect. It will be obvious that in a reading-room which has been conceived on these lines, certain conditions have already been defined which will influence the choice of equipment to a considerable extent. It will be noted for instance, that ample heating surface is available on both floor and ceiling, but practically none on the walls. Below the book-shelving is a boxed-in space, available for pipes or ducts. There is also a small space available at the top of the shelving, behind the title strip. In the case of a lending department the centre part of the room will usually be occupied by island stacks, and there will be a continuous circulation of borrowers round the faces of stacks and book-shelving. In reading-rooms generally, however, the floor area will be taken up by tables, at which readers will be seated for a period of time—the length of which period will vary to a large extent in accordance with the type of reading to which the room is devoted.

The hours during which the various departments will be open

to the public are of importance. A typical time schedule reads as follows, but will, of course, be liable to variation in different libraries :

Staff	Staff arrive	9 a.m.
Lending Library	Library opens	9.30 a.m.
	Library closes	8 p.m.
Reading-rooms	Rooms open	9.30 a.m.
	Rooms close	8.30 p.m.
Children's Library	Library opens	4 p.m.
	Library closes	6 p.m.

In the case of the smaller branch libraries, open only during a limited number of hours each day, some form of thermostatically controlled gas or electric heating, capable of switching itself on and off by means of a time-clock operating device, may prove an economy. If heat were switched on say two hours before the opening of the library, it would probably suffice.

Departments will vary as regards the number of air changes per. hour which will be required. In a crowded news room as many as ten changes per hour may be desirable, whereas in a special collection room, frequented usually by a very limited number of readers, four changes may suffice.

Whatever method of heating or ventilation is adopted it should be such as to avoid stuffiness, an over-heated atmosphere, the creation of draughts, or the distribution of dust and dirt throughout the room.

Heating and ventilating services should be so arranged that departments which are not in continuous use may be cut off from the general heating circulation. If the building includes an art gallery, this should certainly be treated as a separate unit—particularly as regards ventilation. The windowless walls of the galleries, together with the heat radiated from the glazed slopes and roof flats in hot weather, will necessitate individual consideration being given to this section of the building.

A ventilating system which provides for the introduction of warmed air into the building will enable a consequent reduction to be made in the amount of heating surface to be provided by the water-heating system. Warmed air heating has the advantage that it may be disposed so as to give a universal warmth throughout the whole room.

## HEATING.

The choice of the type of fuel to be used is likely to be the subject of keen controversy when brought before a municipal council for sanction. In cases where gas, coke, and electricity are all supplied by departments of the municipality, the adoption of one or other of these heating media may be preferred by a majority, even though its economic cost may be against it. Questions of policy will arise, and it may well be that fuel will be offered at a very much reduced rate, perhaps from a desire to assist an enterprise beneficial to the ratepayers as a whole, or from the point of view of advertising the resources of the municipal services. Again, the choice of a fuel is bound up with a variety of other considerations, *e.g.* the situation and extent of the space available for heating plant and fuel storage, the facilities for the delivery of fuel, the question as to whether or not a discharge of smoke and fumes would be seriously detrimental, and so on. In effect, it is necessary that the heating scheme should receive consideration as a whole, with regard to fuel, plant, ventilation, labour, and maintenance. As has already been stated, the question of running costs, in a building of this type, is of greater importance than any question of initial outlay. In this connection each individual building provides its own problem and must be considered on its own merits. It is impossible to lay down hard and fast rules which would be applicable to every building. For example, when a building only requires intermittent heating, quite a different problem arises from that obtaining when continuous heating is necessary, and this fact may have a considerable bearing on the choice of the particular type of fuel to be adopted. In some cases, even though solid fuel is the cheapest from other points of view, the loss of heat due to firing up, banking periods, etc., may turn the scale in favour of the choice of gas or electricity.

In estimating the annual running costs of a heating installation, the main items of expenditure to be considered may be summarized thus :

1. Cost of fuel.
2. Electric current for motors of fans and circulating pumps.
3. Labour.
4. Maintenance and repairs.
5. Interest on capital cost.
6. Insurance.

The following tables, which have been compiled from an analysis of costings taken from various sources, may serve as a very approximate guide for purposes of comparison :

1. *Initial cost of plant in heating chamber*, and including, in each case, a hot-water radiator heating system.

(a) Coal or coke fuel, consumed in hand-fired C.I. boilers	£5000
(b) Gas fuel . . . . .	£5500
(c) Coal fuel with automatic stokers and hand firing .	£6250
(d) Coke fuel, with gravity feed, including steel hoppers	£6500
(e) Oil fuel, including storage tanks . . . . .	£6200
(f) Electricity, with thermal storage . . . . .	£7700

2. *Initial cost of heating system*, and including for heating chamber plant as at 1 (a) above.

Hot-water radiators . . . . .	£5000
Panels, with iron pipes . . . . .	£6600

In addition to the above there is a large number of varied types of heating systems on the market, whose cost and suitability for a particular purpose might best be obtained by reference to the specialist firms of suppliers. Before embarking on a scheme full investigation should be made of the possibilities of using electric panels, hot-water heated panels, electric strip radiators, and so on.

A comparison of running costs is difficult to arrive at as the conditions obtaining vary so much, but the following observations may be of some assistance.

The cost of fuel is liable to great variation, but for our purpose will be taken on this basis :

Solid fuel at	46s. per ton.
Oil	„ 100s. per ton.
Gas	„ 7d. per therm.
Electricity	„ $\frac{3}{4}$ d. per unit.

Taking into consideration the efficiency of the various equipment, varying factors generally found in practice, and assuming a building of which the cubic contents are from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  million cubic ft., the comparative costs, exclusive of labour and interest on sinking fund, might be taken approximately as follows :

Solid fuel . . . . .	£660 per annum
Oil . . . . .	£840 „ „
Gas . . . . .	£1575 „ „
Electricity . . . . .	£2500 „ „

With reference to the question of labour, this may vary within very wide limits—whether or not the stoker can be usefully employed for other work when not attending to the boilers, and so on. It is assumed that in most cases boilers having either automatic stokers or gravity feed will be installed, reducing the work of the attendant to a minimum. When there is a comprehensive system of ventilation, etc., some of the man's time will be taken up with attendance on the plant and this time will be common to whatever fuel is used.

With particular reference to solid fuel a fact sometimes lost sight of is that the skilful management of boiler equipment and the choice of the most suitable class of fuel for the particular equipment installed, can cause a big difference in the actual efficiency obtained from such equipment—sometimes as high as 20 per cent. In fact, as regards the heating installation generally, an intelligent man can ensure proper service in the building with a minimum of upkeep—it is a great mistake to assume that any untrained person can fire a boiler and attend to the heating and ventilating plant. A good salary to a really competent man is well worth while where an up-to-date and comprehensive plant is installed.

The cost of an installation burning solid fuel, and including a panel-heating system, ventilation plant, and hot and cold water services, should usually be found to approximate to about one-sixth of the total building costs, and rather more if a complete air-conditioning system is adopted.

The heating chamber should be well ventilated. It is well to arrange for boilers to be duplicated so that the whole plant is not liable to be thrown out of operation when repairs or cleaning are in progress. A small domestic hot-water heater should be provided for summer use, when the main heating installation may not be in operation. This domestic heater may not necessarily use the same fuel as do the boilers for the main heating system—electricity or gas is sometimes found an advantage even if the winter load is supplied by solid fuel.

#### *Fuel.*

There is little doubt that solid fuel will, under normal conditions, give the cheapest service. Its dust and dirt are a disadvantage, but frequently means may be found whereby these may be confined to the heating chamber and so cause little or no inconvenience. If the position of the heating chamber is such that fuel may be dumped

in from street level and fed to the boilers by gravity or by a worm-drive automatic feeder, labour charges will be greatly reduced. The clinker may be trolleyed to a lift, and so raised to street level for removal. One ton of coke occupies approximately 90 cub. ft. of storage space.

Oil provides a highly efficient fuel, though the increase in its cost during recent years has done much to preclude its more frequent adoption. Contrary to a generally accepted belief, the storage of oil presents no particular danger as it is very difficult to ignite when in bulk. To comply with Home Office requirements it is necessary to house the oil tanks in such a manner that in case of a leak from the tanks the oil cannot escape into the surrounding premises. This is generally done by building up a wall surrounding the tanks and of such dimensions as to contain all the oil that may escape should any leakage occur.

The re-filling of storage tanks is a simple matter, as oil may be pumped in from the street after making connection to a service nozzle, which may be permanently fixed on the outer wall of the building. One ton of oil occupies a space of approximately 40 cu. ft.

Gas-fired boilers are clean, ashless, and smokeless. In operation they require less attention than does any other type of boiler except those heated by electricity—with which they are on a par as regards general efficiency and ease of control. No storage space is required as the supply is taken off direct from the corporation mains.

Electrical heating is 95 per cent. efficient, entails no labour, gives off no smoke or fumes, and, being instantly controllable by switch, is eminently suitable to cases where rapid and intermittent boosting up of the heating installation is desired. Though from an engineering point of view an electrical system is excellent, yet it should be remembered that its cost, unless thermal storage is provided, is likely to prove prohibitive when compared with other methods of heating. The thermal storage system consists of taking off current at certain hours during the night, at the "off-peak load" period (when the current is less in demand and may be obtained at a greatly reduced rate) and storing the heat generated in special tanks designed for that purpose. These tanks are of considerable size and will in fact occupy as much or more space than would a solid-fuel-burning plant and its fuel storage. The initial cost of plant is heavy, and unless current is obtainable at an unusually cheap rate, the cost of electric heating, even with thermal storage, will be found to be well in excess of all other methods.

*Heating Systems.*

Direct heating comprises such media as electric, gas, and coal fires, high and low temperature panels, convectors, and so on. Generally speaking, these methods are more suited to the heating of individual rooms than to the warming of a large building. Direct heating by electricity is undoubtedly expensive in current consumption, but in the case of small rooms the convenience of being able to switch the supply on and off instantaneously is obvious. Even in the case of large rooms there are compensating advantages in favour of electricity. For one thing the service cable occupies little space—Pyrotanex copper-sheathed cable may readily be buried in the normal thickness of the plasterwork, and an electric installation is very easy to install. Again, if the difference in temperature between the heated and the unheated surfaces should cause discolouration of the plasterwork (and I have not yet come across an entirely satisfactory way of obviating this), in the case of a heated panel (whether the heating is done electrically or by water) this discoloration will be evenly distributed over the whole surface and so less obvious to the eye than would be the case with the discoloration so often seen when pipe coil systems have been used.

In the Malden and Coombe County Branch Library, electrically heated panels have been installed in the central part of the lending library with very successful results. Here the ceiling is divided into three strips, each extending the full length of the room. The two outer strips consist of the metal heating panels, and the central strip is composed, for purposes of sound-deadening, of  $\frac{1}{2}$ -in. thick square slabs of fibre board. The whole effect is both neat and efficient and discoloration has to a large extent been obviated by the insertion of a narrow strip of insulating material as a surround to the heating panels. Electric tubular heating may usefully be employed in positions under window openings where it is desired to warm the incoming air before it enters the room.

Indirect heating may be defined as a system whereby heat is conveyed to the various parts of a building by means of the circulation of water or steam. The simplest type of indirect system consists of hot-water pipes running round the rooms just above floor level. Dust and dirt are liable to accumulate about the pipes, but the method is cheap and effective and quite well suited to a small branch library where cost is a prior consideration. As a reference to the section on Litho. Plate No. 12, Fig. 1, will show, the pipes may



be very conveniently accommodated behind the skirting of the book-shelving. This skirting should be slotted or have metal grilles for the passage of the heated air. The underside of the bottom shelf should be faced with a sheeting of asbestos to protect the woodwork.

Radiators heat mainly by convection, are effective in use, and comparatively cheap in initial cost. On the other hand they harbour dirt, cause discoloration if placed against the walls, and, if fitted with metal covers, form a shelf where there is the invitation to lounge or deposit books and litter. If price is a vital consideration, radiators are suitable for use in corridors or offices, but quite unsuited to a reading-room, where they occupy valuable shelving space on the walls.

The invisible panel system, whereby hot water, circulated by pumps, is passed through coils of pipes embedded in the room ceiling, would seem to rank about equal with the electrically heated panel as a means of heating reading-rooms. The panel coils consist of welded wrought iron pipes,  $\frac{1}{2}$  in. or  $\frac{3}{4}$  in. in diameter, spaced at about 6-in. centres, and embedded in the concrete or suspended from the wood joists of the ceiling above. In addition to the convenience of this position from the standpoint of a librarian, it is widely accepted that the amount of radiation given off by panels when placed in the ceiling is greater than that given off from similar panels when placed in the floor or walls. Again, floor panels necessitate the use of particular floor coverings and definitely rule out the use of cork or lino for the purpose. Panel coils transmit heat chiefly by radiation, and it is therefore desirable when using this method of heating to incorporate some system of ventilation, in order that any suggestion of air stagnation may be avoided.

With the panels in operation the plaster ceiling surface will emit, very approximately, 100 B.T.U.'s per sq. ft. of area, and there will be a variation in surface temperature of the plaster in between and that directly over the pipe coils. This variation in temperature will tend to produce a "stripey" effect of pattern staining which, as has already been noted, it is difficult to prevent entirely.

Provision will have to be made for housing the control valves to the panel coils. Cupboards for this purpose may usually be incorporated in the wall shelving and access to the controls should be convenient—they should be placed so that an attendant can reach them without having to strain himself in the process.

The panel system of each department should be capable of being cut off from the rising mains if so desired.

## VENTILATION.

Whereas in small libraries the natural ventilation from windows will no doubt be adequate to meet all requirements, in larger libraries it will probably be desirable to install some type of mechanical ventilation equipment. If reading-rooms abut on to a busy thoroughfare it may be necessary to provide double, sound-resisting windows, in which case artificial ventilation will be essential. In any case it will be an undoubted advantage if, in a town, the windows can be kept closed, and outside dirt excluded as much as possible.

A simple system of ventilation consists of a method whereby air, washed, filtered, and warmed to room temperature, is blown into and extracted from a building by means of fans.

Air conditioning may be described as an inlet and extract system whereby the air, in addition to being washed, filtered, and warmed, is dehumidified before being blown into the building.

The number of air changes per hour which are desirable in each department will naturally vary with the size of the room and the extent to which it is occupied. A small committee room with a full meeting in session may require 10 changes per hour, a crowded news room 8 changes, whilst in the ordinary reading-rooms 4 changes would probably suffice.

On Litho. Plate No. 11 and Litho. Plate No. 12, Fig. 1, is shown a scheme of ducting which it is suggested is very suitable for adaptation to large libraries where the reading-rooms are on several floors. The main fresh-air inlet duct leads from a ground floor or basement fan-chamber and circles the outer walls of the building below ground-floor level. The duct should be made the full height of a man in the standing position, say 6 ft. 3 in., for any place to which access is difficult or uncomfortable is almost certain to be neglected, and it is important that this main duct should be the object of frequent attention. The duct is provided with access manholes at suitable points, and serves to conceal the pipe mains, electric conduit, telephone, and clock wiring, etc. It also gives access to the control dampers at the bottom of each vertical vent duct riser, access which permits of the flow of air to the rooms above being effectively regulated. The rising ducts are of galvanized metal trunking, turning into shaped mouthpieces concealed in the top of the shelf framing and discharging through pierced metal grilles at each floor level.

A similar method of construction may be followed with regard

to the extract system, or, where there is a central area light, the main extract duct may be designed to encircle the lay-light framing as shown at the bottom of Litho. Plate No. 11. In this case the air is extracted from the room above by short vertical downcast shafts, and is drawn in through grilles concealed in a recessed troughing formed in the plaster cornice of the lay-light opening. All vent grilles are effectively concealed.

On Litho. Plate No. 12, Fig. 1, the construction of the outer wall containing the rising ducts is shown in greater detail, and attention is directed to the following points :

- (a) Steelwork and ducts are of such dimensions as would normally be suited to a building consisting of three or four floor levels.
- (b) The wall thickness of 1 ft. 6 in., though actually unnecessarily thick in the case of a steel-framed building, is permissible in this case owing to the fact of the large amount of wall space occupied by ducts.
- (c) Stone or brick facings are of a depth of bed which ensures the minimum of cutting for ducts.
- (d) A spacing of 10 ft. 6 in. to 12 ft. between stanchions works conveniently as regards the arrangement of ducts and windows, and, in addition, gives an economical layout for the room furniture. The gangway width of 3 ft. 8 in. between chair backs is about the minimum where passage-way behind them is desired.
- (e) If the wall beams are placed eccentrically towards the outer wall face, it will allow an easier passage for the ducts, the wall weight will be more directly supported, and it should be possible to reduce slightly the sizes of the stanchions owing to the weight of the wall serving to counter-balance the eccentric loading from the main floor beams.
- (f) The piers between windows may be finished internally with plaster on expanded metal stretched from one window reveal to the next, or may be lined with acoustic or fibre boarding.

Multi-tiered stack rooms which, being on the inside of the building, rely on artificial ventilation, may be treated as shown in Fig. 3. Slots, about 12 in. by 4 in., are provided in the stack floors in such positions as to ensure a complete circulation of the incoming air throughout the stacks.

## LIGHTING.

Fluorescent lighting has not yet been fully developed as regards the production of fittings suitable for peace-time needs, but the following facts are of interest :

At the present time only the special 5-ft. long war-time standard tubular fitting is available, but many fittings of smaller size and shape are being developed for a variety of purposes. The 80-watt 5-ft. fluorescent tube gives 300 per cent more light than does an 80-watt tungsten filament lamp. It follows that, theoretically, to obtain equal light intensity fewer fittings will be required in the case of a system comprising fluorescent lighting. It must be noted, however, that intensity of light is not the only concern and that for equal distribution the light points must be evenly spaced throughout the room.

Running costs of a fluorescent system are very cheap, but fittings and replacement tubes are, at the present time, fairly costly.

In America fluorescent tubes are now available in twelve standard sizes. In this country, too, we shall no doubt have similar developments and provision will be made for colour correction. When fluorescent lighting is installed it will be necessary to provide a condenser for power factor correction near the source of supply to the building or else at each individual fitting.

For the cheapest and most efficient lighting, there is no doubt that a totally enclosed pendant, with a single bulb and having the major light flux directed downwards, is the best type of fitting at present on the market. The suspension rod allows the source of light to be brought to a desired height above the reading plane, but exception may be taken to a forest of pendants from the point of view of appearance.

If ceiling fittings are installed they should be easily accessible for cleaning and for the renewal of bulbs. As regards the renewal of light bulbs, in Chapter VII, page 121, a brief note is given of the type of ladder which may suitably be provided for this and other purposes. To obviate the nuisance of having to change odd bulbs in rooms where the ceilings are high and difficult of access, it is standard practice to take each room in turn, changing all the bulbs in that particular room when they have given the maximum amount of service (*i.e.* 2000 hours). Bulbs which are not then completely burnt out may be put aside for use in more easily accessible positions.

It is suggested that the fitting shown in Fig. 5 (which was

designed for the main reading-rooms of the Huddersfield Library) has several points of interest.

- (a) The fitting is tight to the ceiling, so that no dust can gather inside or on top.
- (b) The opaque glass sides provide sufficient illumination to light the ceiling, but by far the greater volume of light is directed downwards by means of mirror reflectors.
- (c) Strip metal louvres serve to diffuse the light and eliminate shadows.
- (d) The louvre frame is hinged for access. Flat on the top of the louvres is a sheet of "rain-drop" pattern glass, so that the interior of the box fitting is not visible from below.
- (e) A four-point lamp holder is provided, so that by changing the wattage of bulbs a considerable variation in the range of light intensity is assured.

Indirect lighting is excellent from the point of view of architectural effect, and the avoidance of the distraction caused by a multiplicity of light fittings is obvious. The R.I.B.A. Library has bowl fittings concealed in the tops of the semicircular ends of the projecting bays of book-shelving, and light is thrown on the ceiling and reflected downwards. At the Picton Reading Room, Liverpool, light from eight 750-watt lamps is thrown upwards from a central bowl fitting, and is reflected off the inner surface of the dome above. In the principal rooms of the Viipuri Library, Finland, light is thrown from the ceiling on to the side walls and so reflected and diffused.

Concealed lighting may be provided cheaply and effectively by means of high-powered commercial reflectors suspended at least 3 ft. above the level of lay-light glazing. Providing that reasonably obscured glass is used for the lay-light, this height of suspension should be sufficient to prevent any "spotty" effect being produced.

As regards initial cost there is probably little to choose between a scheme of indirect lighting and one in which the light is supplied direct from visible sources. The cost of the greater number of light points required in the former instance balances the more expensive finish required for fittings in the latter case. But if we compare the current consumption of the two schemes it will be found that the annual cost of an indirect scheme is such as to be practically prohibitive as regards its general use in a library com-

prising a number of large reading-rooms. Under normal circumstances the annual current charges on a scheme of indirect lighting will be four to five times the amount of the charges on a scheme with pendant lights.

The light intensity to be provided in reading-rooms should be 10-ft. to 14-ft. candles at desk level, but where individual desk lights are provided the general light intensity may be reduced to 8-ft. candles. The actual effective illumination will be liable to reduction up to a proportion of as much as 25 per cent as fittings and decorations lose their freshness, and allowance should be made for this.

For further information on the subject of artificial lighting by electricity the reader is referred to the series of pamphlets published on this matter by the Lighting Service Bureau. These pamphlets contain particulars of a method of calculation, by simple formula, of the proportion of lumens produced by a lamp which actually reach the plane of work, and they state the wattage of the lamp which it will be necessary to provide to produce these lumens. Included in the formula is a "coefficient of utilization", a factor which takes into account the proportion of light reflected by various colours of walls and ceilings. The following table gives a few only of the large range of reflection factors given in the pamphlet. The figures effectively demonstrate the considerable extent to which internal finishings are liable to affect the general lighting of a room

White . . . . .	84 per cent.
Light grey . . . . .	31 "
Dark grey . . . . .	11 "
Primrose . . . . .	76 "
Sea green . . . . .	38 "
Sky blue . . . . .	30 "
Mid-brown . . . . .	12 "
Crimson . . . . .	6 "

Window areas, where such occur, are taken as being dark—as light is transmitted through the glazing and very few rays are reflected back.

It will be appreciated that with the direct lighting system the influence of wall and ceiling colours on the general lighting is of considerable moment, but that this is doubly so in cases where an indirect system is installed—in which event the colour and texture of the reflecting surfaces are most important. Highly glazed and

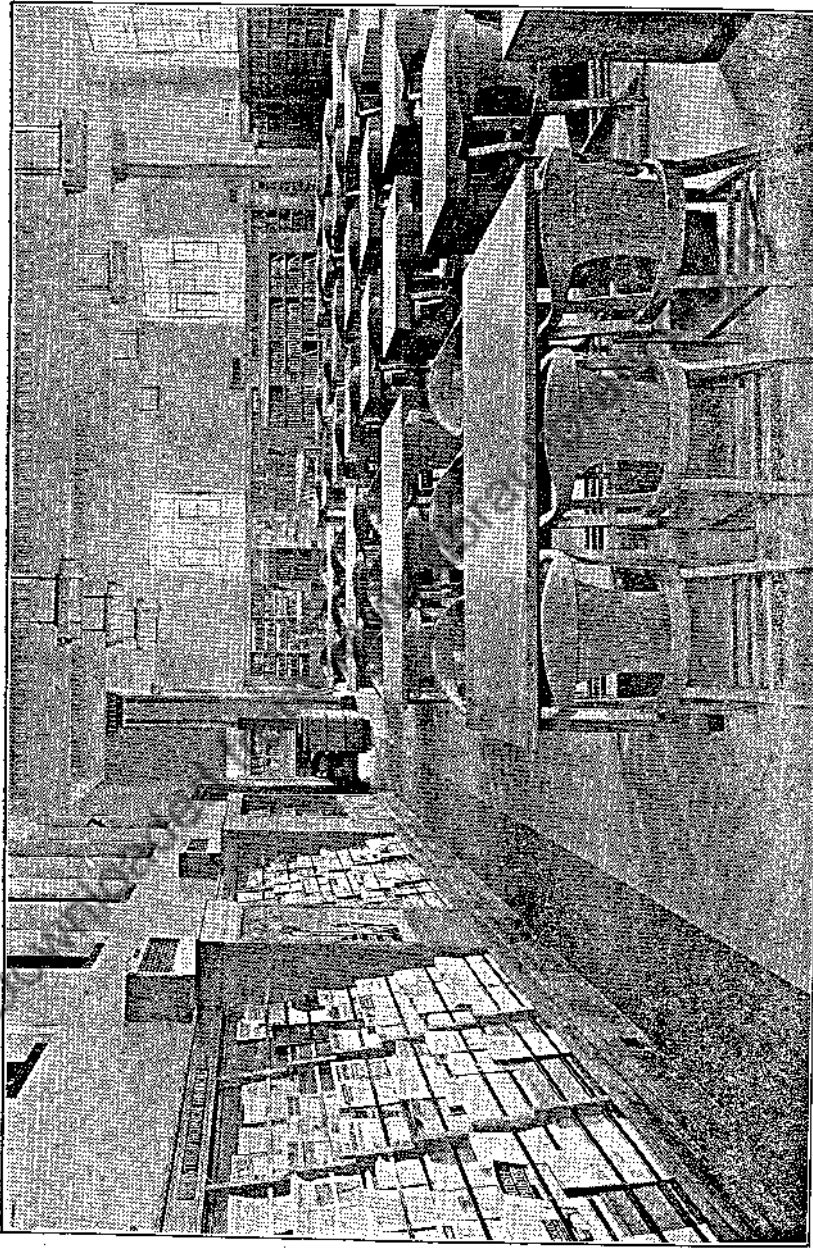
polished surfaces should be avoided as they are liable to cause glare and inconvenient reflections. For this reason, if for no other, a natural or matt-finish for the woodwork is desirable.

The switching of lights is important, and sufficient switches should be provided to ensure complete control over the light intensity of each room. Fig. 4 shows a suggested layout for the switching of a reading-room, and for a spacing of light points such as will give an even and shadowless distribution of light over wall shelves and reading-tables. Note that the lights on the blank wall side may be switched on independently from those nearer the windows. The switches control alternate lights and a two-way switch is provided for the caretaker's use when perambulating the rooms at night-time. All switches in public rooms should be directly under the control of the library staff—either placed in the service counter or in a cupboard close to the assistant's hand. In the case of a long range of news slopes or reading-tables it is a good plan to provide a master switch for the convenience of the caretaker.

Considering the electric supply system as a whole, thought should be given to the provision of cupboards or recesses where the fuse boards may be conveniently yet unobtrusively accommodated. It should also be borne in mind that a suitable area of wall space must be reserved (usually in the basement near the point where the main supply cable enters the building) in the front of which may be fixed the frame for mounting the main switches, fuse boards, and meters.

Emergency lighting should be provided to guard against the possibility of a failure of the main electric supply and to provide pilot lights at strategic points over the main exits, to assist in the clearance of the building in case of emergency. In a building wired on the 3-phase system it will usually be considered sufficient if the emergency supply is run off a separate phase.

In very large libraries (*e.g.* the Manchester Central Library) it may be necessary to provide a separate installation run off trickle-charged accumulators. This is, of course, an expensive item as regards batteries, wiring, and fittings, and in addition the batteries will require weekly attention.





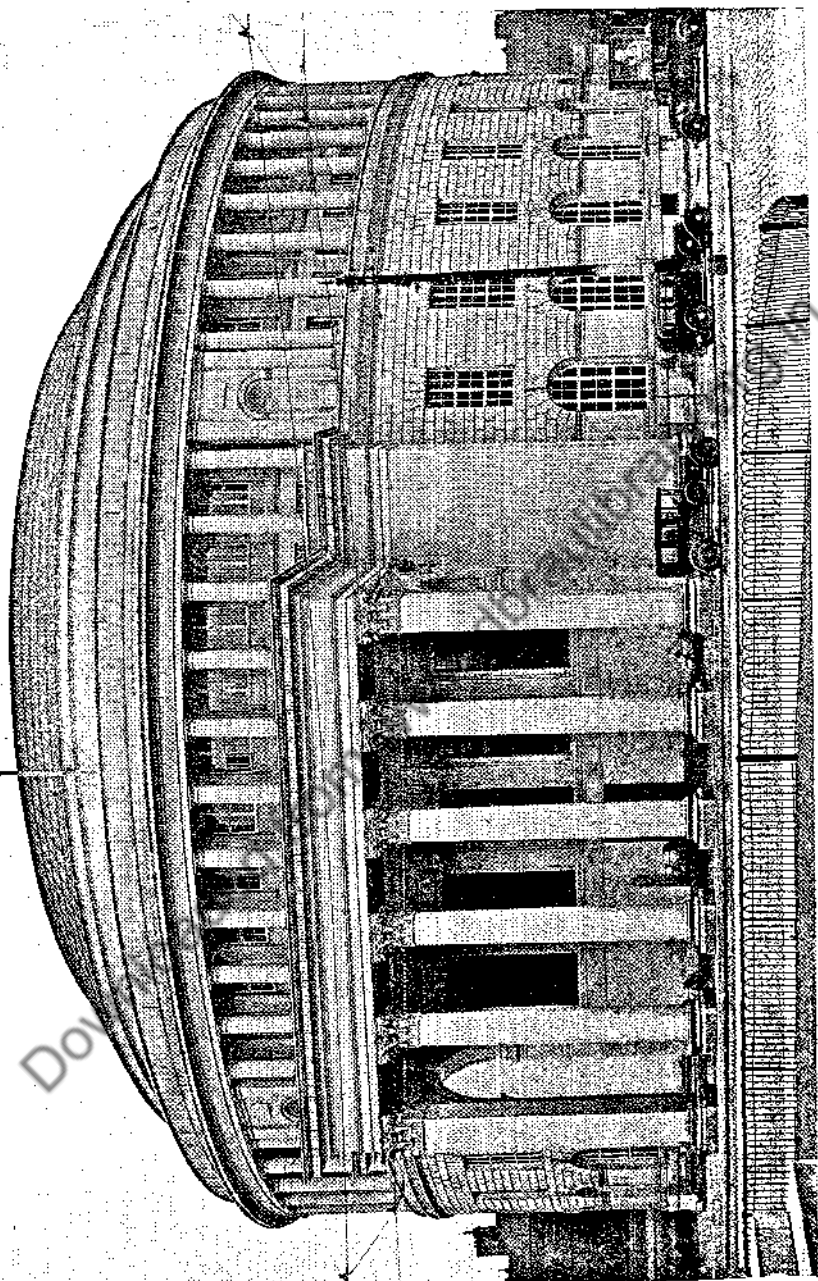


PLATE XIII.—THE MANCHESTER CENTRAL LIBRARY. (Front View.) By E. VINCENT HARRIS, O.B.E., R.A., F.R.I.B.A.  
[By courtesy of the Chief Librarian, City of Manchester Public Libraries.]

## INTERNAL FINISHINGS AND EQUIPMENT

## FLOOR FINISHINGS.

THE selection of a suitable floor covering, its capacity for standing up to hard wear, and its properties with regard to the amount of labour which will need to be expended in keeping the floor surface clean, are matters of sufficient importance to justify brief notes on the several types of finishings in most general use. The ideal finish for a reading-room will be a material which is hard-wearing, non-slippery, clean and silent in use, reasonable in cost, and capable of being produced in a variety of colours to conform to different schemes of internal decoration. Needless to say this ideal is difficult of attainment, but there is not the least doubt that in many cases where a finishing has been tried and condemned as unsuitable, the fault has been, not in the material itself, but in the method of cleaning which has been adopted. This question of cleaning should therefore be considered in conjunction with the choice of floor finishings—most manufacturers will supply the necessary polishes and cleaners best suited to their particular floors and will give detailed instructions as to the processes to be followed. The floors of reading-rooms should not be directly approachable from the street, but a width of matting or some rough and easily cleaned covering should intervene in order that dust and dirt may, to some extent, be prevented from being carried in on the feet and trodden down on the floors of the rooms themselves. It is highly dangerous to have wax-polished wood or cork floors in close proximity to terrazzo or marble stairways as the wax is liable to be trodden on to the stair treads, resulting in a glazed polish which may cause slipping and serious falls.

*Cork Carpet.*

Manufactured from ground cork, wood flour, colour pigment, and oxidized linseed oil, pressed together on a hessian backing, cork carpet is usually about  $\frac{1}{4}$  inch in thickness; it can be obtained in a wide range of colours and is laid with adhesive paste to a concrete or wood base.

In addition to daily sweeping, the cork carpet will require washing with warm water about once a week. A little paraffin may be added to the water, and bad marks may be removed with petrol or turpentine. Soda or strong scouring soaps should be avoided. Where cork is laid over a ceiling heated by means of invisible panel coils, the heat of the floor, together with the periodic washings, will tend to destroy the oily properties of the flooring, so that at intervals of about four months it would be advisable to go over all surfaces with a renovating cleaning material containing linseed oil.

An alternative finish for this type of floor consists of a first treatment with a pliable seal containing phenolic resin, the application of a light finishing coat of wax varnish, and a final buffing-up with an electric polishing machine or weighted pad. This method of treatment will give a pleasing effect, though the amount of labour expended in subsequent polishings (which would require to be done almost daily) would be considerable.

Cork carpet gives a very silent, resilient floor, is the cheapest of all the usual floor coverings, and to my mind is probably the most suitable flooring to use in the case of large reading-rooms.

#### *Linoleum.*

This material is similar in composition to the cork carpet except for the fact that finer grains of cork are used and it is subjected to a greater pressure in the course of manufacture. Linoleum may be obtained commercially in a variety of colours and in thicknesses varying from  $\frac{1}{8}$  in. to  $\frac{1}{4}$  in. The lino is fixed in a similar manner to the cork carpet, but care must be taken to see that the fixing is done on a perfectly smooth base, as even small irregularities in the under surface are liable to show through after a short time. Owing to the danger of dry-rot, lino should not be laid over an unventilated wood floor. If laid on a stone or concrete floor which is subject to dampness special precautions should be taken to guard against rotting of the lino. Thin cork slabs or one of the proprietary lino under-lays should first be fixed to the structural floor as a ground to which the lino may be secured. Though footmarks are apt to show up rather badly on lino, the surface is easily cleaned with soap and water or may be better preserved by being wax-polished. Lino is strongly recommended for corridors and offices, but it is not as silent a flooring as cork carpet or cork tiles.

*Cork Tiles.*

Cork tiles are manufactured from the pure bark of the cork oak, thoroughly cleaned, dried, and ground into shavings. The shavings are then packed into moulds approximately 37 in. by 13 in. by 2½ in. thick, compressed, and baked at a temperature sufficient to cause the natural resin of the cork to flow and so bind the whole into a strong homogeneous mass. The blocks are then sawn into approximate tile sizes and the surface sanded.

Three shades of brown are obtainable, light, medium, and dark, so that by a slight variation in the colour and size of tiles used, patterned and bordered floors may be readily designed. The tiles are set in mastic, secured by special steel pins, ground down to an even surface, and wax-polished.

Cork tiles may be cleaned with water and pure soap or Hudson's powder, but manufacturers will usually supply a cleaning polish on demand. At about monthly intervals the floor should be thoroughly mopped over and should receive a coat of hard-drying wax-polish which should be allowed to dry thoroughly before being buffed-up with the electric polisher. Periodically all surplus wax-polish should be removed by the use of a special cleaner polish, and the floor re-waxed and polished up in the usual manner.

Cork tile floors are durable, clean, noiseless, and non-slippery. They are in fact eminently suited for use in art galleries or in important reading-rooms not immediately adjacent to the street. I have known cases where the darker cork tiles have become partially bleached when exposed to strong and continuous sunlight, but perhaps this is not the case with all makes of tile.

*Rubber.*

Floorings of which the basis is pure rubber may be obtained in a variety of forms, both as tiles or in sheets, and of soft or hard material. The resultant flooring is quiet, dustless, and, on the whole, non-slippery—though the smooth, hard rubber surface may constitute a danger in the case of wet mud or grease. The rubber is secured to the base by an adhesive—if laid on wood floors care must be taken to see that these are well-seasoned and the sub-floor well ventilated. As compared with cork, rubber is cold to the touch, not as sound-deadening, and is suggested as being more suited to use in corridors than in reading-rooms. Rubber laid on concrete is tiring to the feet if situated in rooms where there is much standing about to be done on the part of the staff.

It is better to lay rubber flooring in large continuous sheets as smaller pieces are apt to come away. Rubber floors are fairly easily cleaned with soap and water—wax-polish is to be avoided.

### *Plastic Flooring.*

Plastics are now being produced in the form of floor coverings and rubber substitutes are offered in a variety of colours. So far as I am aware this flooring has not yet been tried out in library buildings and it is early yet to give a definite opinion as to its possibilities.

### *Wood Blocks.*

Coverings of hard-wood or soft-wood blocks are particularly suitable in cases where the reading-rooms are at ground-floor level with the floor laid on the solid. Blocks are usually of a standard size, 9 in. by 3 in. or 12 in. by 3 in. and from  $\frac{7}{8}$  in. to  $1\frac{1}{4}$  in. thick. They are laid in mastic, cleaned off with a sanding machine, and usually wax-filled and polished. As is the case with cork floors, the wood blocks, if polished, should receive a periodic cleaning-off down to the surface of the material in order to prevent the slipperiness which would be occasioned by an accumulation of layers of wax polish. With careful treatment of the floor there should be no trouble occasioned by slipping, even in the case of hard teak or oak blocks.

It should be remembered that the effective wearing depth of a block floor is only the depth from the surface of the floor to the uppermost portion of the interlocking or keying device—which may be only half the depth of the block. Of timbers, genuine Moulmein teak is probably the best for block floors. It is of a rich brown colour, is durable, and has practically no movement. Burma Padauk (red) and Pyinkado (reddish purple) are also excellent, and Austrian oak has a high reputation. English oak is strong but has a tendency to twist which is sometimes rather disconcerting.

### *Magnesite Floors.*

Composition or jointless floors consist of aggregates such as sawdust, sand, or asbestos combined with a basic material of calcined magnesite. The composition is usually laid in two layers, of about  $\frac{3}{4}$ -in. thickness in all. When laid direct to a wood-batten floor, sheets of light-gauge expanded metal should first be firmly

nailed to the battens as reinforcement. The fact that these composition floors are particularly susceptible to cracking and are difficult to repair has made them unpopular with architects except in cases where a perfect mix and a firm and dry base may be absolutely assured. The finished floor should be oiled and waxed, after which treatment a regular scrubbing with soap and water should be all the cleaning required.

#### *Granwood Blocks.*

This patent flooring material consists of non-magnesite blocks, usually of a size 6 in. by 2 in. by  $\frac{5}{8}$  in., and now supplied in a range of six tones of colour. The resultant floor is hard-wearing, warm, and fairly silent to walk on, and it enjoys the distinction of being the only flooring except marble which it is safe to use over floor panel heating coils.

#### *Terrazzo.*

Terrazzo in precast slabs or laid *in situ* is a suitable floor-covering for entrance halls, stairs, and corridors. Slipping may be obviated by a sprinkling of powdered carborundum combined with the surface finishing or, in the case of stair treads, by the insertion of alundum dots. To prevent cracking, floors should be divided into sections by means of brass or ebonite strips, which, to be effective, should be of such a depth as to penetrate right down to the concrete base. Excess of cement in the aggregate should also be avoided, and it is recommended that the floor screeding and the terrazzo finish should both be laid by the same firm in order to avoid the hazards of divided responsibility.

In America long experience has given rise to certain developments in this type of floor construction, and I understand that the following method is usually followed in the case of large and important floors. On the concrete underbed a  $\frac{1}{4}$ -in. thickness of sand is laid and on the top of the sand is spread a layer of waterproof building paper. On this paper is then floated a 2-in. layer of screed and its finishing layer of  $\frac{5}{8}$ -in. to  $\frac{3}{4}$ -in. thick terrazzo, giving a total thickness of about 3 in. from finished surface to finished surface. Strips divide the floor into slabs of not more than 9 sq. ft. in area, and as the terrazzo floor is completely separated from the structural floor the danger of cracking is reduced to a minimum. Terrazzo floors are cleaned with soap and water or by the use of

one of the patent cleaners supplied by the manufacturers. If the former method is adopted care should be taken to see that no particles of soap are left adhering to the surface of the floor, otherwise dangerous slipperiness will result.

### *Tiles.*

These are made of an infinite variety. The 6-in. by 6-in. and 4-in. by 4-in. adamantine tiles give a good effect when used in corridors or lavatories, particularly if set in coloured cement and laid with a wide joint. They have the advantage of being non-slippery and are easily cleaned with soap and water.

### *Marble.*

Probably the most suitable range of marbles for use in library entrance halls and corridors will be found in the limestone marbles, Hopton Wood stone, San Steffano, Bianco del Mare, and so on. These seem to strike a right note and give a quiet yet distinctive effect. Travertine has had a long run of popularity both as a floor and a wall covering. When used on floors, cavities in this marble may be "stopped" to prevent the accumulation of dust and dirt in the interstices—though the marble will suffer the loss of a good deal of its natural character in cases where this is done. My own experience of travertine, when laid in 2-ft. by 2-ft. square slabs, has been that the veined cavities have, in several cases, rapidly developed into definite cracks, completely spoiling the appearance of the floor.

As mentioned before, marble is one of the two floor coverings which are not detrimentally affected by having panel heating coils embedded in the concrete floor below—a fact which makes it particularly convenient for use in entrance halls. Marble work is better cleaned with especially prepared cleaner polish rather than with soap and water.

### *Granolithic Floors.*

Concrete floors, finished with a  $\frac{3}{4}$ -in. screeding of grano chippings, make a cheap flooring suitable for stack rooms or minor corridors. Even when the chippings are carefully riddled free from dust, it will be advisable to treat the surface with a solution of silicate of soda to prevent working up when in use. Alternatively the concrete surface may be painted—a practice which is largely adopted in American libraries.

*Asphalt.*

The use of asphalt as a flooring may well be considered in the case of basement stack rooms, corridors, and work rooms. The resultant flooring is hard-wearing, non-slippery, and, being jointless, is extremely sanitary in use. The floor may be laid either on a concrete or a wood subfloor. In the latter case a layer of felt should be laid in between two layers of asphalt. The finished surface may be sprinkled over with sand or slate dust, or the finishing coat may consist of one of the coloured asphalts now obtainable. Cleaning is done by the usual method of mopping over with soap and water.

## LIFTS.

Particulars of the size and power appropriate for book lifts are indicated on Litho. Plate No. 6, Fig. 3. In addition to the usual method of summoning the lift by an electric push-button control, some means of conveying messages from one floor to another must be considered. This may be effected by internal telephone, by speaking-tube, or by a system of buzzers combined with written message slips dropped down a message chute or placed in the lift itself before dispatch. The minimum of noise and vibration are occasioned in cases where lift motors are situated in the basement, insulated from and bedded on the solid ground. If the circumstances do not permit of this position being adopted, and the motors are of necessity situated at roof level, the floor of the motor room should be isolated so far as is possible from main structural members which abut on to the reading-rooms. All motors should be firmly fixed on to their concrete bases with a stout insulating pad of laminated cork intervening.

## DOORS.

Where double swing doors are provided to reading-rooms the most useful type of door furniture to adopt is the check action type of floor-spring which holds the door in a fixed position when opened to the extent of a right angle. Not only do these floor springs obviate the necessity for the use of unsightly cabin hooks, or door stops, but they permit of the adjustment of the spring so as to swing the doors closed at any desired pressure. In cases where panel pipes or floor reinforcing bars are inconveniently near the



surface of the floor, special springs may be obtained which may be fixed in the heel of the door, the pivoting shoe being of a shallow type which requires as little as  $1\frac{1}{4}$  in. for fixing.

It is desirable that doors to public reading-rooms should be glazed in order to facilitate oversight and to assist in the creation of an attractive openness of layout. Double doors of ample width should be provided in all cases where there is the possibility of large pieces of furniture having to be moved through the door opening.

#### WINDOWS.

All windows, if of any considerable height from the ground, should be capable of being opened and all parts of the glass should be easily accessible from inside the building for cleaning purposes. Double glazed metal windows are now supplied by the leading firms of window manufacturers and may prove useful in cases where reading-rooms have to be placed adjacent to noisy thoroughfares. Where reading or storage rooms face towards the south, sun blinds should invariably be provided. Where reading-rooms are wide in their relationship to the window wall or where the external light is to some extent obstructed by outside buildings, attention is directed to the proprietary glasses now available to meet the case of just such conditions. Designed with a pattern of lenses or prisms, or both, these glasses have the effect, not of actually increasing the amount of light, but of distributing it to better advantage throughout the room.

#### CLEANING.

Cleaners' sinks should be provided at each floor level, and a store for soap, towels, and cleaning materials should be situated in the basement or other convenient place. Where vacuum cleaning plant is installed sufficient hose connections should be provided at each floor level to ensure that every part of the buildings is readily accessible, by means of a 30-ft. length of hose, without the exertion required to move heavy articles of furniture. From the point of view of cleanliness and quietness in the reading-rooms, it is very desirable that all windows should be kept closed, and if artificial ventilation is installed this may readily be provided for. As already mentioned, however, windows should be capable of being opened for the purpose of cleaning.

For the renewal of light bulbs and the cleaning of light fittings in lofty reading-rooms, it will be necessary to consider a means of access for these purposes. Some form of telescopic ladder or platform is obviously suggested, and this should be of such dimensions as to permit of its being run into the lift for transport from one floor level to another. In view of the fact that fixed desks and tables will usually be placed directly below the light points, a form of platform ladder which will straddle over these fittings will usually be found the most convenient type to adopt.

Facilities for the cleaning of external and internal area walls should be considered, and in this connection, attention is directed to the methods adopted at Huddersfield and Sheffield (Chapter III., pp. 54, 60). A third device consists of the provision of a heavy gauge metal track, fixed along the upper wall face just below coping level, and fitted with runners from which a cradle may be temporarily suspended for cleaning purposes.

#### NOISE PREVENTION.

The stress and racket of modern life have rendered the problem of noise-abatement one of paramount importance ; particularly is this the case when considering the design of reference rooms and other departments devoted to serious study.

It will be obvious that certain precautions to guard against excessive external or air-borne noise may be taken at the very first stage of planning operations. If it is possible the library will be placed on a quiet site, set back from busy thoroughfares, or, better still, surrounded by an open space of greater or less extent. In addition, the reading and study rooms will be so situated as not to be immediately adjacent to sources of external noise. Reading-rooms generally will be considered in relation to their sound-absorbing properties, and with a view to the avoidance of any undue transmission of noise. In the prevention of sound transmission the following points are of importance, and the adoption of certain of them should be considered, having regard to the features of each individual problem.

#### *Walls and Partitions.*

- (a) A hard reflecting surface on the outside of the wall.
- (b) A non-homogeneous structure containing inert air cells.
- (c) An air gap to prevent continuity.

- (d) The insertion of a layer of insulating material.
- (e) A sound-absorbent surface to the inner wall faces of the room.
- (f) Massive and rigid construction.
- (g) Foundations at such a level as to be free from the effect of impact noises.

#### Floors.

- (a) A floating floor isolated from the walls.
- (b) The insertion of a layer of insulating material between the floor and floor covering.
- (c) A rigidly constructed floor with suspended ceiling below.

In hollow walls or partitions cross connections are detrimental to the sound-insulating value of the structure, the two walls of which should be constructed, so far as is possible, independently of one another. An air space is usually more effective than a filling material.

The insulating properties of doors may be increased by the fixing of a rubber strip round the frame or to the door itself; that of windows by the division of the glass area into smaller and stiffer panes, by double glazing, or by setting the panes in felt instead of in putty.

Not only is it desirable to prevent the transmission of sound waves from without, but the interior of the reading-room must be considered with regard to its capacity to deaden noise. Sound is reflected in accordance with laws which are, broadly speaking, similar to the laws of optics, *i.e.* the angle of incidence is equal to the angle of reflection. The amount of sound which is reflected may be very nearly as much as the incident-sound, and depends, in every case, on the hardness and rigidity of the surface texture of the reflecting medium. Again, if sound waves impinge upon a resilient and porous surface, considerable energy will be dissipated in the passage of the waves through the pores, so that the absorption of the sound will be relatively high. In calculating the sound absorption properties of different materials the basic unit of comparison used is an open window, which, not interfering with the free passage of sound at all, is considered for the purpose of calculation to be 100 per cent absorbent. The following table gives the number of "open window units" of absorption per square foot of area for various materials commonly met with in library design :

MATERIAL.	COEFFICIENT PER SQ. FT.
Open window (as basis of comparison)	1'00
Heavy curtains	'40
Artificial acoustic stone	'36
Fibre board	'30-'70
Cork	'30
Books (on shelves)	'25
Acoustic plaster	'21
Carpet (unlined)	'15
Sound-absorbing plaster.	'14
Wood	'06
Glass (single thickness)	'03
Plaster on wood lath	'03
Brickwork	'03
Marble	'01

It will be obvious from the foregoing remarks that the use of rapid-drying hard-wall plasters is not liable to give anything like such good results from the point of view of quietness in reading-rooms as is the use of a traditional three-coat plaster finish of lime and sand. The hard-polished and non-porous surface of the former is lacking in sound-absorbing qualities and is liable to cause considerable reverberation if used on both walls and ceilings. In point of fact, these two surfaces should receive separate consideration. Walls, if rapid-hardening is a consideration, might be done in the hard-wall plaster, and, providing that a reasonably soft floor covering were provided, the large amount of absorption which would be provided by the flooring and by the books themselves would probably be sufficient to prevent any deleterious effect being apparent. A variety of patent products are supplied for sound-absorbing purposes and, if the wall surface comprises a large area of duct and pipe chases to be covered over, the use of a fibre board covering over the whole wall area might well be considered. If, as is suggested, the reading-room is heated by ceiling panel coils, this method of heating will, to a large extent, determine the type of finish to be adopted. The heating engineers ask for a finish of hydrated lime and sand, in which is embedded a canvas scrim to prevent crazing of the plaster over the panels themselves. This is quite good acoustically; alternatively acoustic plaster has been used over the panels and has proved satisfactory.

In cases where the room is warmed by high or low temperature ceiling panels, the panels themselves will present a hard reflecting

surface of which the acoustic properties will not be good. Correction may, however, be readily made by ensuring that the ceiling area which is not actually occupied by the panels is finished in fibrous boarding or in some other material possessing the requisite acoustic properties.

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## CONCLUSION

IN the preceding pages an attempt has been made to furnish representative illustrations of library planning and equipment as such had developed, in compliance with the requirements of their particular problems, up to the outbreak of the second world war. Will these requirements be the same, when building activity is again resumed, as they were before the war? Will interest in books increase or will it diminish? What will be the trend of the movement of population—will it gravitate towards the towns or spread out into the rural areas? In new suburban districts should the library be the first building to be erected, or, as has so often been the case in the past, the last?

It is difficult to undertake the role of prophet (even Governmental minds may be suspected of being hesitant to commit themselves to a conclusion in the case of the third question) but certain observations can, and should, be made if we as architects and librarians are to be ready to collaborate in the reconstruction work which will certainly come, and in the execution of which our training and experience place us under a particular obligation as consultants and advisers.

Taking the above questions in their order, one might, in the case of the first one, compare our condition to that of a small boy who, having taken his bicycle to pieces, has laid out all the parts neatly before him on the mat. Some parts are worn and require replacement, some are missing (no particulars have been given of libraries which have suffered complete or partial destruction on account of enemy action, but the number of these is considerable), the steering and gears have functioned successfully so far but are they capable of further useful service, or would it be an economical proposition to invest in an entirely new post-war model, complete with aluminium frame and the latest thing in lighting-sets?

One would presume that general plan requirements will not, subject to local considerations, which will obviously always have to receive individual study, be much different from those ruling before the war. Conditions of labour and the various constructional materials available for use will in some respects be altered (of this

more anon) but not the actual essentials of the accommodation to be provided.

As regards the method of book issue, reference has been made throughout this book to "open-access" lending libraries, and different types of service counter are illustrated applicable to open-access libraries worked on the card charging system. This system has been adopted in almost all English lending libraries and, so far as one is aware, no other method has so far been found which seems likely to supersede it.

A few libraries (of which the North Finchley Branch Library is one) have installed the Dickman system, in which the issue cards, instead of bearing the reader's name, are given numbers. The effect of this is that the card trays occupy less space than is the case with the card charging system but otherwise the arrangement of the counter is virtually the same. It would appear that the Dickman system entails more office work and that it is difficult to check the actual number of readers at any particular time—altogether the system does not seem to have gained popularity with librarians, and I think one may safely assume that future designs will be based on the card charging system.

The particular type of counter to be provided will depend to some extent on the number of readers to be served and on the shape and area of the space available for the counter, but in addition it will be found that most librarians have a definite preference for the type to which they have been accustomed, and will be full of ideas for improvements which have occurred to them as a result of long practical experience of successes or failures at their own and other libraries.

In libraries of more than one floor the disposition of the lending library entrance in relation to the main stairs is important. In most municipal libraries the logical conclusion will generally be that the lending library should be treated as the major element of the plan—and this may present a difficulty if important rooms, such as justify a grand staircase approach on the centre-line of the building, are situated on an upper floor. To demonstrate this point more fully let us refer to the plans already illustrated.

The Birkenhead Central Library (Litho. Plate No. 1) subordinates the upper floor accommodation but emphasizes the "in" and "out" openings to the lending library very distinctly, placing each opening in one of two side aisles of the main entrance hall. This arrangement quite rightly gives importance to the lending

section and free circulation is provided round the service counter, which may, without difficulty, be made of a sufficient length to satisfy all requirements. The stairs to the upper floor, however, are treated as being relatively unimportant. To get upstairs the visitor has to turn back on his tracks, passing over the main entrance vestibule in order to gain the floor above. Quite a sound and satisfying solution, but had it been desired to give the upper floor an equal importance with the ground floor, no doubt a more monumental method of approach would have been considered to be appropriate.

As has already been mentioned (Chap. III, p. 58) the entrance hall and stairs of the Sheffield Central Library (Fig. 9) are somewhat restricted in depth owing to special requirements of the conditions of planning. The double service counter, with entrance and exit wickets on the main central axis of the building, calls for a prominent central approach. This has been provided—and with ample spaces where the public may circulate without discomfort. The recognition given to the Graves Art Gallery and the very important reference rooms on the upper floors, however, is not quite so successful. Space has not permitted double stairs on either side of the lending library entrance (which would have been ideal) nor even of a three-flight stair with central return flight (which would have been satisfactory).

At Huddersfield (Litho. Plate No. 2) the planning problem was comparatively simple in spite of the fact that the upper floors contained very important departments which it was felt called for a generous planning of their approach stairs. A central service counter was asked for with "in" and "out" openings on either side—as at Birkenhead. This condition permitted of a monumental stair with a straight flight "up" directly opposite to the main entrance and with return flights back on either side. Approach to the upper departments and galleries is thus sufficiently obvious and inviting—at the expense, to some extent, of the lending library, of which the entrance is not so prominently positioned as is the case at either Birkenhead or Sheffield. The short approach passages to the lending library, however, do have their uses. In one, queues may form for the lending library "in" counter, and in the other there is a convenient recess where readers may turn aside to parcel up their books before passing out into the street.

To quote one further example—in which the upper floor is treated as being of supreme importance—let us examine the plan of the Liverpool University Library (Fig. 14). Note the few



steps in the entrance hall itself which give almost a ceremonial approach to the two internal stairways. The stacking space at the back of the building is definitely sealed off by the blank wall which faces the visitor on arrival, and all attention is focused on directing him straight up the stairs and delivering him safely at the entrance to the main reading-room.

Incidentally, it is well, if possible, to avoid placing the return stair flight directly opposite to the main entrance—the underside view of the stair soffit, seen as one enters the building, has not at all a pleasing effect.

Mention has been made of the relationship which exists between the window-sill height and the general height to be adopted for the wall shelving in reading-rooms. It is of course a fact that, if the windows are brought right down, practically to the level of the title strip, the reader faces the full glare of light from the window when he is reading the titles. Unless the height of the room is made considerably greater than is usually thought necessary or practicable from an economic point of view, it is difficult to see how this is to be avoided if windows are designed of a vertical proportion. The usual range of heights for reading-rooms is from about 11 ft. to 16 ft.,<sup>1</sup> which does not allow much room for window heights if a strip of blank wall is considered necessary between the window and the top of the title strip. A wall strip can, however, be provided, and the full height of wall shelving accommodated, providing that the windows are designed of a horizontal proportion. This process will of course be assisted if the wall joists are lifted up in the walls so as to have their undersides linable with the room ceiling—this, incidentally, will increase the amount of light in the room as ceiling reflection will be much greater.

In a reading-room arranged thus it would probably be necessary to fix blinds in order to exclude the full blaze of bright sunlight. It would be well also to have certain rooms, preferably flanking the main entrance, where some windows at least would be extended to near floor level. The view, from the street, of an attractive interior would amply compensate, from the point of view of advertisement value, for the small amount of shelving thus sacrificed.

The requirements of the newspaper room have already been dealt with (Chap. IV, pp. 69-70). It should be added that, in spite of the popularity of this department with a section of the public, some

<sup>1</sup> Mr. A. L. Champneys, in his *Public Libraries*, suggests 10 ft. to 14 ft. for small rooms and 14 ft. to 16 ft. for large rooms.

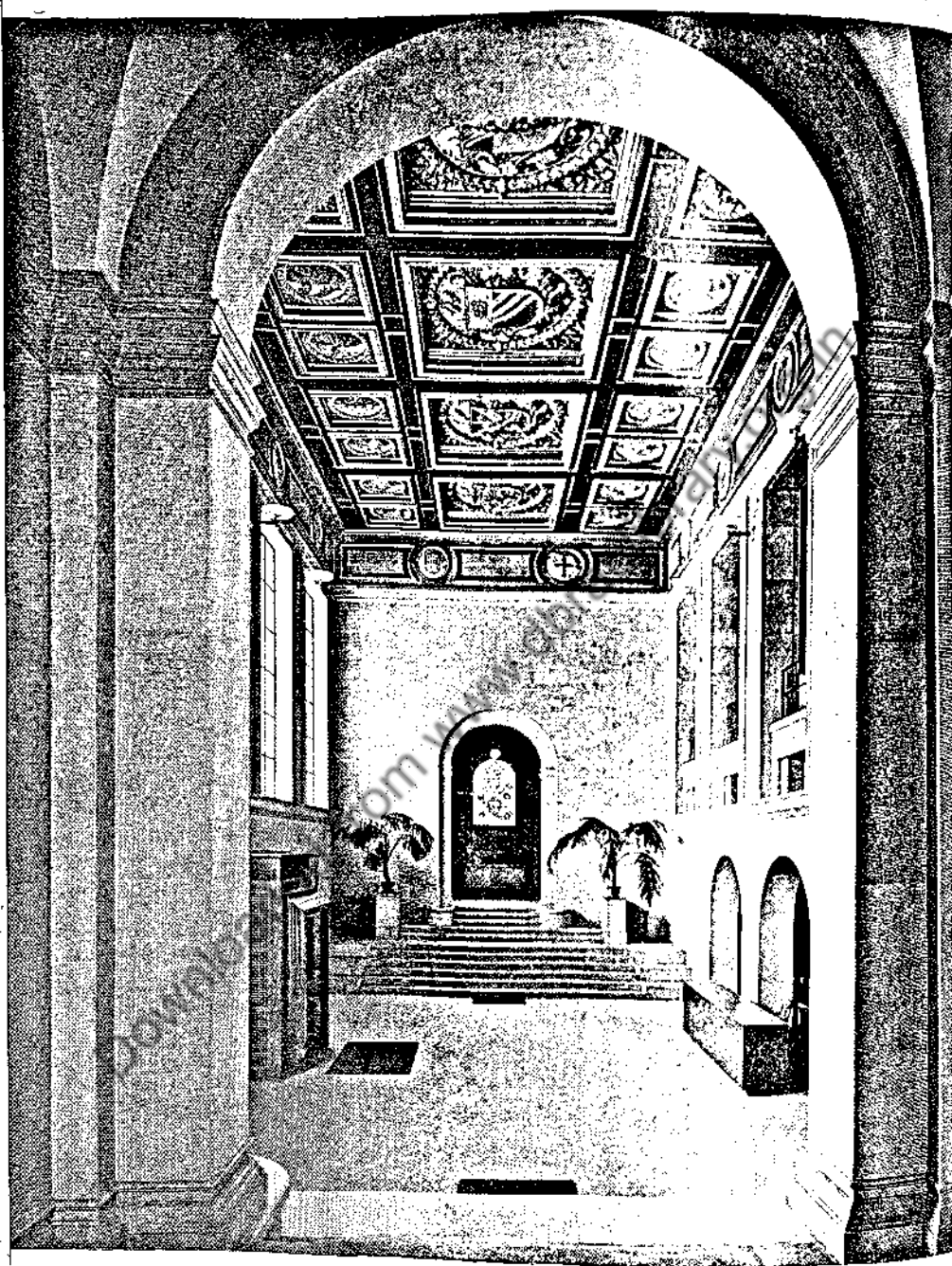


PLATE XIV.—THE MANCHESTER CENTRAL LIBRARY. (The Shakespeare Hall.)  
By E. VINCENT HARRIS, O.B.E., R.A., F.R.I.B.A.  
[By courtesy of the Chief Librarian, City of Manchester Public Libs.]

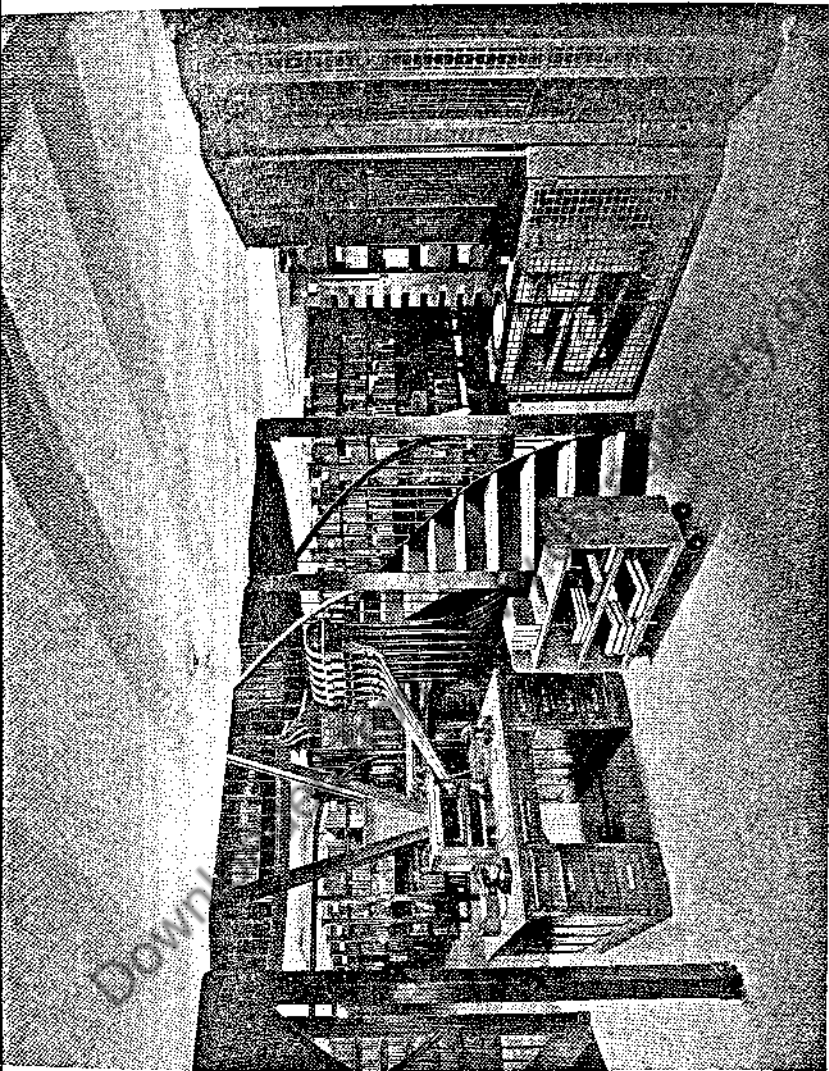


PLATE XV.—THE CENTRAL LIBRARY, MANCHESTER.  
The Stack Superintendent's Desk below the Central Service Counter of the Main Reading Room.

By E. VINCENT HARRIS, O.B.E., R.A., F.R.I.B.A.

[By courtesy of the Chief Librarian of the Manchester Public Libraries.

librarians would advise a policy of isolating the room in a separate building, or would even, as has been done at Islington, Manchester, and other places, omit the news room altogether. The argument of course is that apart from such papers as *The Times*, the *Manchester Guardian*, and one or two more, the general standard of the daily paper is scarcely of sufficient merit as to warrant its inclusion in a building devoted to works of literature. The cost per reading-desk is considerable when space, service, and lighting expenses are reckoned up—and anyway most business people prefer to buy a paper at the bus or railway station and peruse it on their journey to and from their offices.

During a period of intensive study it is very pleasant to have some place where one can walk out, breathe the fresh air, and have a quiet rest or smoke. It is interesting to see how this idea has received expression at various times and by peoples of different mental attitudes. Attached to the Roman libraries were colonnades forming a convenient ambulatory for students. Monastic foundations had their cloisters, a suggestion of which may be noted in the description given of the arcaded central area of the Boston Public Library (Appendix II, p. 151). At the Picton Reading Room and the British Museum Library are colonnades which have proved popular with the public, and at Huddersfield there is an open court, flanking the library and to be laid out in grassed lawns with surrounding paved pathways. Perhaps the most extreme expression of this idea may be found in the oriental gardens of contemplation, where the philosopher may sit in undisturbed retirement and where everything, from the colour scheme and ornamentations to the slow-moving water of a limpid stream, is skilfully designed to convey an atmosphere of perfect rest and peace.

It may be noted in the description of the Viipuri Library (Appendix II, p. 155) that the plan includes a small kitchen and a buffet. Similarly, some English art galleries maintain a tea-room which forms a convenient meeting-place for visitors to the gallery and, one would think, tends to foster a feeling of comradeship between those animated by an interest in kindred subjects. Certainly in a building which combines the functions of library and art gallery some provision for catering seems highly desirable, and even in a library proper one feels that a small café (not necessarily staffed by municipal employees—the catering could be sub-let) would be an innovation which would be popular.

A point which might be mentioned in connection with the

smaller type of branch libraries, where cost is a matter of primary consideration, is the possibility of these libraries being planned on a first floor with a block of shops below. The rent obtained from the shops might well help to cover the running expenses of the library, and if an ample stairway were provided to the department above, it would be sufficiently isolated, and there seems to be no objection to the scheme. In fact it is rather surprising that the arrangement has not been more frequently adopted.

In regard to the layout of the library plan, an interesting suggestion was made some years ago by Mr. Angus Snead Macdonald of Jersey City, U.S.A. and drawings were prepared to illustrate his ideas for "A Library of the Future". The method underlying the construction of this library was that the floors should be carried on the isolated points of support provided by the stanchions of the steel shelving. The unit squares were to be 9 ft. by 9 ft.—*i.e.* three 3-ft. lengths of stacking; but most of the dividing walls and all the stacking would be capable of removal so that departments could be enlarged or reduced in size as required. Certain of the walls were to be solid but in the main the internal arrangements were to be quite elastic.

A height of 8 ft. (or 8-ft. multiples) from floor to floor was adopted as a standard throughout—a height which allowed for "usable mezzanine floors to be installed anywhere between main structural floors". The library was to be located "not near the congested centre of the city, but in a spacious park . . . as a living, growing, organism requiring continually more and more room for expansion". As it was proposed that windows should be permanently closed, elaborate arrangements for absolute control of air-conditioning, temperature, humidity, and dust content were included—as also was a day-nursery where mothers might leave their children under safe and wholesome conditions.

This idea of the standardized unit in the planning of stack room layouts is not of course anything new, but its extension in this particular way, so as to include the whole of the library building, is a suggestion which merits attention. One feels that the forest of vertical stanchions would, in the case of the larger departments, scarcely be conducive to a fine architectural effect, but certainly the standardization of plan on the horizontal plane would greatly simplify the positioning of light points and other services, and would enable, as has been claimed, extreme adaptability to be achieved in the arrangement of fittings and shelving.

The matter of "flexibility" of plan is an ever-present problem to librarians, and one of the most frequently expressed criticisms of libraries of the past is that the architect's "monumental" type of plan is definitely not suited to modern practical requirements. In this connection one cannot do better than quote Mr. J. P. Lamb's own description of the new Manor Branch Library, Sheffield, a result of collaboration between Mr. Lamb himself and Mr. W. G. Davies, F.R.I.B.A., the City Architect of Sheffield. It should be noted that this building has no internal walls of any kind, only concrete columns as necessary points of support here and there.

"The Manor Branch Library, Sheffield, is based on the idea of constructing a library in such a manner that the size, position, and use of every room can be altered easily and cheaply. To achieve this, the building has been planned on a minimum unit of 13 ft. 6 in., and every permanent part of the building is distant from other parts either by 13 ft. 6 in. or multiples of it. The divisions between rooms will be either in the form of wood and glass screens (where it is necessary to avoid noise) or low counters. The screens, built in 13 ft. 6 in. units, will be readily movable, and the counters (except the entrance enclosure) will also be constructed in suitable lengths and, like the remainder of the furniture, will not be fixed permanently to the structure.

"The Branch is designed as a 'Divisional Library' to serve as a Branch Central Library for a large and well-populated area of the city. It will therefore contain, in addition to large Adult and Junior Lending Libraries, Reference Library and Meeting Room; and good book storage will be provided. Shelves forming alcoves at the back of the large lending library will contain the standard 'Divisional' stock of books. The main room will have large display fittings for books in current use, and these will be grouped in accordance with known reading demands instead of by the formal classification scheme. There is a separate entrance for children at the side of the building; and the Meeting Room is in the basement (with natural side lighting).

"Dimensions of Building: Length 124 ft; Depth 102 ft; Area (ground floor) 12,648 sq. ft.; Lending Library 4225 sq. ft.; Children's Library 1400 sq. ft.; Reference Room 700 sq. ft.; Meeting Room 700 sq. ft.; Book Stores to shelve approximately 20,000 volumes.

"Estimated cost (pre-war) £23,000.

"The structure was erected when war broke out and was roofed

in to make it weather tight. It stands at the rear of a large site and will be fronted by a large sunk formal garden approached by stairs and ramp from the road."

Plate XVI shows a very fine scheme which was prepared by the late Mr. John C. Procter, F.R.I.B.A., illustrated in the technical press in April 1938, and is here reproduced by permission of Mr. Procter's Executors. It must be stated that the scheme is quite definitely only a suggestion and has neither been adopted nor approved by the City Council. In view of the ideas conveyed, however, the project seems well worthy of note, particularly at a time when many of our cities will shortly be concerned with re-building problems in their built-up central areas. The proposed building was to comprise library, art gallery, museum, and municipal offices, and was to be placed on a site adjacent to the Town Hall, Leeds, and facing on to the Headrow Gardens. The plan is self-explanatory, the library occupying the western side of the site with its own separate entrance from Calverley Street and with loading and unloading facilities provided from a courtyard opening off Great George Street. Note particularly how increased stacking accommodation may be provided in the future by means of heightening the central stack tower—a very satisfactory, and in fact the only feasible solution of this problem in the case of a site hemmed in on all sides as is this one. It was proposed to use Portland stone for external facings—the straightforward yet dignified treatment of the well-proportioned masses would surely have provided a block of which any city might well be proud.

To discuss the question of whether or not interest in books is likely to increase, it is necessary to retrogress somewhat. At their earliest inception libraries were saddled with the unfortunate appellation of "free"—an absolute misnomer as they are not and never have been free charitable institutions and may be described as free only in the sense that they offer free access to all. There is little doubt but that the early use of this term "free" created an attitude of mind which it took a long time to dispel, but it certainly appears that libraries, in common with other forms of municipal enterprise, were at the outbreak of the recent war experiencing a period of greater popularity than they had ever enjoyed before. One cannot imagine anyone nowadays being prepared to support an argument against the use of a public library on the grounds that it was a charitable institution, beneath the notice of respectable citizens—yet such was once a common attitude.

As a result of the enormous increase in the cost of living, income tax, and general rates, the improvement of municipal services and the stress which has been laid on citizenship and civic-mindedness in the daily press, it would appear likely that the public, as a whole, will become increasingly inclined to utilize the facilities provided under local government schemes. There can be but little doubt that the public library is now definitely established in its proper place as the university of a democratic people and so will become ever increasingly essential. As the proper functioning of a democracy depends primarily on the intelligence of the electorate, the question would seem to be, not whether in post-war years we can afford to build libraries, but whether we can afford the risk of neglecting to build them.

In planning for future library development, probable movements of population must be considered and anticipated. A community brought up on a recently erected housing estate where there exists neither church, library, nor swimming-bath will become so used to such a state of affairs that it may prove difficult to accustom it to a society where these institutions are readily available.

A friend of mine who had largely devoted his life to the conduct of an urban museum where, by the organizing of periodically changed exhibitions, he had catered particularly for juvenile interests, told me that he had found as a result of his work that the adults who used the museum most frequently were, in almost every case, the grown-up children who had become accustomed to getting pleasure from the museum in their youth. There can be no doubt as to the moral to be deduced from this, and it seems vital that appropriate authorities should realize the importance to a child of a fully developed cultural life and should see to it that on newly erected estates the social facilities do not consist solely of the public-house and the cinema.

The crying need for supplying immediate library facilities to serve new residential areas has resulted at Croydon in a very interesting and successful experiment. At the suggestion of Dr. Sandison, the chairman of the Libraries Committee, a new type of rapidly erected "unit" library has been adopted. It is estimated by the Committee that most library buildings become obsolete in about twenty-five years so that the unit libraries are being built of inexpensive materials and are only intended to serve for about that period, after which the libraries are to be demolished and re-built



in a more permanent form when the demands of the particular area have become apparent.

One might debate at length on the probable post-war movements of population. If our re-planned cities are as attractive in actuality as they certainly appear on paper, then one might argue that the pre-war urge to get out, always farther out, into the suburbs and country would lose its incentive and that people would prefer to live amongst fine buildings where they could have all the amenities of social life close at hand. Again, one might take the line that people who throughout the war had become used to an open-air existence would definitely refuse to be herded into a city again. Let us admit that we cannot foretell with any exactitude what will happen, but let us resolve in our own minds that wherever the population goes there should the social amenities go *first*. In the past it has so often happened that the suburban growth, inspired by private enterprise, has outstripped the slower processes of local authority action—which has of necessity to canvas support, obtain grants of money, and pass through the delays of official procedure before any tangible results in bricks and mortar can be displayed to view.

One has seen in the press that Russia, even in the case of her most desolated areas, is proposing to provide facilities for cultural life (*i.e.* schools, libraries, and meeting-rooms) even before structures to house the dispossessed inhabitants are completed. Whether or not this proposal is made a definite line of policy, one remembers how, during the darkest days, the Moscow ballet continued its performances and the great Lenin State Library functioned successfully and even extended its activities.

After the war one may anticipate that many of our methods of building procedure will need to be carefully overhauled. The amount of office work necessary before even the simplest building project can be put in hand has increased immeasurably, and it would be wise to calculate on some, at least, of the present restrictions being kept in force for some considerable time. There is the question of compliance with Town Planning regulations (this will of course be a permanent restriction), applications for licences for material, increased official procedure in the appointment of staff, and so on. There is also the question of site labour—not looking at it from the standpoint of High Politics but from that of a simple architect who is endeavouring to get hold of a sufficient number of men to build a small branch library in the quickest possible time.

Fortunately for the architect (and the contractor too) the amount of actual site labour which is required for any particular building is usually not so great as it would appear to the uninitiated. A very large proportion of the total cost of the building will be represented by the cost of various items supplied by firms of specialists—who, as they employ their own permanent and highly skilled workmen, will normally contract to deliver the goods on the spot by a stated date and will do so in the ordinary course of their business. But the workmen on site are in a different category altogether and one feels personally that there will be a shortage of skilled tradesmen and no "pool" of semi-employed labour into which the contractor may dip at will. All this would appear to affect the architect in this way. He should, during his preliminary negotiations, prepare not only a works progress chart but, based on this chart, a further one showing the number and type of all workmen who will be required from start to finish of the job. Immediately a contractor is chosen, this second or "labour" chart should be gone over with the contractor so that both parties are satisfied that it represents a fair statement of what will be required and that the labour will be available. It may well be that contracts will be let as much on the fact of the guarantee of labour as on the fact of the price being the lowest submitted.

Owing to the tightened-up conditions of the labour market however, the architect himself has a clear obligation to the builder and should exercise particular care in making sure that drawings can be prepared and issued for every part of the work before the same is put in hand. Information as to what drawings will next be required will of course be readily obtained by following the works progress chart—or a shortened schedule of items may be drawn up for use in the drawing office.

Considering the question of building materials after the war, one would not be prepared at the moment to make any forecast of which will be in short supply and which not. What may be said is that throughout the war period tremendous strides have been made in the development of new materials, new processes, new applications of existing processes, and new ideas in organizing and administrative work. At such a pace do we now live that much of this information, although well tried out, may be said to be not yet fully distributed to and absorbed by the interested professions and crafts. This is scarcely surprising when one thinks that the research which has been carried on continuously was, in the main,

directed towards the production of material for immediate application to war purposes—which allowed little time or opportunity for trade propaganda. It is not within my scope to delve deeply into questions of materials or constructional methods, but there is no doubt we shall have plenty of problems on which to exercise our ingenuity in these directions. Plastics, pre-stressed and spun concrete, increased use of metals, welding processes, plywood, and glass—I am not one of those who think that we will ultimately be erecting buildings with the aid only of a spanner, but no one can doubt the fact that the scientific and engineering viewpoint will be to the fore and that many traditional methods will require to be weighed in a just balance against the newer theories.

Throughout this book the question as to whether or not the buildings of which mention has been made are still intact has been ignored completely. At the time of going to press hostilities have only just ceased and no details have so far been made public of the extent of the damage which has resulted from enemy action.

Another important omission has so far been made which may have been noted with some surprise. No quotation has been made of any building costs or percentage proportions from which the figures for the various sections of the constructional works in each library could be deduced. There have been two reasons for this. Firstly, costs incurred on buildings erected before the outbreak of war will be subject to such variation in buildings erected after the war that they would seem to present the danger of misdirection if quoted as a guide. Secondly, it is difficult to arrive at a fair cubic cost basis unless one is entirely familiar with the exact build-up of the final figures quoted—and this is not always easy to arrive at. For example, the demolition of an existing building, the cost of the site, or a considerable sum for the provision of extra book stock in the new library; all these may be passed through the ledger as a charge against the construction and thus adversely effect the final cube.

If, however, the fact that future costs will probably be much higher than they were before the war is appreciated and allowed for, it may be helpful to take one individual building and see if we can make any useful deduction from the build-up of the various figures.

Taking the Huddersfield Public Library as our example, this building is a steel-framed, three-storied structure, faced with dressed ashlar from the local quarries and equipped with coal-

fired boilers, panel heating, and a ventilating intake and extract system serving all major rooms. Cube measurements were taken in accordance with custom, *i.e.* measured vertically from the top of concrete foundations to 2 ft. above the flat concrete roofs and horizontally to the external faces of walls.

The total cost of this building was £102,800 (round figures are given in each case), which included £15,800 for cost of site, demolition, architect's office charges and a sum for additional book stock. Deducting these incidental charges from the total figure, the cost of the actual structure was £87,000, which represented a figure of exactly 2s. per cubic foot.

The cost of the structure (£87,000) was composed as follows :

General contractor's work . . . . .	£40,000
Separately let contracts—	
Steelwork . . . . .	£9,000
Hollow-tile floors . . . . .	4,000
Heating and ventilation . . . . .	11,000
Sculpture . . . . .	1,600
	<hr/>
	26,000
Wood furnishings . . . . .	9,000
Provisional sums . . . . .	12,000
	<hr/>
	£87,000

It will be noted that the general contractor's work, which included the quarrying and working of all masonry, accounts for rather less than half the total building costs.

The heating and ventilation charges, if one adds an appropriate sum for incidental builder's work and for certain duct work which was carried out in plywood and is included under general contractor's work, would amount to £12,000, or approximately one-seventh of the total building costs. One would consider this latter proportion very satisfactory—one-sixth, or even one-fifth is quite a usual figure for this type of installation.

The sum of £9000 for wood furnishings represents a considerable amount of very detailed design work and a further period during which the furniture is being prepared in the shop. In a library of this size it is well to consider if it would not be advantageous to let the furnishing contract to more than one contractor—if each contractor is given complete rooms there should be no apparent variation in technique and in this way the progress of the job will be considerably expedited.

At Huddersfield the furnishings were divided between two

contractors and at the Sheffield Central Library (a larger building) among three.

In the case of the Sheffield Central Library the building structure was similar to the library at Huddersfield but was larger. The building was steel-framed, four-storied, faced with Portland stone, and similarly equipped with panel heating and ventilating system. The total cost was £141,700, which cubed out at 2s. 2d. per cubic foot. Here there was more work below ground level than was the case at Huddersfield, the plaster ceilings were more ornate, and the external stonework rather more elaborately carved—which would account for the higher figure.

Working and carving stone is of course a long and costly proceeding. Several brick-built branch libraries costing from about £30,000 to £40,000 which I cubed up just before the war worked out at from 1s. 8d. to 1s. 10d. per cubic foot.

In considering these questions of labour and costs one cannot help wondering what priority will be given to library construction in the post-war years. Here in England housing will be the most immediate concern. Our educational services have not suffered such complete and wholesale destruction as has been the case in certain parts of Russia and other European countries, but the passing of the Butler Education Act has increased the need for the erection of many more schools. In many areas, also, hospital accommodation is woefully insufficient. It would appear therefore that schools, together with hospitals, should be given priority after our housing plans have received due attention. When deficiencies in these three essential social services have been, to some extent, alleviated, there is a strong case for libraries to be entered next on the list for consideration.

## APPENDIX I

### NOTES ON BRITISH LIBRARIES OTHER THAN MUNICIPAL LENDING LIBRARIES

OBVIOUSLY, certain features of planning or equipment may occur in any type of library, irrespective of whether or not it is primarily for reference or lending purposes (or both) or is supported by the municipal, county, state, university, or other authorities. Put simply, whereas the reference library is concerned with the quick delivery of a certain specified book to the reader, the lending library is, under the open-access system, concerned not only with book delivery but also with the display of its stock in a fitting and attractive manner. The following Appendix gives a brief survey of such British libraries, other than the English Municipal Branch and Central Libraries which have already been dealt with, as seem of special interest in connection with the problems we have under consideration.

It may be remarked that the county library system has been given little recognition here, being represented only by one branch library, that at New Malden. There are, of course, many excellent examples of county branch libraries, particularly in the counties of Lancashire and Middlesex. Their planning arrangement is largely the same as that met with in municipal branches and for this reason and for the fact that space is limited they have been omitted.

Mention should, however, be made of the county library headquarters, to which there is no corresponding counterpart in municipal organizations, but which exist as a source of central delivery and supply in the case of the county systems. At the present time unfortunately, the various county library headquarters are in all cases housed in premises adapted for the purpose, and so far as I am aware Middlesex is the only county which has prepared plans for an entirely new building which might illustrate a logical solution of the problem presented. This building has not yet been erected (owing to war conditions) so that a brief description of the general requirements of the typical county library headquarters must suffice.

There must, then, be a loading bay with receipt and delivery departments for incoming and outgoing book stocks. Adjacent to these must be an assignment room (where the general work of the headquarters may be carried out) and an ample stack room. In addition to these branch library servicing departments it will usually be necessary for the building to include, for local needs, the usual accommodation for lending and reading which is provided for the ordinary branch library. A reference room should certainly be provided as many of the outlying book centres will probably have no facilities of such a nature.

## A COUNTY BRANCH LIBRARY.

An interesting variant on the usual fan-shaped lending library treatment for a corner site is provided by the little county branch library at New Malden, illustrated on Fig. 12.

In this library, designed by Mr. A. R. Goldthorp, B.Sc., A.M.I.C.E., and Mr. F. C. Otton, A.R.I.B.A., and opened in 1941, the lending library is octagonal in shape, the stacks being so arranged that a pleasantly regular layout is achieved, supervision down the central rows of stacks is direct, and semi-private reading may be pursued in the recessed alcoves of the book-shelving at each side of the library. This lending library measures 50 ft. by 40 ft. and has shelving for 12,500 volumes, that fixed to the walls being 6 ft. 6 in. high and the island stacks standing 5 ft. high.

This 5 ft. height, by the way, should be regarded as an absolute maximum for island stacks—4 ft. 6 in. is better, as then an uninterrupted view over the room may be obtained even by the shortest person.

The reading-room, also on the ground floor, is 50 ft. by 20 ft. and the junior room, with separate entrance, measures 30 ft. by 20 ft. and carries a stock of 2200 volumes.

On the first floor the lecture room follows the dimensions of the reading-room below and has seating for 110 persons, the walls being lined with cork tiles so that exhibitions may be staged at certain times. The reference department (35 ft. by 20 ft.) has shelving for 1600 volumes and specially designed fittings for maps, atlases, and picture collections. There is direct and convenient access from the reference department to the stack room and a staircase leads from the latter to the side entrance so that books may be conveniently delivered away from the main entrance of the library.

A striking feature of the completed library is the care and attention which have been given to the fittings generally. In the lending library, for example, special shelving has been provided for large books and music and pull-out rests make for ease in the handling of these rather cumbersome items. The way in which the catalogues have been designed as a part of the lending counter front will ensure that the staff are at hand to give any assistance which may be required. But there is a disadvantage in the fact of the congestion which is likely to be caused at this point.

Heating is by means of low-pressure hot water served from a gas-fired basement boiler fitted with clock control and accelerator.

Joinery is well designed and is of Australian scented satinwood and flush-panelled veneers of English cherry and Australian maple.

As construction took place during the war years it is interesting to note that windows and partitions have been carried out in reinforced anti-splinter glass and that extra reinforcement has been provided to the concrete roof over the lending library.

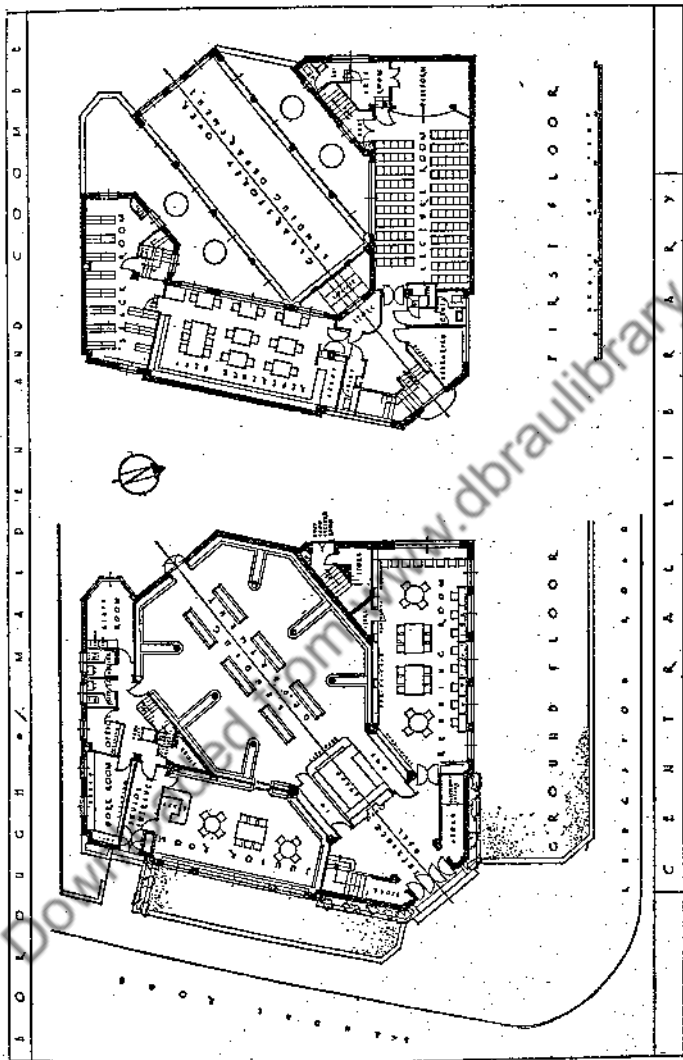


FIG. 12.—MALDEN AND COOMBE COUNTY BRANCH LIBRARY.

Ground- and First-floor Plans.

By A. R. GOLDTHORP, B.Sc., M.I.C.E., and F. C. OTTON, A.R.I.B.A.

[By courtesy of the Secretary, The Library Association.]



## MUNICIPAL REFERENCE LIBRARIES.

The Manchester Central Library has already been described. Whilst it possesses an important lending section and maintains a service to various branches, yet the reference library and the stack rooms subsidiary thereto are on such a scale that the plan requirements of the building closely approximate to those of the purely reference libraries which will be described later.

*The Mitchell Library, Glasgow.*

The Mitchell Library was designed by Mr. W. B. White and was opened in October 1911, at which date it was accepted as the largest undertaking in municipal library building for many years. It still retains its place as one of the finest examples of library architecture in the United Kingdom.

In Glasgow, the various branch libraries provide the necessary facilities for lending books, the Mitchell Library containing only such works as are devoted to reference, music, or research. The need for such a library, devoted entirely to purposes of reference, will usually occur only in the larger cities, and it will be useful to compare the two examples chosen for illustration (the Mitchell Library and the Picton Reading Room, Liverpool), for whilst they are absolutely dissimilar in plan, each may be said to be a masterpiece of its own particular type. It may be noted that in the Mitchell Library the stacks are placed behind the rectangular reading-room, and extend, vertically, through a height of five floors. In the Picton Reading Room the stacks line the circular wall of the reading-room itself.

The Mitchell Library basement floor extends over the whole area of the building. It is treated externally as a rusticated stone plinth and internally it serves to house the heating and ventilating plant, and provides ample room for storage, strong-room, and the various services of the library.

The ground floor contains the principal departments, and those to which quick access for the public is desirable. The main feature of this floor is the rectangular reading-room, 112 ft. by 54 ft., extending through three floors in height and lit from a central area above. Immediately behind this reading-room, and on the same level, is storage space for some 40,000 of the books most frequently in use; additional book storage extends vertically over this portion of the building, through four more floors.

The reading-room is encircled by a broad and well-lit corridor which gives access to other departments—the ladies' and the students' rooms, each 49 ft. by 23 ft., and the Burns and Glasgow collections, each 27 ft. by 23 ft.

An intermediate floor extends over about half the area of the building and is devoted to administrative rooms, committee room, and storage.

On the first floor are situated the magazine room, with seating accom-

modation for 200 readers, and the Jeffrey reference library. These departments are identical in size, each measuring 98 ft. by 33 ft.

The building is designed in the Renaissance manner, is faced externally with stone and decorated internally with a profusion of detail in the free classic style of its period.

A scheme for the extension of the book stack so as to accommodate a further 500,000 volumes is in hand.

#### *The Picton Reading Room, Liverpool.*

The Picton Reading Room (Fig. 13), for which building Cornelius Sherlock was the architect and J. N. Shoolbred the engineer for floor and dome, was completed and opened in 1879. The building is circular in plan, with the principal entrance at the front and with minor entrances to left, right, and rear, giving access to the Lending Library and Museum, the Walker Art Gallery, and the Hornby Art Library respectively.

Under the reading-room is the Picton Hall, approached direct by a door placed centrally in a front screen wall, on either side of which rise flights of steps giving access, from the sides, to the reading-room above. The approach to the front of the building is particularly fine, the outer stone walls of the elevation being enclosed by a semi-circular colonnade in the Corinthian style. The Picton Hall, excavated out of the solid rock, provides seating for over 1000 people and is largely devoted to purposes of lecturing, conferences, and the story-hour talks delivered to the young people's department by members of the library's staff.

The reading-room itself is 100 ft. in diameter and 60 ft. high. It provides seating accommodation for over 200 readers and is open to any person over sixteen years of age without payment or introduction. It carries a stock of 251,000 volumes, of which some 75,000 are housed in three heights of shelving running continuously round the inner wall and projecting forward, in sixteen two-tier bays, into the room itself. Catalogues are situated just inside the main entrance doors, and required books are brought by hand to the service counter by a staff of small boys retained for that purpose. From the service counter, books may be taken for perusal to the double-sided reading-tables which radiate from the centre of the reading-room.

Natural light is admitted through an "eye" light, 24 ft. in diameter, in the centre of the crowning dome.

Artificial illumination is semi-direct, and is provided by eight 750-watt lamps placed in a saucer fitting surmounting an ornamental column in the centre of the room. Light thrown upward from this fitting is reflected back from the inner surface of the dome above.

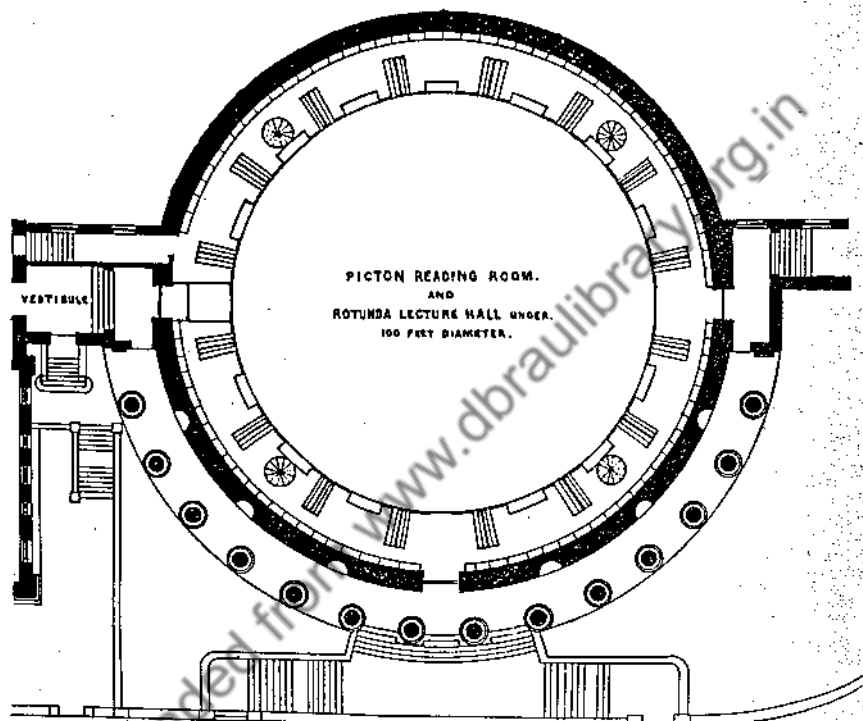
#### REFERENCE LIBRARIES OTHER THAN MUNICIPAL.

##### *The British Museum Library.*

Though the British Museum Library is definitely a "research" library, as distinct from a municipal library which has to cater for the

man in the street equally with the student, yet no treatise on library planning can be considered complete without reference being made to the principles underlying the construction of this great conception.

The British Museum Library was designed in 1854 by Panizzi, and consists of a circular reading-room capable of providing seating for



PICTON READING ROOM & ROTUNDA LECTURE HALL.  
*CORNELIUS SHERLOCK, ARCHT*

FIG. 13.—THE PICTON READING ROOM, LIVERPOOL.  
Ground-floor Plan.

By CORNELIUS SHERLOCK, ARCHITECT.

[By courtesy of the Chief Librarian, City of Liverpool Public Libraries.]

450 readers. The encircling wall is lined, to the height of the springing of the superimposed dome, with a triple height of book-shelving, access to which is gained by means of the narrow projecting galleries which are provided, following the line of the shelving at convenient heights. The circular reading-room forms the core, as it were, of a rectangular-shaped block which contains the vast book stock. Service from the stacks (which is now assisted by a system of conveyor belts and hoists) is

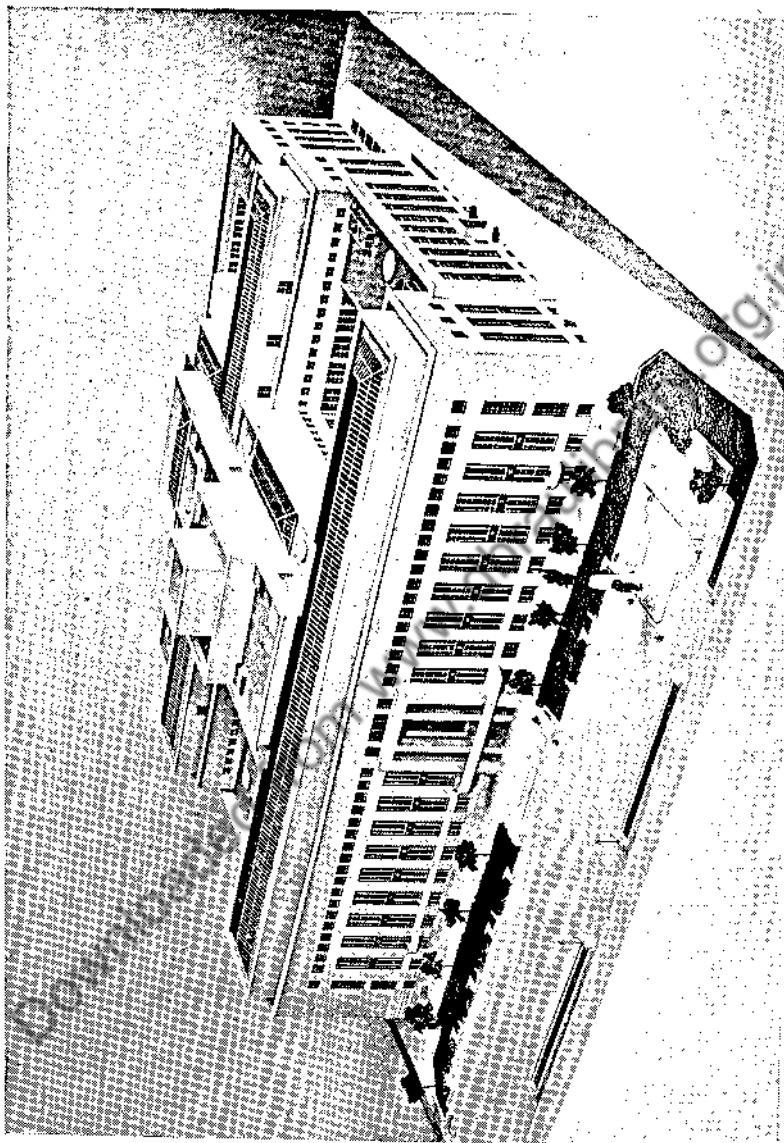


PLATE XVI.—CIVIC BUILDING, COMPRISING CENTRAL LIBRARY, ART GALLERY, CITY MUSEUM, and GENERAL OFFICES,  
as proposed by the late JOHN C. PROCTOR, F.R.I.B.A., for the City of Leeds. Photograph of model.  
[By courtesy of the Executors of Mr. John C. Proctor, F.R.I.B.A.]

therefore direct, and the maximum distance which a selected book has to cover in transit is as short as it is possible for it to be. It should be appreciated that here the onus of book selection is put on the reader himself—he, before entering the actual reading-room, is required to make his selection from the catalogues supplied and to fill in the number of the required book on a slip provided for that purpose and handed in by him on entering the reading-room.

The main structural material used is cast-iron, and this has also been used for the stacks—some of which, however, have now been replaced by the more up-to-date steel shelving.

Reading-desks are entirely covered in leather fabric. The vertical front of each desk has doors which may be opened out so as to expose a shallow recess, and from the space thus exposed a book-rest may be hinged out, its movable arm capable of such adjustment that the rest may be fixed to any convenient angle or position.

The British Museum Library still holds its place as one of the outstanding examples of library planning and management. In this connection it is interesting to note that when, in 1940, the Lenin State Public Library of the U.S.S.R. formed a new department to study the methods of the best libraries of the world, their selection included the British Museum Library, the Library of Congress, Washington, and the New York Public Library.

#### *Liverpool University Library.*

Mr. Harold A. Dod, M.A., F.R.I.B.A., when he designed the Harold Cohen Library of the University of Liverpool (Fig. 14), brought to his task a wide previous experience of library matters. Many points of interest might be picked out in the completed design, but space permits only of a brief mention of the main "bones" of the scheme, that is to say the method of approach to the reader's study table and the relationship of this table to the stack services.

On the ground floor the reader enters directly, by means of a central entrance doorway, into the spacious entrance hall. On either side of this entrance and extending along the front (south-west side) of the building, are rooms devoted to private study. The remainder of this floor is chiefly given over to storage and stacking space.

A double stairway gives access to an upper hall on the first floor where the reader at once finds himself at the catalogue stands, and from whence he may pass either into the open-access rooms on either hand or else straight through into the main reading-room, which extends along the main length of the front elevation, successfully dominating the adjoining structure by its greater height and pronounced vertical fenestration.

The well-lit stack block, in eight stories each 7 ft. high, is placed along the back of the library and forms a distinctive feature, clearly defining the purpose for which the building is intended to be used.

The total book stock, when all stack rooms are in full use, will be

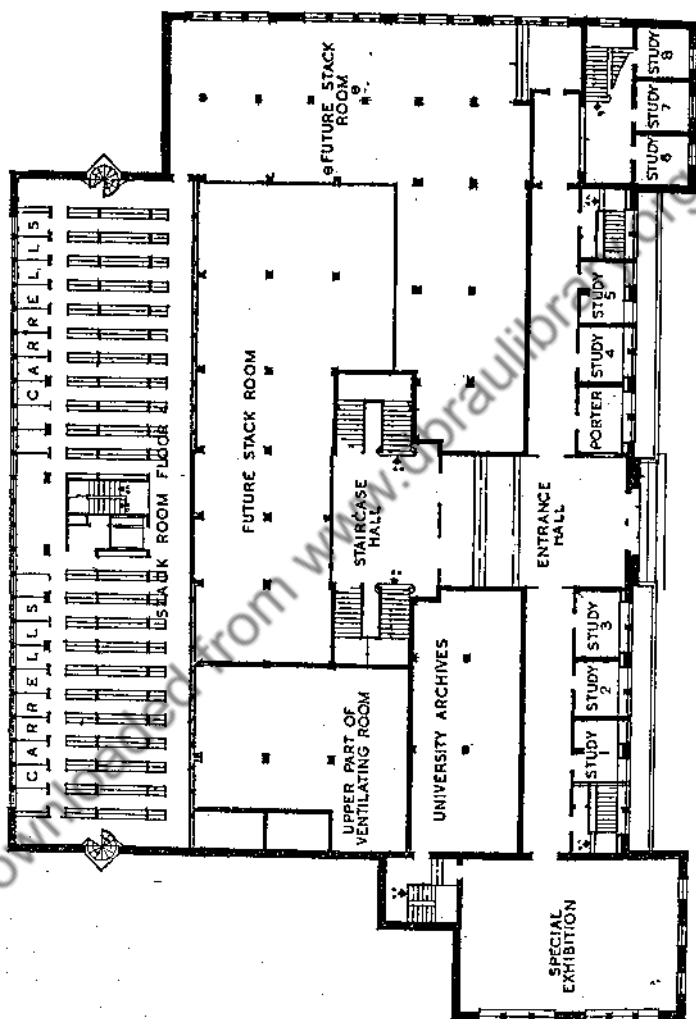


FIG. 14. LIVERPOOL UNIVERSITY LIBRARY.

By HAROLD A. DOD, M.A., F.R.I.B.A.

Ground-floor Plan.

[By courtesy of the Architect.]

1,000,000 volumes and some 450 students may be accommodated at one time.

*Cambridge University Library.*

The illustration (Fig. 15) of the magnificent Cambridge University Library (Sir Giles Gilbert Scott, R.A., F.R.I.B.A., architect) can give only an indication of the general disposition of the plan elements. These elements are grouped so as to enclose two internal square courts, the main feature of the front elevation being the stack tower, which is placed

NEW LIBRARY CAMBRIDGE UNIVERSITY

By Giles Gilbert Scott R.A.  
7 CLARE PLACE, SQUARE, W.C.

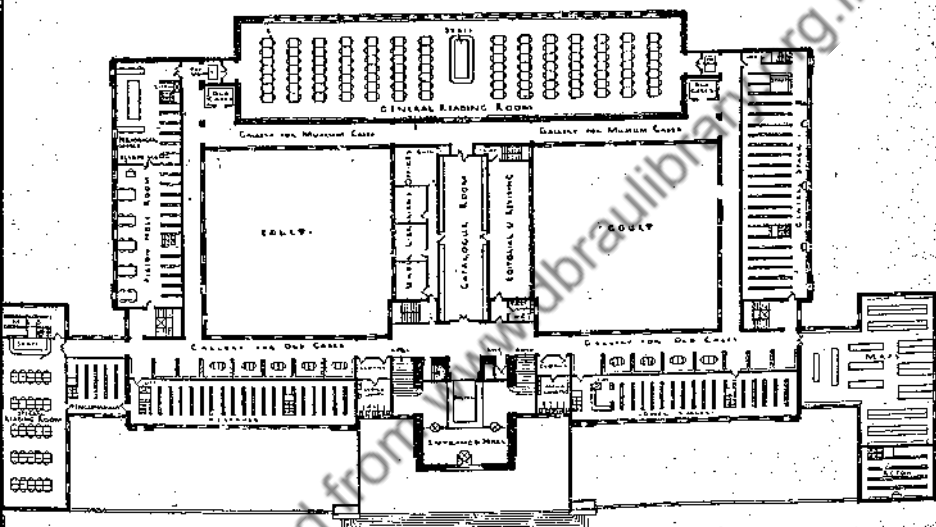


FIG. 15.—CAMBRIDGE UNIVERSITY LIBRARY.  
Main-floor Plan.

By SIR GILES GILBERT SCOTT, R.A., F.R.I.B.A.

[By courtesy of the Architect.]

above the principal entrance and which rises to a height of 160 ft. above ground level.

Complete circulation round the building, by corridor, is only provided at ground- and first-floor levels; the ground floor being chiefly devoted to staff circulation and the first floor to that of the general reader. Above this level there are no corridors and the floors are devoted entirely to stacking, each of the four main book stacks being seven stories in height.

From the main entrance the reader ascends, by steps, to first-floor level, passes directly down the main central axis of the building, down the length of the catalogue room, and, by way of handsome bronze doors, into the reading-room (193 ft. long, by 43 ft. wide by 33 ft. high), which extends along the back or western elevation of the library.

The structural steelwork of the stacks serves to carry the stack floors, independently of any wall support.

In the reading-room the walls are of rough plaster, the ceiling of wood, the floor covered with rubber, and general lighting is provided from flood reflectors in the tops of the bookcases.

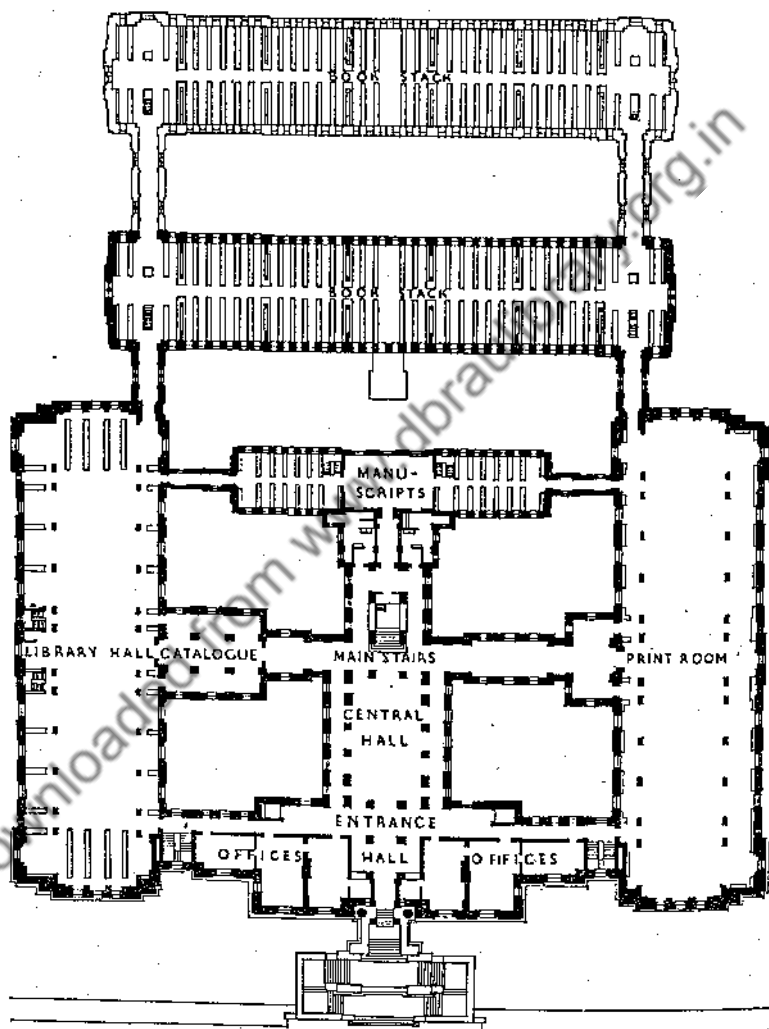


FIG. 16.—THE NATIONAL LIBRARY OF WALES, ABERYSTWYTH.

Ground-floor Plan.

By SIDNEY K. GREENSLADE and MESSRS. ADAMS, HOLDEN, AND PEARSON,  
F.F.R.I.B.A.

[By courtesy of the Architects and of the Librarian, The National Library of Wales.]



Stack-room walls are of brick, unplastered but treated with cement glaze to provide a hard, easily cleaned surface. Stack rooms are floored with linoleum, tinted to match up with the wall colouring. In the stack rooms, where continuous windows occur, an ingenious form of radiator has been devised. Horizontal pipes, welded to form a protective balustrade to the windows, themselves provide the radiating surface and reduce the obstruction to light and space to a minimum.

*The National Library of Wales, Aberystwyth.*

The Welsh National Library (Mr. Sidney K. Greenslade, F.R.I.B.A., and Messrs. Adams, Holden, and Pearson, F.F.R.I.B.A., architects) is shown on Fig. 16 and is illustrated as an attempt to solve the ever-present problem of increasing demands for stack storage space. The solution arrived at, of repeating the stack blocks as occasion arises, could obviously only be used where ample space is available for extension over the site. Vertical stack expansion would most certainly seem preferable to this method of repetition, and is in more favour to-day, both on the grounds of site space and also as regards speed of book delivery. Vertical lifts serve much more quickly than does the service along the extending double corridors of the repeating stack-block type of plan.

Downloaded from www.digitallibrary.org

## APPENDIX II

### NOTES ON SOME FOREIGN LIBRARIES

At the first meetings of the Select Committee which was appointed in 1849 for the purpose of reporting on "the best means of extending the establishment of libraries freely open to the public", the assistance of existing foreign library organizations was requested. This assistance was given, and made it possible for plans of those libraries already established in Paris, Vienna, Berlin, Dresden, Munich, Copenhagen, Rome, and Florence to be included in the Committee's report. Particulars were supplied of a large number of American libraries, and maps showing areas of population, accessibility, and book distribution were submitted. Representatives of the principal foreign States who attended and gave evidence as to the conditions ruling in their own countries included Mr. Charles Meyer, German Secretary to the Prince Consort, and Mr. Henry Stevens, a former librarian of Yale University Library. It is interesting to note that this international collaboration has been successfully maintained, and that, in the case of libraries erected within the last few years at Liverpool, Manchester, and Sheffield, it was felt desirable, at an early stage in the building operations, to dispatch delegates abroad for purposes of study and research.

Detailed descriptions of the various American and Continental libraries will be better acquired from works dealing exclusively with those particular countries. Here an attempt will only be made to stress certain features, occurring perhaps in conditions not entirely applicable to English municipal planning, but which may be considered as links in the chain of general development, to be utilized or discarded as circumstances may dictate.

#### AMERICA.

The problems of heating, lighting, ventilation, and other services to be provided in the erection of large-scale public buildings have, in America, received intensive and scientific consideration. In a young, rich country, possessing an abundance of open space and opportunity for expansion, it is natural that libraries, monumentally planned and elevated, should abound, and that these libraries should frequently form one unit of an extensive layout of park space or university campus.

As regards internal planning, a symmetrical arrangement of plan elements has usually been adopted.

The "open-access" system, almost universally adopted in England, is also popular in America. In America it is a common practice to provide combined reference and lending subject-departments instead of having

the lending library entirely separate from the reference library—as is the normal method in this country.

In the smaller libraries access is usually direct, by means of an entrance vestibule, to a central delivery room and counter. This delivery room forms the hub of the library organization and round it will be grouped the reading, reference, and children's departments. Stacks and the necessary service rooms will be accommodated in the basement or at the back. If a second floor is provided it will usually be pierced by a central area which will permit of the admission of top-light to the delivery room below.

In the case of the larger libraries the main reading-room is treated as the principal element of the plan. This room will usually be of considerable size, situated on an upper floor and extending along the front elevation of the building. External expression will be given by the long vertical lines of the reading-room windows, often accentuated by a columnar or pilaster treatment of the front façade. This method of treatment is strongly reminiscent of that adopted in the Library of Sainte Geneviève, Paris, a fact which is easily explained when one recalls to what extent the influence of the French school has been impressed on American architecture. Behind the reading-room will be grouped the main stairway (sometimes duplicated), the lifts, and, if the size of the scheme necessitates it, the light wells. The stacking accommodation is usually of considerable magnitude, the metal stacks being arranged in tiers, with an allowance of 7 ft. 6 in. in height between each stack floor. Natural light and ventilation are not considered necessary for the storage of books, with a result that the stack room is often placed inside the building, the stack framing being utilized to stiffen the walls and to support the upper floors of the structure.

The problems of quick service from stack shelf to delivery counter, and of the provision of facilities for the future expansion of the stack storage space, are of vital moment and their solution has been attempted in various different ways. In the New York Public Library the multi-storied stack block is expressed boldly on the front elevation. The reading-room is placed on the top of the stacks, with which it communicates vertically by means of a service of book-lifts. The Boston Public Library has a square arrangement of plan, of which square the front constitutes the reading-room and the sides and back the stack and service accommodation. The central courtyard thus enclosed is open to the sky, but is surrounded on three sides by a covered arcade where readers may loiter and converse.

#### *The Philadelphia Public Library.*

Though neither one of the largest nor yet one of the most recent of American libraries, the public library of Philadelphia may serve to illustrate a type of plan which is considered fairly typical, and which demonstrates the points which have already been noted. The first floor contains the principal reading-rooms, with the main reading-room

occupying the central position on the front elevation. A generously proportioned staircase, flanked by corridors and two internal light wells gives access to the various floors. Stacks are accommodated at the rear of the building, in the basement, and at ground-floor level.

*The Library of Congress, Washington.*

Designed by J. L. Smith-Meyer and P. J. Pelz and opened in 1888,

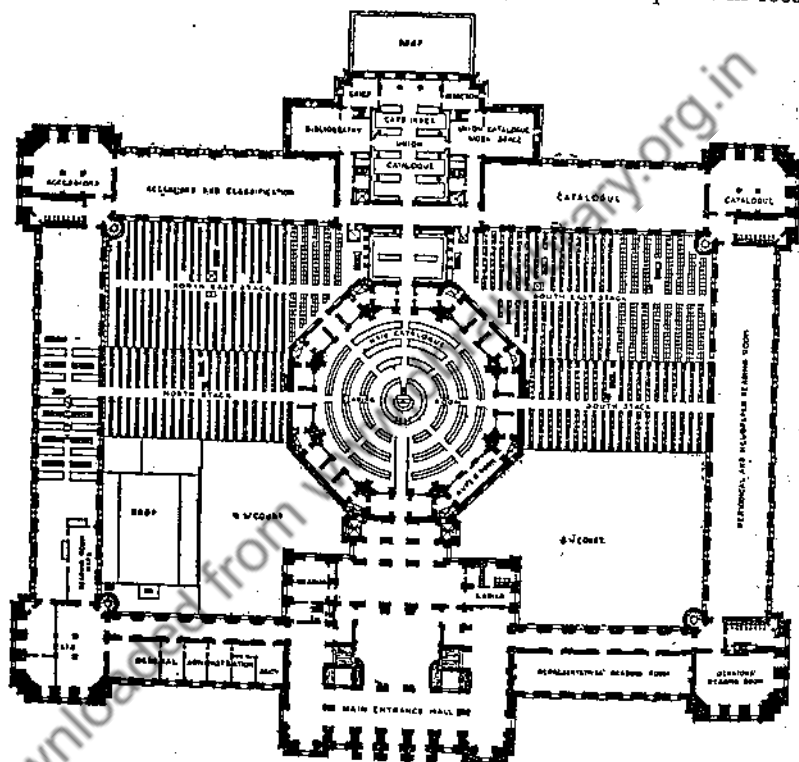


FIG. 17.—THE LIBRARY OF CONGRESS, WASHINGTON, U.S.A.  
First-floor Plan.

By J. L. SMITH-MEYER and P. J. PELZ.

the Library of Congress has an octagonal central reading-room approached from the front by way of an imposing entrance block and extended at the rear into a block devoted to departments which house the cataloguing, indexing, and bibliographical services (Fig. 17). From these two blocks extend side wings, connected at their extremities by lengthy reading-rooms which thus enclose the central octagon within a rectangular frame of circulating rooms and corridors. The light wells thus formed between the octagonal reading-room and the enclosing rectangle are

being gradually filled in to provide additional stacking space as such becomes necessary. As this process of filling in is proceeded with, the plan tends more and more to resemble the earlier British Museum Library conception. In the case of the Library of Congress, however, there seems a disadvantage in the fact of the blocking up of the inner windows of the rectangular enclosing wings. The position of the reading-room is excellent, it is most conveniently near the main entrance and well positioned in regard to its auxiliary services.

### *Modern Tendencies.*

In America, as in England, the more recent library plans show a movement away from the monumental plan to an open arrangement of the accommodation, capable of easy sub-division by light party walls or partitions. Of these later libraries mention might be made of the Enoch Pratt Free Library at Baltimore, Maryland, which is described in detail in *The American Public Library, Its Planning and Design*, by J. and L. Wheeler and A. M. Githens (Scribners, 1941). This library was completed in 1933, the first floor is the main service floor carrying the "live" portion of the book stock, and storage is provided in a three-level stack immediately below the first-floor level. The "live" stock comprises volumes for reading, reference, and circulation to a total of 150,000 volumes.

### FINLAND.

#### *The Viipuri Library.*

The Viipuri Library (Fig. 18), designed by Alvar Aalto and opened in 1935, possesses many extraordinarily interesting features and would seem to be well worthy of a visit both from the point of view of the librarian as well as from that of the architect. Unfortunately I must rely on information already published in the technical press for the particulars here given. The reader is referred to the description and photographs published in the *Architectural Review* of March 1936 and an article in the *Library Association Record* of August 1936.

The Viipuri Library breaks new ground in library construction. Functional both in planning and design, it is notable chiefly for the skilful treatment of varying levels and for the original and scientific solutions which have been arrived at in connection with the problems of heating, lighting, ventilation, and acoustics.

The building is set on the outskirts of a public park, adjacent to an extensive layout of ornamental gardens. The requirements to be satisfied were twofold and consisted of (a) the provision of a public library complete with children's, reading, and lending libraries, news room and stacking accommodation, and (b) the provision of lecture room, offices, club, and refreshment rooms for the use of a local cultural society.

The two functions are admirably expressed in the elevations and also in the plan, which consists of an asymmetrical arrangement of two

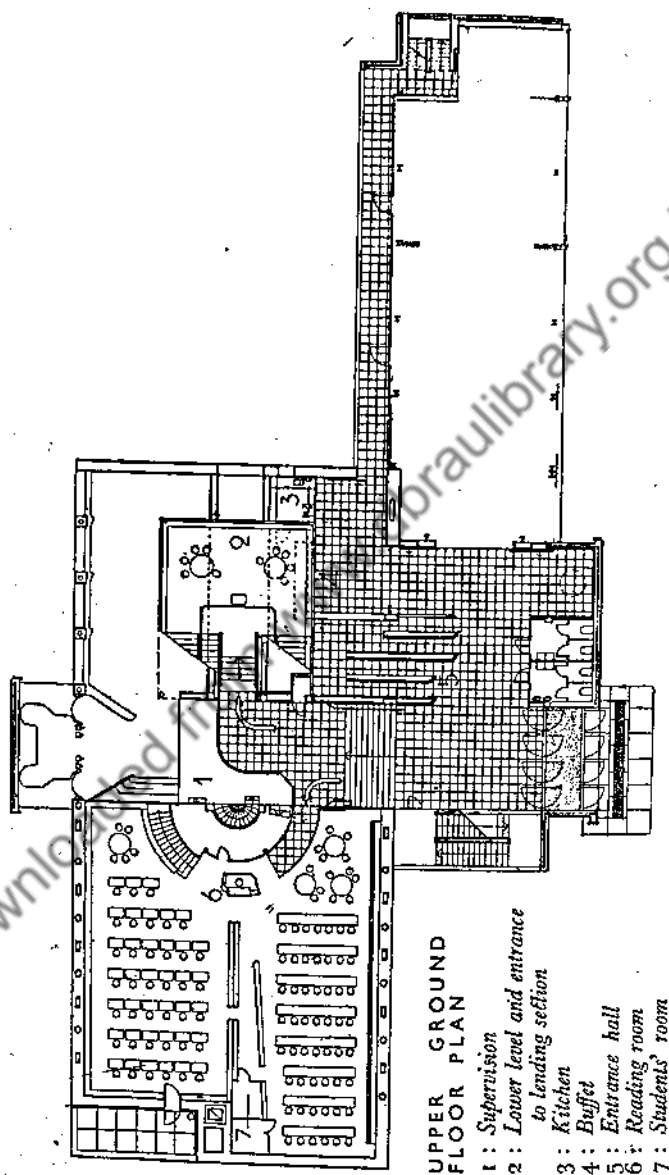


FIG. 18.—LIBRARY AT VIIPURI, FINLAND. BY ALVAR AALTO.

rectangular blocks with separate though parallel access to each by means of a spacious entrance hall which serves to combine the dual purposes of the scheme. The requirements of each element of the plan have received careful individual study, and where these requirements differ there occurs a corresponding variation in construction and design.

The lower ground floor contains the children's library, facing on to the ornamental gardens and with a separate entrance giving access to gardens and "play-lawn". The children's library measures 86 ft. by 20 ft., and comprises two departments. One, the reading section, provides stools to seat seventy-five children at long reading-tables. The other, besides serving the purpose of a lending library, is used for lectures and story-hour talks, the floor area being left clear for an informal grouping of chairs when such is required. Continuous book-shelves line the walls of both departments. Natural light is supplied by windows set in the outer wall above the book-shelving. Lavatory basins and a mouth-rinsing column are provided for the children in a screened-off space by the entrance doors.

Behind the children's library is the newspaper room, 50 ft. by 20 ft., with an entrance door leading from the side street and with long horizontal windows overlooking the park.

Almost the whole of the remaining area of this floor is devoted to stack storage, the heating and ventilating plant being contained in small basement rooms situated at the corners of the building in the foundations.

At upper ground-floor level is the main entrance hall, serving both library and lecture hall departments. The generous width of hall, steps, and entrances gives an air of invitation which is further augmented by the provision of a buffet counter with small service kitchen adjoining.

The lecture hall is of light steel-frame construction, with a ceiling of most original design. The surface of this ceiling is built up of narrow wood strips fixed in such a way as to give an undulating profile in the longitudinal section—a method of construction which is claimed to give almost perfect acoustic results in a case where speakers may rise from any position in the hall. The lecture hall is furnished with specially designed wooden chairs and stools, and has a movable partition by means of which the room may be subdivided if necessary.

The library department proper is totally enclosed by windowless brick walls, is lit by means of indirect light from above, and consists of a single room having three floor and two ceiling levels. The reading-room provides accommodation for a hundred readers at the tables, which are flanked by open counters for periodicals. The room is divided down the centre by lofty ranges of shelving, at the extreme end of which are two small rooms screened off for purposes of private study. The lending library is arranged as a wide, open gallery surrounding a square well which is situated at a lower level and is accessible by steps from the gallery above. In the centre of the library and with direct supervision over all departments, stands a boxed-in enclosure, below which is the librarian's department with direct access to every part of the building.

Also at first-floor level are offices and club rooms for the use of the cultural society. These are connected by a long corridor and are immediately accessible, by means of stairs, from the lecture hall below.

To ventilate the building, metal and earthenware ducts are provided, concealed in the thickness of the brick walls. These ducts discharge near the ceiling and extract just above the book-shelving in each case.

The library is lit by day by means of fifty-seven circular disc lights fixed just above the surface of the flat roof. These lights are of rough glass with an under-surface of clear crystal, and are set above conical cavities of a depth sufficient to exclude the direct penetration of the sun's rays. In principle, each prism throws down a cone of light, the circumference of which is sufficient to overlap the cones projected by other prisms, and to cause such a diffusion that the possibility of shadows or glare is obviated. Artificial light is supplied by means of special reflectors concealed in the base of the outer rows of conical cavities and directed against the white surrounding walls so as to give an even distribution of light over shelves and tables.

Heating is by means of the invisible panel system, the heating tubes being concealed in the ceilings.

As regards the internal finish of the building, a careful selection of varying types of timber has been made, and utilized, generally in the natural state, for fittings, furniture, and linings. Plaster walls and ceilings are plain, and unadorned with any suggestion of moulding or corncicing.

#### SWITZERLAND.

##### *The Swiss National Library, Berne.*

As a result of an architectural competition, the authors of the designs placed first, second, and third were invited to submit a joint scheme for a National Library. This they did, and in 1928 the scheme of MM. Oeschger, Kauffman, and Hochstettler was approved and instructions were given to proceed with the work. The official opening of the building took place in October 1931.

The problem presented consisted of the provision of a library, primarily for reference, but containing also certain facilities for lending and for the issue to readers of books loaned from other libraries. There were to be periodical and reading-rooms, an information bureau, and provision for an extensive increase in the stack accommodation at a future date. It was in fact decided that, rather than make provision for future extensions of the building, it would be desirable to erect a large building in the first instance. For this reason there is spare space in both stack block and offices—in the case of the latter the extra space has been utilized to house temporarily certain Government departments.

The main front of the building displays the low, wide-flung wings of the administration block, facing almost due south and pierced in the centre by the main entrance porch, to which access is gained by broad



flights of steps. The side wings of this block contain the cloakrooms, lavatories, director's and secretary's rooms, and the administrative offices. The entrance opens on to a wide corridor from which access may be gained to the reading and catalogue rooms (with central delivery counter) to the periodical room, and an exhibition room. From the staff space behind the delivery counter there is communication, by signalling apparatus, to all floors of the stack room above and service lifts are provided for books and requisition slips. Flanking the periodical room and the exhibition room are, on the one side, a reading-terrace overlooking the garden and, on the other side, working-rooms for the library staff. The main public rooms are all in direct communication, and are separated only by glass screens so that supervision is unobstructed and a clear view of the garden may be obtained, across the reading-terrace, from the inner rooms. It will be noted that the public rooms are effectively isolated by the stack block and administrative offices, so that outside noise is to a very great extent excluded. Top-light is provided to this section of the building, a glazed pitched roof admitting natural light, which is controlled by means of horizontal curtains fixed over the lay-lights. By night, artificial illumination is provided by powerful reflectors, suspended between lay-lights and pitched roof.

At the back of the building is the reinforced concrete stack block, in nine stories, and with a total storage capacity of between 2 and 2½ million volumes. The stack shelves are 3 ft. 1 in. long by 10 in. and 11 in. deep, with a 2-ft. wide passageway between each stack. Strong-rooms and a department for the storage of maps are provided. On the north-east side of the stack block there is access, from a private road, for book crates and fuel.

In the general design of the building the shelf spacing of 5 ft. between two rows of shelving has been adopted as a unit of spacing throughout. Mouldings, and all architectural adornments have been eliminated in conformity with the entirely modern conception of the whole scheme. The reading-room tables are rectangular, measuring 2 ft. 5 in. by 3 ft. 10 in., and are designed to seat two readers side by side. Tables have individual lighting. The table legs are of metal and the tops are inset with lino of a colour to match the floor coverings.

The floors of reading-rooms and corridors are covered with thick rubber carpet.

Reading-room doors are of metal and glass, with rubber buffers to eliminate noise. Office doors are constructed of inlaid panels, framed in metal and edged with rubber.

In the public rooms the walls, above the book-shelving, are lined with non-inflammable acoustic wall-boarding.

#### GERMANY.

##### *Tubingen University Library.*

The Tubingen University Library is accorded a "three-star" grading by German bibliophiles and the compact and straightforward planning

of this library is worthy of study. A great feature is made of the entrance hall, which extends over almost the whole front and from which access may be had to the central reading-room and other public departments—these are all accommodated in the rectangular-shaped block which forms the front portion of the plan.

The catalogue rooms and administrative offices occupy the central rear portion of the rectangular block and behind these are the book stacks, with provision on either side for extensions which are intended finally to enclose two rectangular internal courts.

SWEDEN.

*The Stockholm Public Library.*

It would be presumptuous to offer any criticism of this extensively publicized library without having had the opportunity to study building and equipment at first hand and in minute detail. Full descriptions have however appeared in the English technical press and it is of interest to hear what the architect himself, Mr. E. G. Asplund, has to say of the building, and to remark on the general disposition of the planning and the types of finishings used in a country which is rightly renowned for its meticulous attention to æsthetics and its high standard of architectural proportion and craftsmanship.

The building was begun in 1924 and finished in the autumn of 1927. The main feature of the plan consists of the circular top-lit lending hall, which occupies a central position on the first floor, with reading and study rooms symmetrically arranged on three sides of it. Below this lending hall is the book magazine, which, for the time being at any rate, is to fulfil the requirements of a book storage room whose erection was postponed on grounds of cost (Fig. 19).

It is stated that in the planning of the library a main consideration was felt to be that the distance between the entrance and the counter of the lending hall should be as short as possible. For this reason a compact plan was favoured, and narrow staircases lead direct from each entrance, and run in, through the floor of the lending hall, to discharge close up to the lending desk.

The lending hall rises high up above the square block of the surrounding departments, and owing to its height it was found necessary to light the hall by means of windows in the cylindrical outer wall instead of by roof lights as had been originally intended. Books in the lending hall are displayed on shelves which run round the circular wall of the hall in three tiers, the lower tier being accessible to the public from the floor and the two upper tiers accessible only to the library staff.

The semicircular room which will be noted in the plan (Fig. 19) is known as the Legend Room, the function of which is similar to that of the story-hour corners of our own libraries. The interior of this room is said to be very lovely, the walls being decorated in an imaginative way, well suited to form the background to the stories of mystery and adventure which are no doubt listened to with eager ears.

The building is built of brick, finished both internally and externally with stucco. It may perhaps be that the greater popularity which external stucco work enjoys on the Continent is due to the fact that there external and internal work are considered as two distinct and separate trades, each with its own particular technique. Here we combine the two, and whilst our internal work will bear comparison with that of any country perhaps our external work is not so successful.

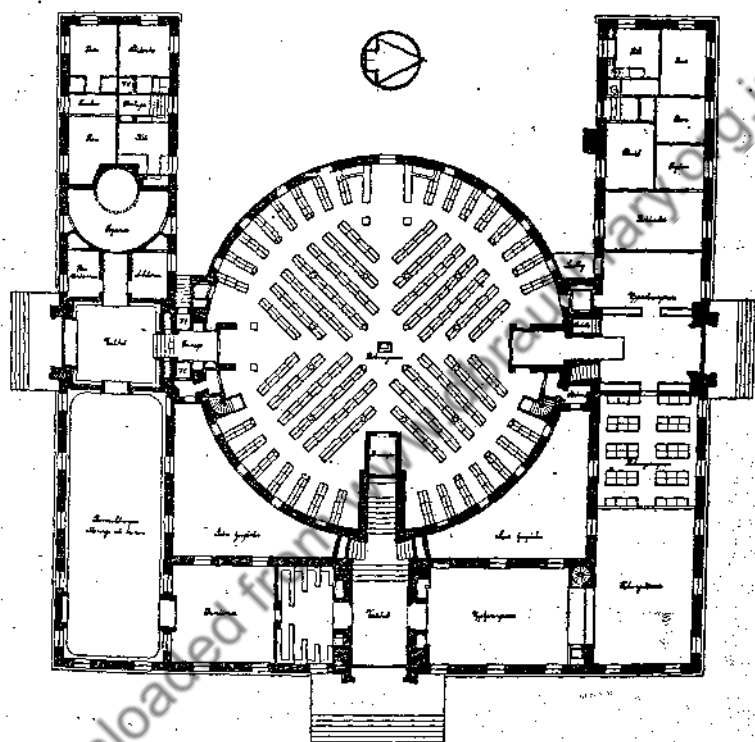


FIG. 19.—THE STOCKHOLM PUBLIC LIBRARY. By E. G. ASPLUND.  
Ground-floor Plan.

Concrete, with filler joist construction and covered with thick linoleum, has been used for the floors. The flat roof over the side wings is similar in construction to the floors, whilst the lending hall roof is a steel-framed structure with copper-covered panels.

It is interesting to read that the cost per cubic foot of this building is stated to be at the rate of 1s. 9d., or about the same as it would have been for a similarly constructed library in England at this time (1924-1927).

## RUSSIA.

*The Lenin State Library, Moscow.*

In 1864 the first Moscow public library was formed from a number of private collections and was housed in the Rumyantsev Museum. The stock of the library increased very rapidly (it now amounts to over 9,600,000 volumes) and a new building has now been erected comprising an eighteen-storey book depository having 180,000 metres of shelving. Reading-rooms, whose erection was delayed owing to the war, are in course of erection.

The Lenin Library serves not only its own readers but also the libraries of many other cities of the Soviet Union.

Libraries exist in almost all Russian towns and have a similar service to that in English libraries. They have special children's sections and there are also special children's libraries in each of the larger district centres.

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## SUPPLEMENTARY NOTES

PAGE 9. Insert after Paragraph 3 :

I offer my apologies for a mistake which was made in the first edition of this book. The library at Wallington was erroneously described as a branch library and was included in the chapter devoted to such buildings. Wallington is in fact the central library of a borough and the library service has never been a branch of any other organization. This mistake has been corrected in the present edition and I thank the borough librarian of Wallington for kindly pointing out the error.

Add to Paragraph 4, line 3 :

To Messrs. Charles Nowell, M.A., F.L.A., . . . the exacting task of reading through my script. To Messrs. James Ormerod, F.L.A., and E. Osborne, F.L.A. for their help and encouragement.

PAGE 24. Insert after Paragraph 2 :

In calculating the number of volumes which it will be necessary to house in any particular library the rate of expansion of the population must be estimated together with the probable percentage increase in the number of readers. It has been reckoned that between the years 1910 and 1935 the percentage of borrowers per head of population rose from 8 per cent. to 20 per cent. and if this rate is maintained in thirty years time the percentage may well be as much as 50 per cent.

According to American Library Association standards a library should have at least one and one-half volumes per head of the community served, and as the average community is unlikely to contemplate rebuilding in a lesser period than twenty-five years, provision is usually made for this space of time. It is suggested that in this period the population would be likely to have doubled itself, so that, in a town of 30,000 inhabitants, the number of volumes to be housed, after the lapse of twenty-five years, would be stated as :  $30,000 \times 2 \times 1\frac{1}{2} = 90,000$  volumes.

PAGE 27. At end of section on "*Hospital Libraries*" :

The first hospital to have an organized hospital library with a librarian in charge of it was the McLean Hospital, Waverley, Mass. This was in 1904, and in 1919 the state of Iowa organized a whole group of hospital libraries.

PAGE 66. Insert after Paragraph 1 :

Again, the idea of a business department, introduced by the late John Cotton Dana, the librarian of Newark, New Jersey, is one which has received widespread approval in American libraries and which is gaining popularity in this country at the present time. These business departments contain books on trade and manufacturing subjects, industry, economics, and salesmanship, together with recent directories, year books, gazetteers, telegraphic addresses and so on.

PAGE 72. *Special Collections*, after "their appeal would be to a limited section only."

As regards local and historical collections it is certain that much valuable material is continuously being lost which, had it been deposited in the safe keeping of the nearest convenient library, would have been of inestimable value to succeeding generations. Data relating to local folklore, custom, and myth, and particulars of archaeological and geological discoveries made during the course of excavations, are two only of the large number of such losses which suggest themselves to one's mind.

"Some particulars of the type of furnishing" . . .

*The Music Library*, after "may also be deemed desirable."

Notable British music collections are the Henry Watson Library at Manchester and the Massey Library at Burnley, whilst in America those of Los Angeles and Philadelphia may be taken as representative.

PAGE 77. *The General Office*. After "to deal with increased branch library services, cataloguing, publicity, and the like."

*Staff Training Room*.

At the present time increased attention is being paid to the proper training of candidates for the profession of librarianship and several schools have recently been inaugurated where educational courses are to be provided. In addition, it would be advantageous for every large library to have suitable accommodation set aside for the express purpose of staff training.

*Photographic Department*.

The uses of photography have so far been appreciated more fully by American librarians than by those of this country. It may be well, therefore, to mention the services which photography can

render and the advantages which it possesses in comparison with other forms of reproduction.

By photography an accurate facsimile may be produced of any document or illustration and it may be either to the same scale, reduced, or to a standard size for filing purposes. Commercial documents may be reproduced at a rate of 1000 copies per hour or, by the use of the microfilm, 1600 folio pages of letterpress or typescript may be recorded on 100 ft. length of 35 mm. film which only occupies a few cubic inches of space. The microfilm space occupied is about 1 per cent. of that occupied by the original manuscript, so that the advantages of this process, in regard to the postage and storage of material, are obvious. Valuable records, with which the library concerned would be loath to part, are thus brought within reach of the research student in every part of the globe. In certain cases (that of newspapers for example) the original may be kept for a specified time and then destroyed.

In microfilm work the resultant photograph may be viewed in either of two ways.

- (a) By enlargement. This may be done in the dark room by the use of an enlarger similar to that used in ordinary photographic enlargement.
- (b) By projection. A form of viewing apparatus or "reader" is specially made which is particularly adapted for occasional reference to short lengths of film. The magnification is usually about 12 diameters and the apparatus has a base area of about 15 in. by 18 in. and stands about 36 in. high.

The reader is independent of the general room lighting but there must be a plug provided to which it may be connected. Alternatively, projection may be made on to a screen or wall surface—the size of the image varying with the number of spectators.

For filing purposes microfilms may be cut into short lengths and stored flat in envelope packages, or they may be stored in 100-ft. lengths in "pill box" containers. Containers should be dust-tight (but not air tight) preferably of metal, and should be kept in a store of even temperature (about 60 to 65 F. degrees). In considering the amount of space which will be required to house the apparatus it will be necessary to decide whether provision is to be made for photostat or microfilm work or for a combination of the two. If photostat work only is to be done, a room of 20 ft. by 15 ft. is the absolute minimum. The sizes of the various articles of

equipment are roughly : photostat 13 ft. by 5 ft., washer 5 ft. 6 in. by 2 ft. 6 in., and dryer 5 ft. by 3 ft. In addition, space will be required for a bench, cupboard storage, and a sink. A small part of the room must be allotted to the purpose of a dark room.

A microfilm apparatus will only be justified where its continuous employment can be assured. In this case the room will require to be about 30 ft. by 25 ft. and the space will be about equally divided between (a) office and records room, (b) space for operating, and (c) dark room.

Follow on with "*Binding, Printing, and Packing Rooms.*"

PAGE 109. Insert after Paragraph 2 :

The Chesterfield Corporation Electricity Department have recently installed fluorescent fittings in the adult lending library at Chesterfield. Seventeen fittings have been installed and the consequent saving in current consumption is reckoned to be 1360 watts as against 10,020 watts.

PAGE 134. Paragraph 3 to read :

In this post-war period many of our accepted values and methods of building procedure are having to be drastically altered. The amount of office work necessary before even the simplest building project can be put in hand has increased immeasurably, and it would be wise to calculate on the present controls and restrictions being kept in force for a very considerable period of time. There is the question of compliance with Town Planning regulations (this will certainly be a permanent restriction), applications for licences for materials, increased official procedure in the appointment of staff, and so on. There is also the question of site labour—not looking at it from the point of view of High Politics but from that of a simple architect who is endeavouring to get hold of a sufficient number of men to build a small branch library in the quickest possible time.

All these factors, together with ever-changing bottle-necks in the supply of building materials, have enforced a condition where the architect must be as versatile as a chameleon—and he would be a brave man who would now be prepared to prophesy the exact form which his finally completed design is likely to assume. As production stoppages occur, first in the supply of one material, then in that of another, so the architect perforce changes his ground, leaping, like a well-trained skirmisher, from one vantage-point to another, and trusting by rapidity of movement and determination

of action, to burst through the entanglement of red-tape behind which his final objective is concealed.

PAGE 135. Paragraph 3 to read :

Considering the question of building materials the vagaries of their supply during this post-war period have already been referred to, and it is impossible to make an accurate forecast of which will next be in short supply and which not. It is certain however, that during and since the war tremendous strides have been made in the development of new materials, new processes, new applications of existing processes, and new ideas in organizing and administrative work.

*"At such a pace do we now live" . . . etc.*

PAGE 136. Paragraph 1.

*"Throughout this book the question as to whether or not the buildings of which mention has been made are still intact has been ignored completely."* Omit *"At the time of going to press" . . . "from enemy action"* and insert :

My intention has been to give a representative survey of such works as have actually been completed and in use in this country and there would appear to be no good reason for including obituary notices.

PAGE 139. Paragraphs 3 and 4 to read :

Mention should, however, be made of the salient features of county library organization, for whilst it is true to say that the plans of county and municipal branches are closely akin in character, yet the administrative problems of the library services as a whole are completely dissimilar. The county library service will be administered throughout the whole of the county area from a county library headquarters. This will usually be situated in a county administrative centre (as at Derby) but may be in a town which, though important as regards its size or prestige, is not actually a natural focal point (as at Wakefield). In the first case it will be necessary that a lending library be provided for local and country readers, in the second event (and also in cases where the county and municipal libraries work in collaboration) it may not be necessary to make such provision. County librarians pursue an adventurous policy—they speak of "going out" to their readers and this indicates pioneer work over a very widely dispersed and perhaps thinly populated area, entailing regular and systematic servicing to isolated villages and hamlets in addition to the supply of books to branch libraries in the larger villages and towns.

After the passage of twenty-five years (which is approximately the age of the county library system in this country) it is possible to form

a fairly accurate estimate of the general requirements which are to be fulfilled.

In the case of the larger county areas it has been found difficult for the county librarian, working from his headquarters library, to maintain that close contact with outlying country readers which is so essential, and the broad outlines of a system of decentralization of the library services have been generally agreed by county librarians. The purpose of this decentralized service is to ensure closer contact with rural areas through regional branch libraries which will themselves be in intimate touch with their headquarters and so in a favourable position to render assistance and up-to-date guidance to their reading public.

Mr. Osborne, the county librarian of Derbyshire, has kindly supplied me with figures which he has worked out for his particular county—which is of medium size (450,000) thinly populated in the north-west, but with busy industrial areas in the east and centre. In Derbyshire the county library headquarters is situated in the county town itself and there are at present thirteen regional branch libraries positioned at strategic points throughout the county area.

It is estimated that the Derbyshire county library headquarters with all its regional branches requires an ultimate book stock of 250,000 volumes in addition to the reserve stock at regional branches. The figures suggested for the county library service as a whole are :

Headquarters reserve . . . . .	250,000 volumes
13 Regional branches (average 30,000) . . . . .	390,000 "
50 Branch libraries (average 20,000) . . . . .	100,000 "
500 Village Centres (average 200) . . . . .	100,000 "
Children's Centres . . . . .	100,000 "
Headquarters lending library . . . . .	10,000 "
	<hr/>
	950,000 volumes

As regards the library headquarters itself, Derby is an important administrative centre and the lending and reference libraries are live organizations freely used by many incomers from the surrounding country districts.

Mr. Osborne stresses the need for ample working space where many hundreds of service points have to be administered, and the necessity for space to accommodate such future expansion of the book stocks as may be reasonably anticipated. His requirements in regard to the headquarters accommodation are as follows :

- (a) A lending library with shelving for 10,000 volumes.
- (b) A reference library with shelving for 2500 volumes and seating for 20 readers.
- (c) A lecture and exhibition room.
- (d) A committee room.

- (e) Book order and accessions department with adequate shelving and storage space for 5000 volumes (work space for 5 assistants).
- (f) Cataloguing department with shelving and sorting space for 3000 volumes (work space for 8 assistants) and general catalogue.
- (g) Book department for regional areas with shelving and sorting space for 30,000 volumes (work space for 12 assistants). This department would also be responsible for packing and distribution of new books to all regional branches and for all books sent by post.
- (h) Administrative department with filing and working space for 4 assistants.
- (i) Rooms for chief and deputy librarians and for a senior assistant.
- (j) Staff canteen and rest room.
- (k) Main stack room to house 250,000 volumes (work space for 4 assistants).
- (l) Book repair room (work space for 3 assistants).
- (m) Stock room for the receipt and despatch of parcels, with loading bay.
- (n) Store room and accommodation for the non-professional staff, van drivers, storemen, cleaners, etc.

It may be said that such county library headquarters as have been formed in the past (usually in premises adapted for the purpose) have proved inadequate for their function and have, in fact, been quite incapable of housing the administrative staff, and the amount of reserve stock which are necessary in order for them properly to fulfil the purpose of their existence. So far as I am aware, Middlesex is the only county which has prepared plans for an entirely new building which might illustrate a logical solution of the problem presented, and owing to the recent war this building has not yet been erected.

Then follow on to Page 140 with "*A County Branch Library.*"

PAGE 151. Paragraph 2 to read :

In the case of the larger libraries the main reading-room is treated as the principal element of the plan. This room is usually of considerable size and in the earlier libraries would be situated on the first floor where external expression of its function would be given by the vertical lines of the windows, often accentuated by a columnar or pilaster treatment of the front façade. This method of treatment is strongly reminiscent of that adopted in the Library of Sainte Geneviève, Paris, a fact which is easily explained when one recalls to what extent the influence of the French school has been impressed on American architecture. Behind the reading-room would be grouped the main stairway (sometimes duplicated), the lifts, and if the size of the scheme necessitated it, the light wells. Stacking accommodation is usually of considerable magni-



tude, the metal stacks being arranged in tiers with an allowance of 7 ft. 6 in. in height between each stack floor. Natural light and ventilation are not considered necessary for the storage of books with the result that the stack-room is often placed inside the building, the stack framing being utilized to stiffen the walls and support the upper floors of the structure. This positioning of the stacks leaves the lighter parts of the building available for reading-rooms.

After Paragraph 3 :

transfer "*The Philadelphia Public Library*" section as below and follow on with "*The Library of Congress Washington*."

#### *Detroit Public Library.*

This magnificent library, designed by Cass Gilbert and opened in 1921, is compact and efficient as may be expected when one considers the success which its architect had achieved in innumerable competitive designs at and about this period. The plan is traditional, embodying a great central circulation hall and a stack block at the rear of the building. Splendid twin stairways lead from the entrance hall to the square circulation hall which is surrounded by top-lit rooms, sufficiently low as to allow of light being admitted from light wells above to the top part of the enclosed circulation hall.

I well remember, when a student at the Liverpool University School of Architecture, being called on, as that year's President of the Students' Architectural Society, to conduct a visitor over the school premises. And I recall my sensations when, having introduced myself and inquired if the visitor was merely casually interested or was himself a member of the profession, he replied quietly, "My name is Cass Gilbert." This was in 1920; the great architect was then at the zenith of his fame and was, of course, a hero to the younger generation of students.

#### *Philadelphia Public Library.*

Though not one of the most recent of American libraries (it was completed in 1927), the public library of Philadelphia is remarkable for the excellence of its furniture and equipment in addition to the elaborate treatment of its internal decoration. It may serve to illustrate the monumental plan which is so typical of the work of American architects during the twenty odd years previous to its erection, and it demonstrates the several features of plan lay-out which have already been noted. The first floor contains the principal reading-rooms, with the main reading-room occupying the central position on the front elevation. A generously proportioned staircase, flanked by corridors and two internal light wells, gives access to the various floors. Stacks are accommodated at the rear of the building, in the basement, and at the ground-floor level.

#### *Cleveland Public Library.*

The Cleveland Public Library may be quoted as the first great experiment in decentralization and subject division of the book stack. The

argument advanced is that books should be stored where they are to be used, in other words that the reader, on selecting the room devoted to his particular subject, should find there, or immediately adjacent to him, all the books related to that subject together with the specialized staff-members fitted to advise him. It is agreed that the outer faces of the library, where light is unobstructed, are best devoted to use as reading-rooms, and that a central stack, which can expand upwards, is appropriate. But the central stack has the disadvantage that it forms a solid centre block through which it is difficult to provide direct communication and which therefore raises serious problems of access from one side of the building to another. If decentralization be adopted as a principal, then, as at Cleveland, the stack blocks may be given the form of a hollow square or rectangle. At Cleveland the Brett Memorial Hall forms the centre of the square block. This hall contains periodicals and is used for general reading. Around it, arranged as a hollow square, is the stack block, and outside this block are the general reading-rooms of the library, each adjacent to its own particular section of the stack. The main catalogue is housed in a room near the entrance, for as each special subject room has its own catalogue the main catalogue is of comparatively minor importance from the reader's point of view and does not demand a central position.

#### *Los Angeles Public Library.*

The Los Angeles plan carries the idea latent in that of Cleveland a stage further. The stack is decentralized and consists of a hollow square, but here the stack is pierced by main corridors arranged in the form of a cross which gives direct access to all departments of the library, and the service desks and catalogue are at the centre of the building where the arms of the cross intersect.

#### *The Enoch Pratt Free Library, Baltimore.*

As in England, so in America, the more recent library plans show a definite movement away from the monumental plan to an open arrangement of accommodation capable of easy sub-division by light party walls and partitions. The Enoch Pratt Free Library was opened in 1933 and its plan is expressive of the ideas which were beginning to be generally adopted about that date. The entrance, from street level, leads into a central circulation hall where the service desks and catalogues are arranged in prominent positions on either side of the hall. This ground floor carries the "live" book stock (comprising volumes for reading, reference, and circulation to a total of 150,000), but the stock is arranged in subject departments, each of which is adjacent to its appropriate reading-room. The storage stacks contain the lesser used books and these stacks are placed, in three levels, below the ground floor—which is thereby left free from all but the most frequently required stock.

*Toledo Public Library.*

Completed in 1940 the library at Toledo is particularly noteworthy for its highly developed systems of heating and ventilation. Here again the ground-floor plan is kept clear of all except the most used books, and the general book stock is housed in two levels below the ground floor. Particular attention has been paid to the placing of the points of support and their spacing is wide and regular so that departments may be easily expanded or reduced as occasion arises, simply by a rearrangement of book cases or light screens.

PAGE 153. Paragraph 1 to read:

*Modern Tendencies.*

These few brief notes do not attempt to give more than a brief outline of the tremendous amount of work which has been and is being done in American library development. This subject has recently been ventilated in far more detail and with far more skill than I could myself display, in the excellent book *The American Public Library Building*, by J. L. Wheeler and A. M. Githens (Charles Scribners' Sons. 1941).

PAGE 161. Wheeler should read :

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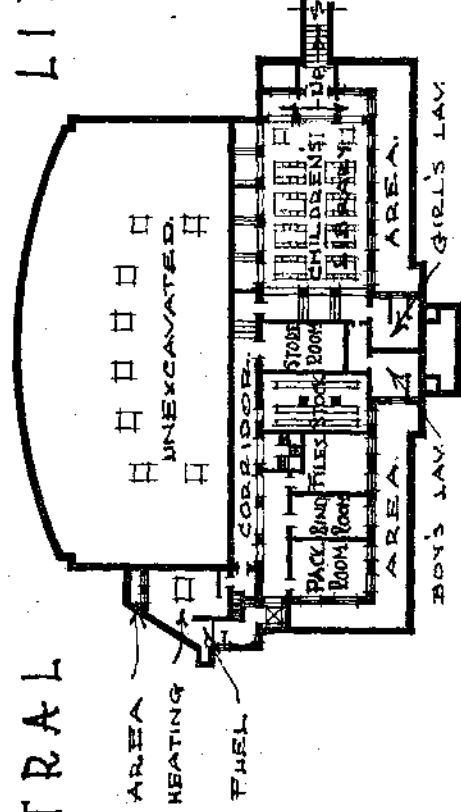
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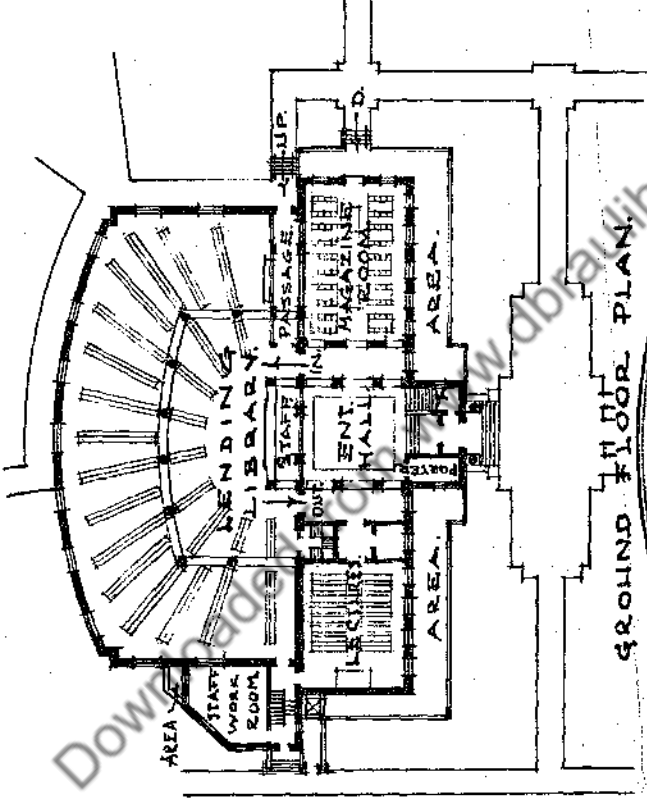
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# CENTRAL

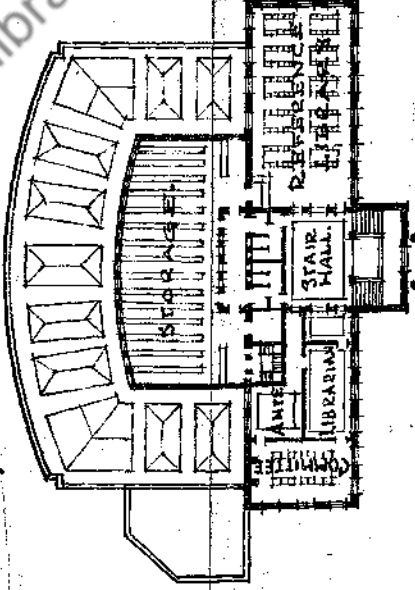
# LIBRARIES



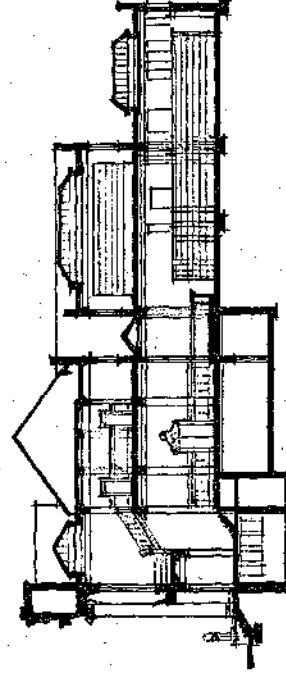
BASEMENT PLAN.



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.



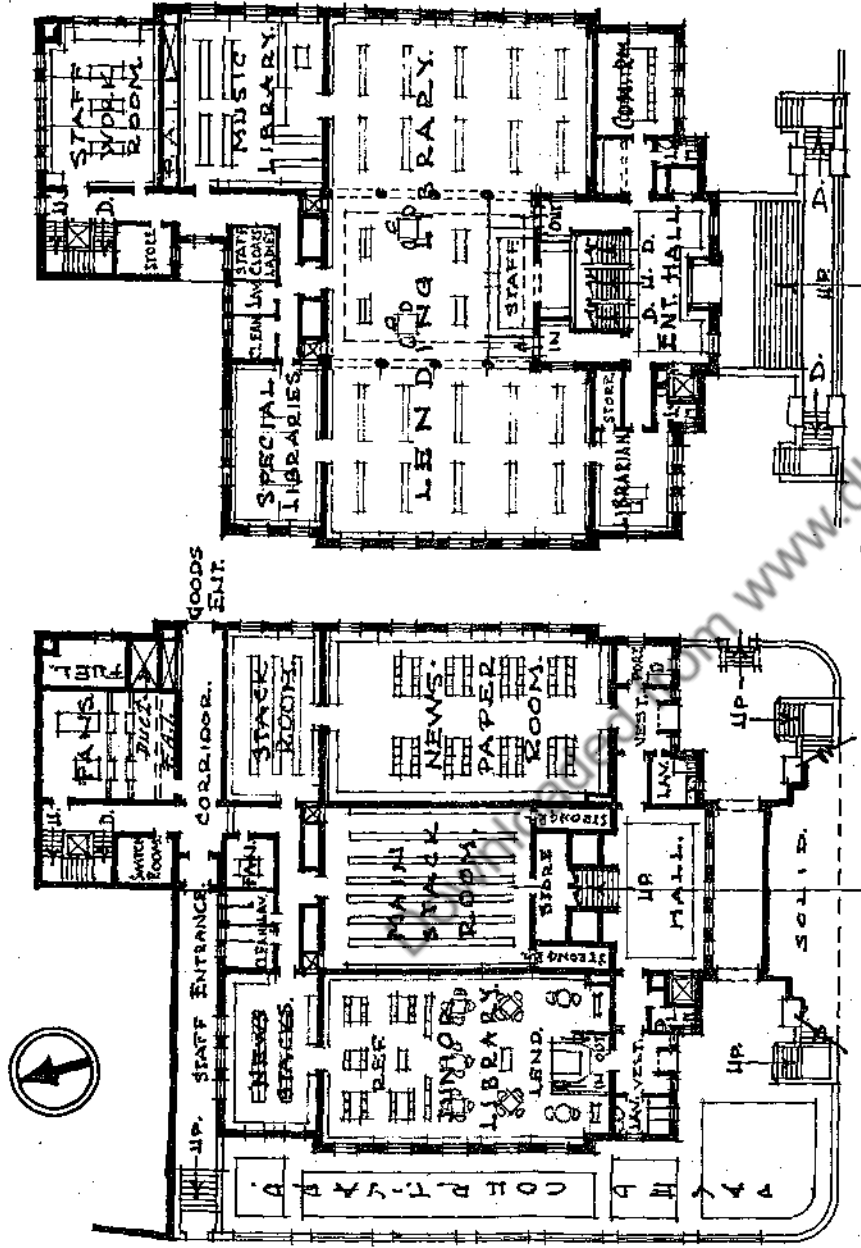
SCALE FOR PLANS.  
10 0 10 20 30 40 50 FT.

CROSS SECTION. SCALE FOR SECTIONS.  
10 0 10 20 30 40 50 FT.

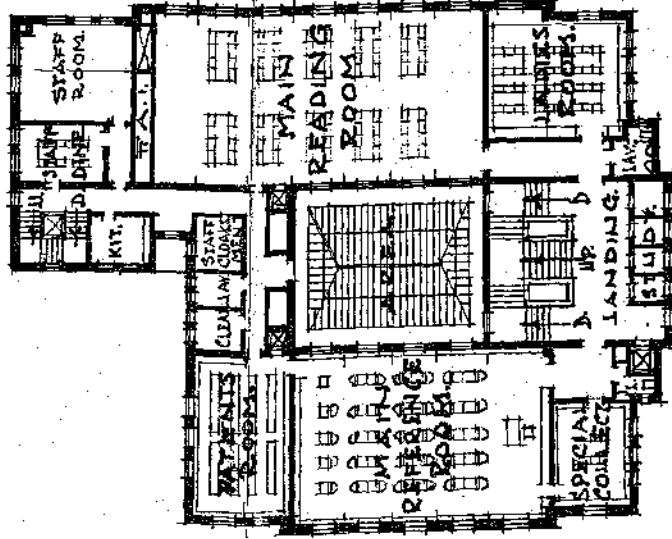
BIRKENHEAD CENTRAL LIBRARY, BY GRAY, EVANS, & CROSSLEY.



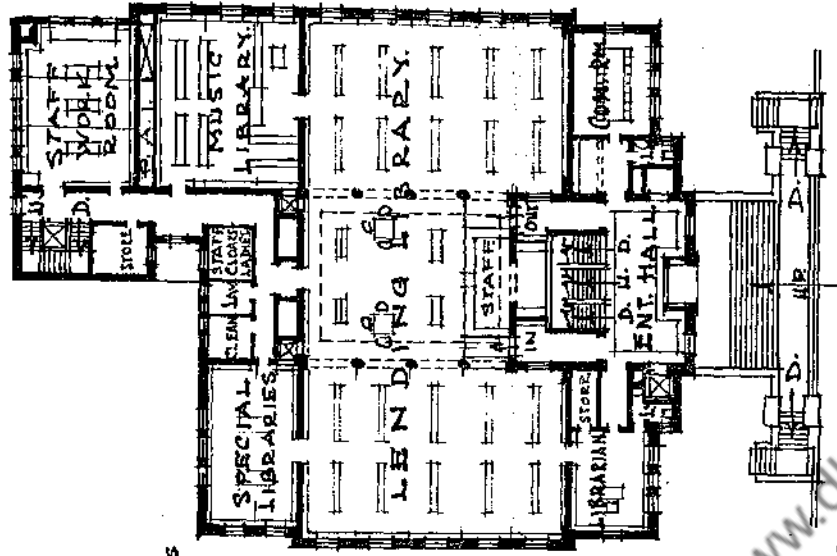
SCALE OF FEET.  
 10 0 10 20 30 40 50 100 FT.



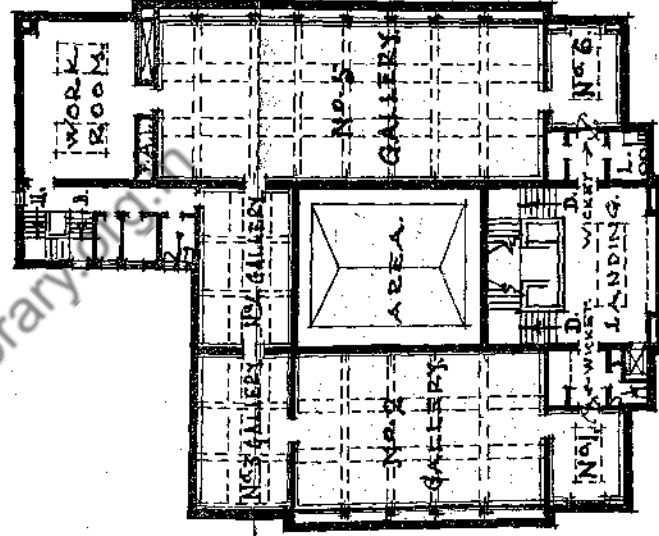
LOWER GROUND FLOOR.



FIRST FLOOR.



UPPER GROUND FLOOR.

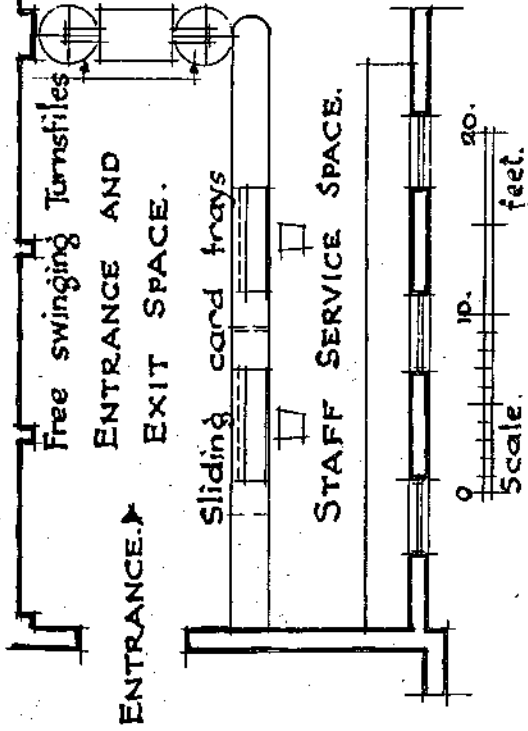


GALLERY FLOOR.

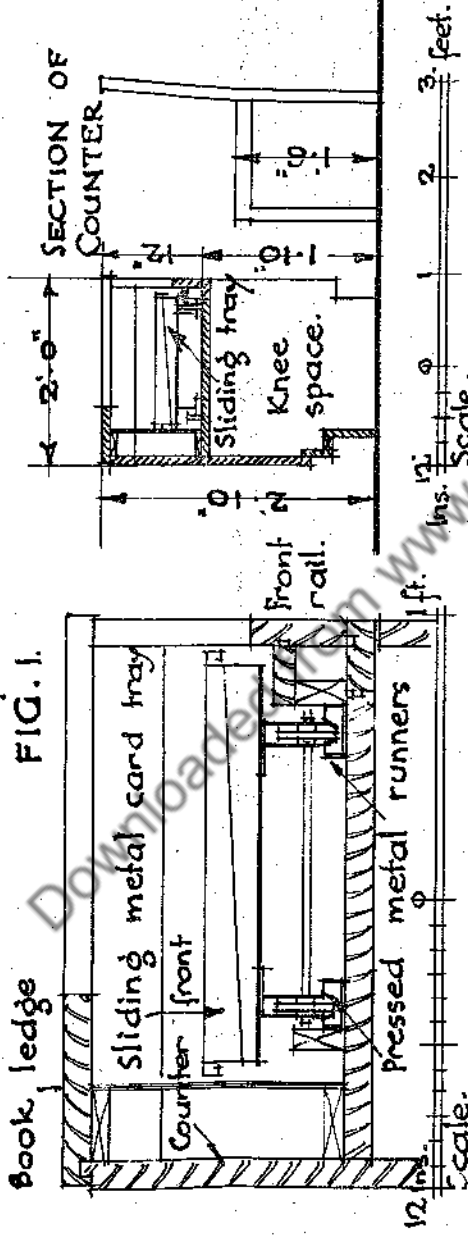
**SERVICE COUNTERS.  
LENDING LIBRARY.**

Counter fitted with sliding metal trays.

Attendant seated.  
Length of card tray space = 11'0"  
Uncontrolled Entry and Exit for the Public.  
Three points of service

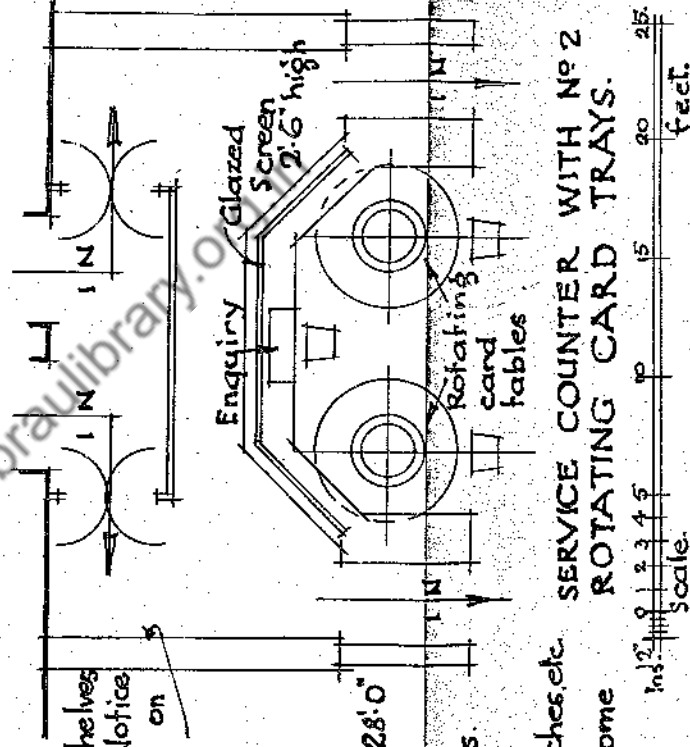


**FIG. 1.**

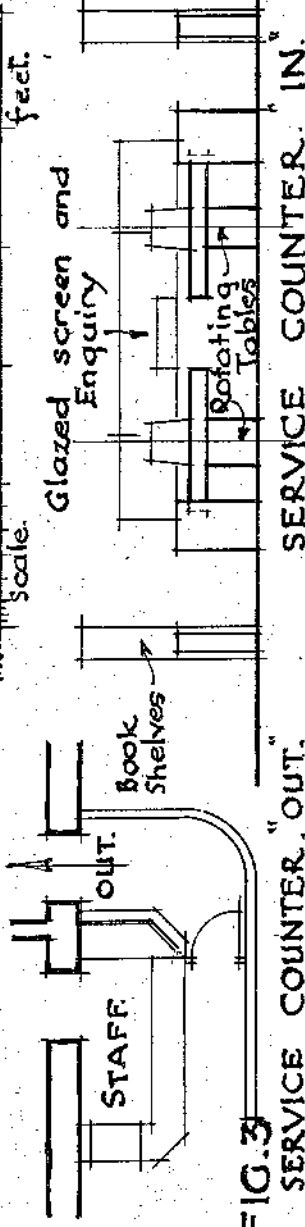


**FIG. 2.  
SERVICE COUNTER WITH  
CIRCULAR CARD TRAYS.**

Attendants seated.  
Length of card tray space = 28'0"  
Uncontrolled entrance and controlled exit for Public.  
Rotating Card tray counters operated by attendants.  
Central enquiry desk with telephone, light control switches, etc.  
Three points of service.  
Exit Counter situated at some distance from ENTRANCE.



**SERVICE COUNTER WITH NO 2  
ROTATING CARD TRAYS.**



**FIG. 3  
SERVICE COUNTER "OUT."**



# SERVICE COUNTER.

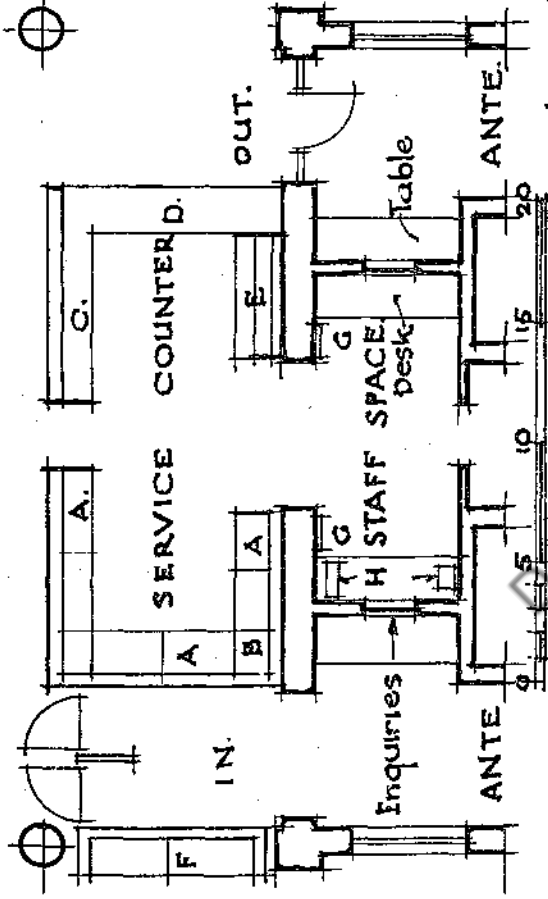
Attendants standing.  
length of card tray  
space.

Main Counter. 21' 0"  
Emergency do. 7' 0"  
Controlled Entry and  
Exit for Public.

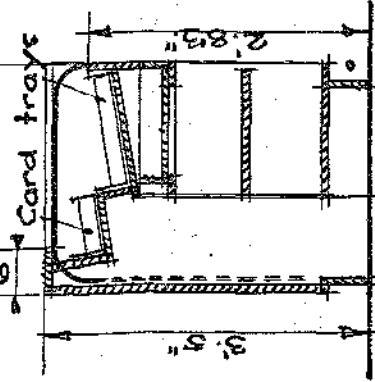
Two rows of card  
trays.

Two points of service,  
normally, three at peak  
periods.

Telephone and light  
control switches, placed in Staff space  
well away from general public.



Scale.



## SECTION AT A.

Double row card trays  
roll top cover, drawers  
and book shelves under  
treadle bar control of  
entrance wickets.

## COUNTER DESIGNED AS SINGLE UNIT.

A. Pressed metal card tray Counters.

B. Fine ticket rolls.

C. Catalogue counter with pull-out shelves  
and drawers under for members cards.

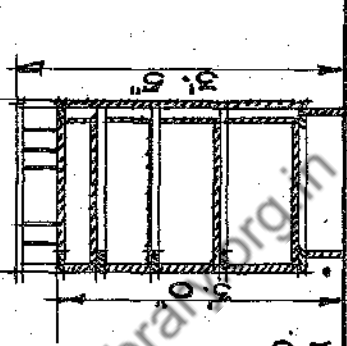
D. Exit counter.

E. Sorting counter with rack over

F. Emergency counter for peak periods.

G. Lighting control.

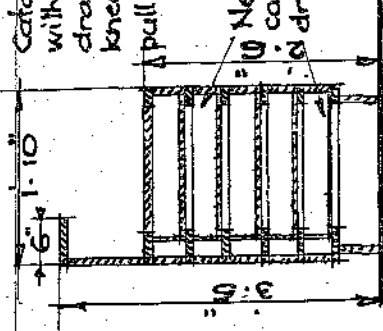
H. Post Office and Internal telephone Exchanges.



## SECTION AT D.

Exit counter fitted  
with drawers  
and shelves. treadle  
bar control of exit.

Catalogue Counter  
with nests of  
drawers for cards  
knee space and  
pull out shelves.



## SECTION AT C.

Ins. 12 6 9

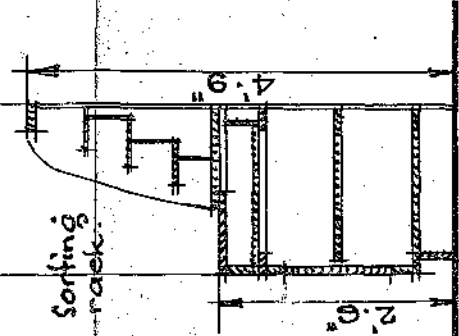
Scale

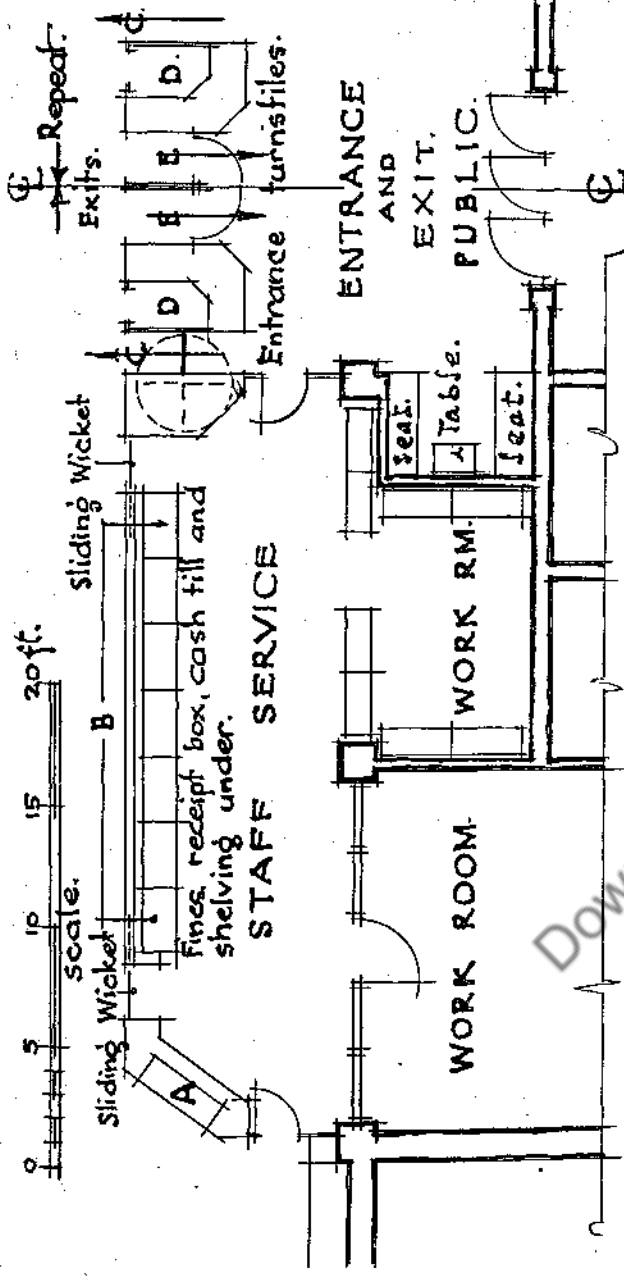
2 3 4

## SECTION AT E.

2 Ft.

Sorting table  
with pull out  
shelves, drawers,  
and cupboards,  
under sorting  
rack over.

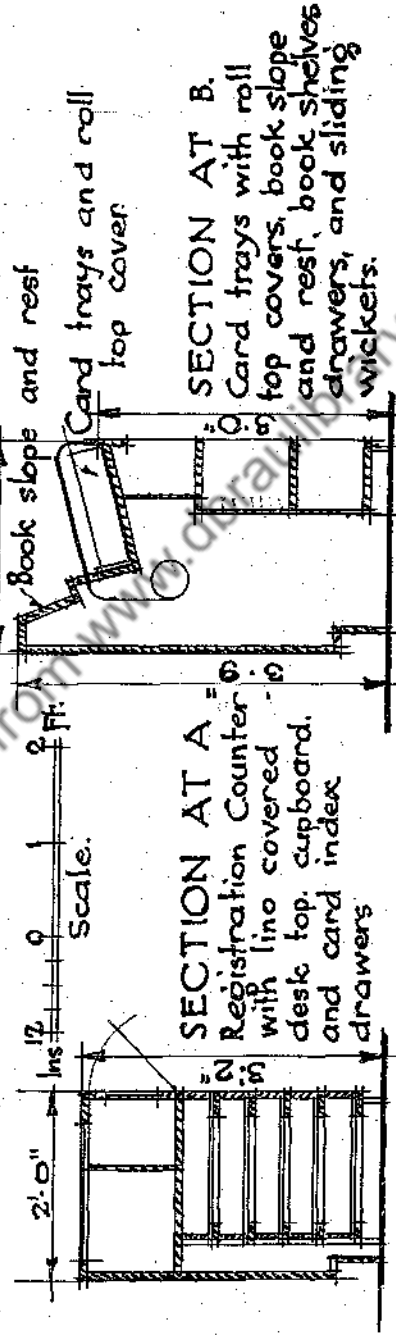




**COUNTER, DESIGNED AS DOUBLE UNIT.**

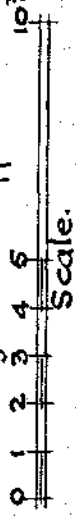
- A. Registration desk with Voucher Cabinet under.
- B. Card trays with shelving, drawers, etc., under.
- C. Free swinging entrance turnstiles.
- D. Exit counters and control.
- E. Exit wickets, controlled.

FIG. 1.



**SERVICE COUNTER.**

Attendants standing. Counter consists of two distinct units on either side of the Entrance Lobby one dealing with names A-M the other with names N-Z. Length of card tray space = 38'-0". Uncontrolled entrance through turnstiles, and controlled exits for public. Telephone services, light switches, etc., situate in adjacent Staff Work Rooms.



**Glazed observation Screen**

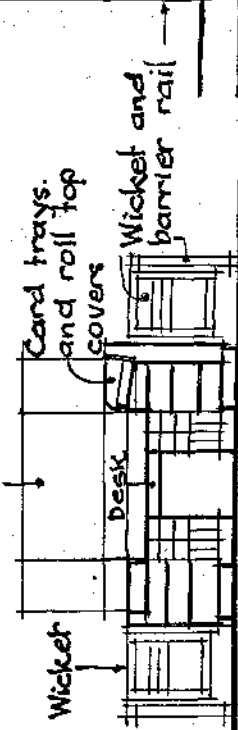
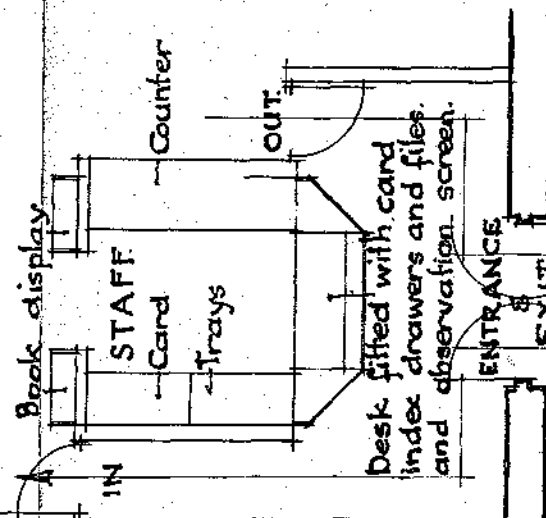
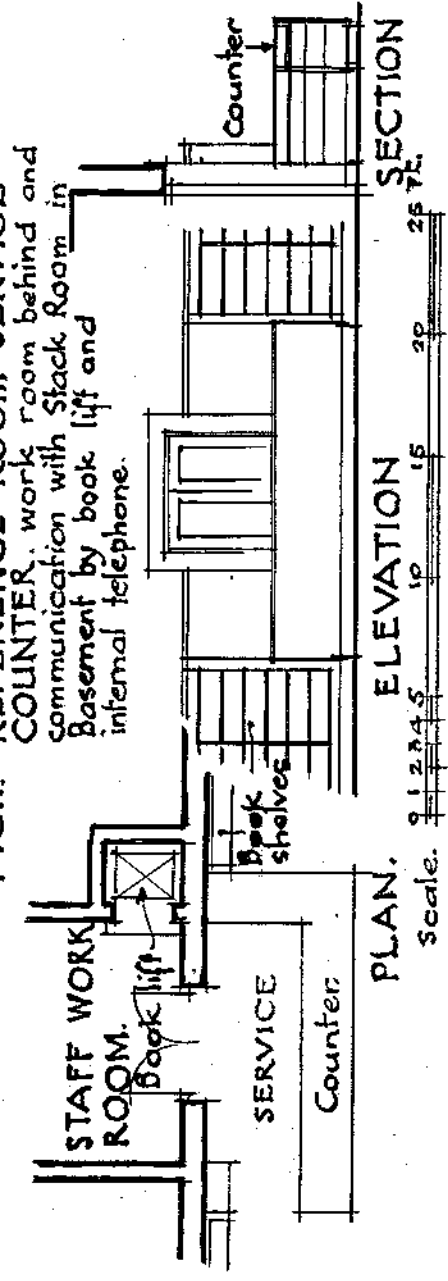


FIG. 2.



**SERVICE COUNTER FOR JUVENILE LIBRARY.** Desk and glazed screen for observation of entrance, card trays with roll top covers. Exit counter, and controlled entrance and exit wickets with foot lever.

FIG. 1. REFERENCE ROOM SERVICE



PLAN OF COUNTER.

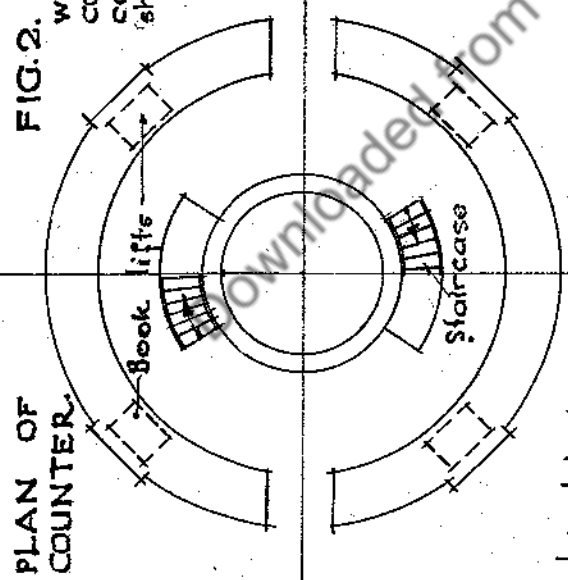
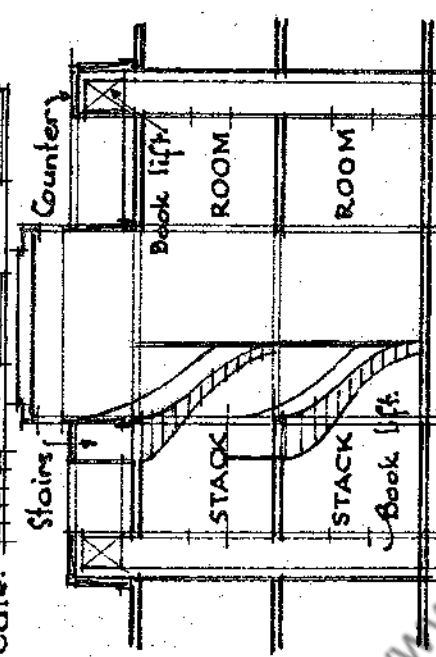


FIG. 2. CIRCULAR REFERENCE COUNTER with book lifts under counter, and stairs communicating with stack rooms below. counter fitted with drawers, cupboards and shelves.  
Scale. 1/2" = 1'-0"



SECTION OF COUNTER.  
SCALE ROOMS ETC.

FIG. 3. PLAN and SECTION of BOOK LIFT, electric with push button control

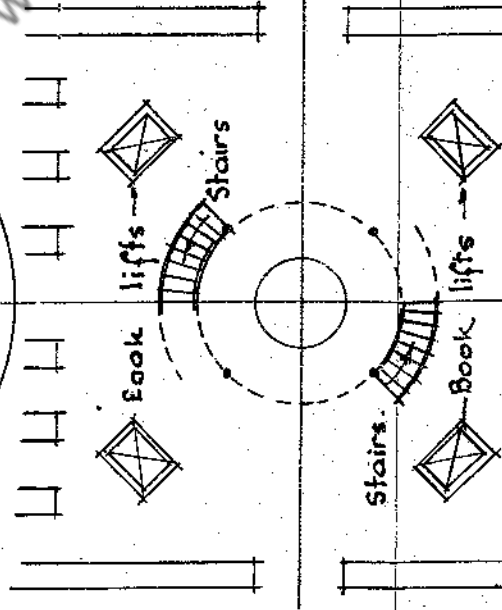


FIG. 4. TREADLE FITTING foot operated Release Fitting for Wicket Gate.

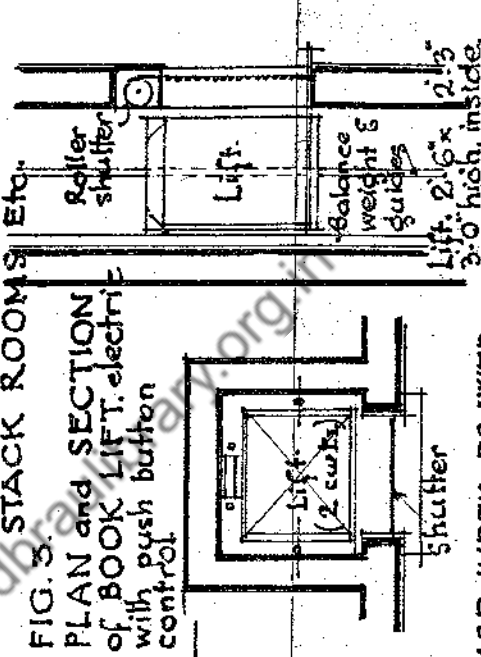


FIG. 5. CARD INDEX DRAWER with rod, stop block, pull and label holder

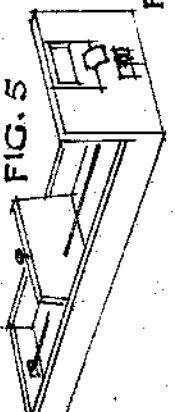
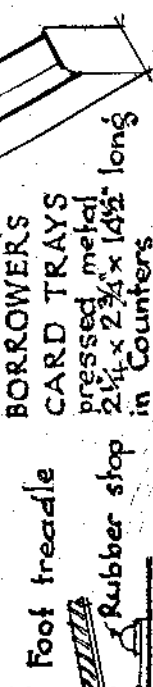
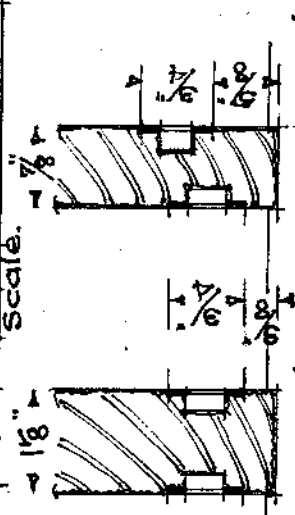
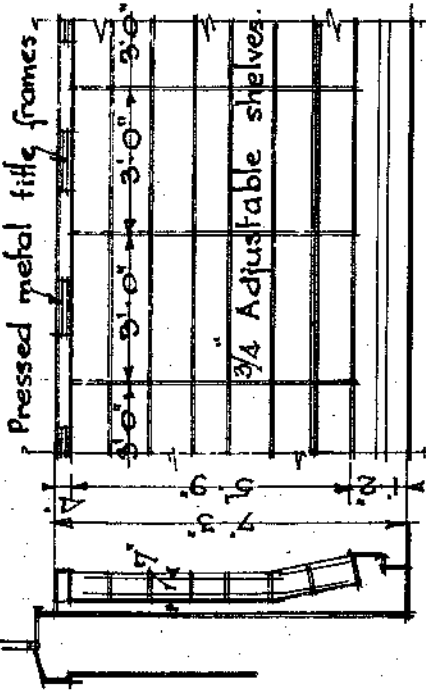


FIG. 6. BORROWERS CARD TRAYS pressed metal 2 1/4" x 2 3/4" x 14 1/2" long in Counters

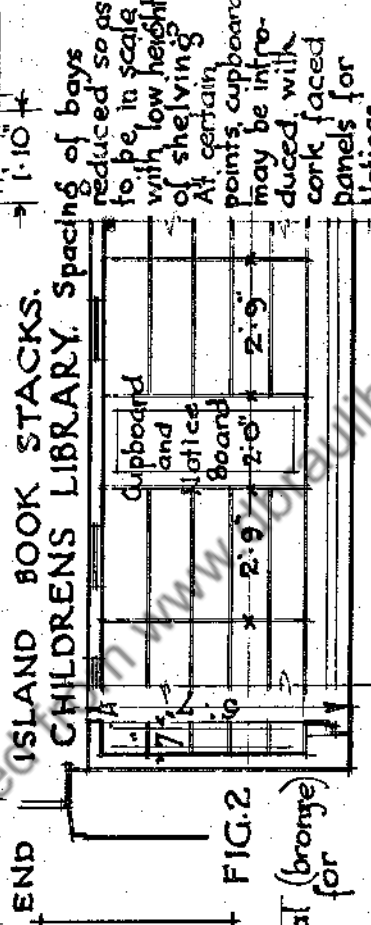
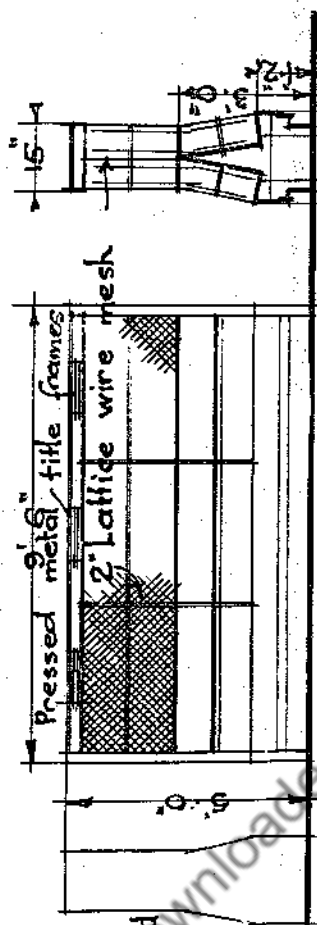


LENDING LIBRARY SHELVING FIG. 1. 1 2 3 4 5 10 Ft. scale.

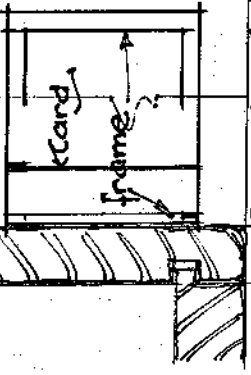


Plans shelving fittings for adjustable shelving (a). (b).

**WALL SHELVING.**  
 Note how height of wall shelving determines sill height.  
 Wall shelves may be fixed several inches from wall to allow for vent ducts.

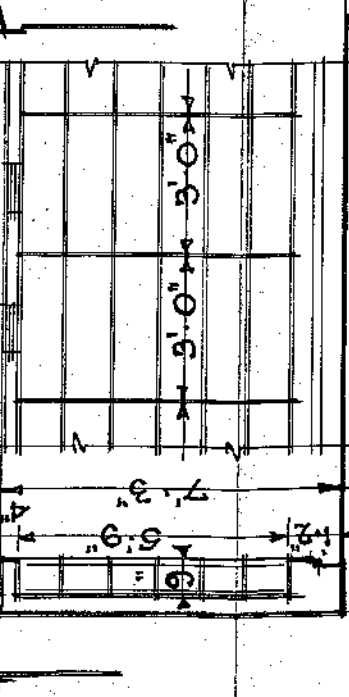


ISLAND BOOK STACKS, CHILDRENS LIBRARY. Spacing of bays reduced so as to be in scale with low height of shelving. At certain points, cupboards may be introduced, with cork faced panels for Notices.



Pressed metal (bronge) card frames for shelving.

REFERENCE LIBRARY. FIG. 3.



PATENTS LIBRARY. FIG. 4

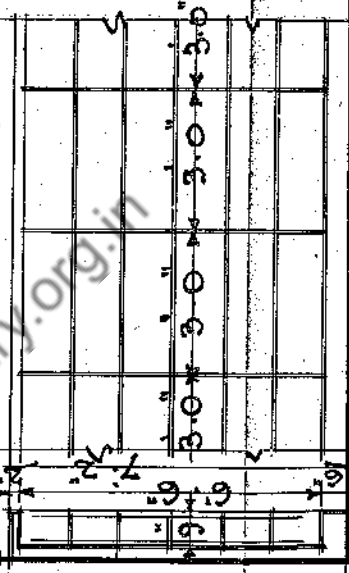
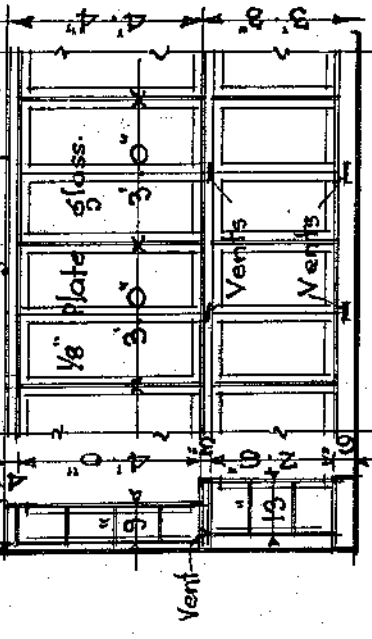
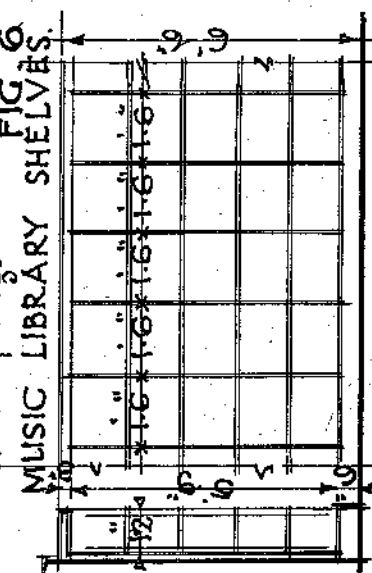


FIG. 5. SPECIAL COLLECTIONS. Cupboards with glazed fronts and ventilated.



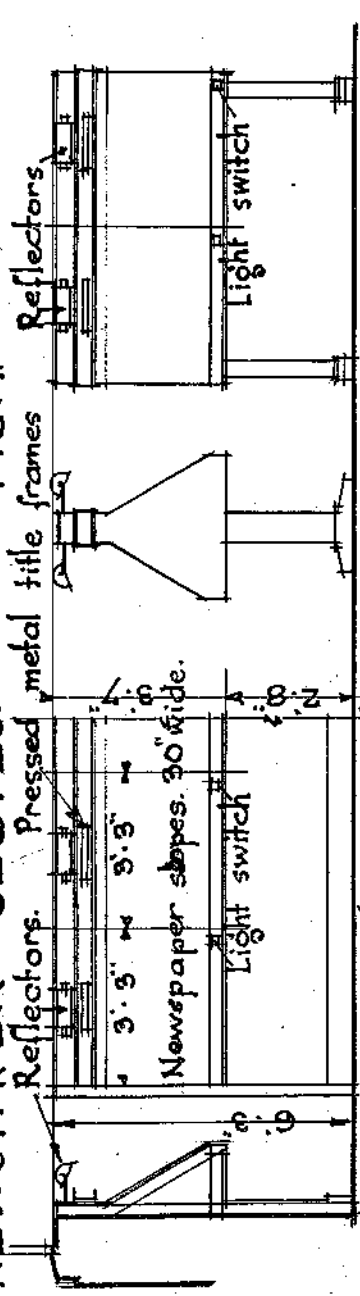
All shelvings should be adjustable fitted with Tonks or similar fittings.



MUSIC LIBRARY SHELVES. FIG. 6

# NEWSPAPER SLOPES.

FIG. 1.



## NEWSPAPER SLOPE (STANDING)

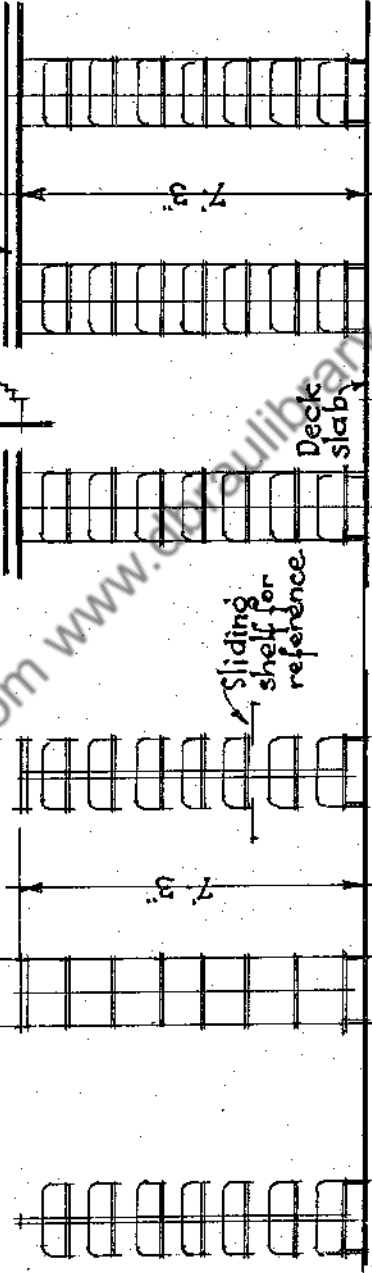
## ISOLATED NEWSPAPER SLOPES

Pivot fixed above centre point of news slope so that weight of lower portion causes slope to automatically drop into position again.

NEWSPAPER SLOPE (Seated) and fitted with adjustable news slopes.

## NEWSPAPER SLOPE (SEATED)

## BOOK STACKS. STANDARD TYPES.



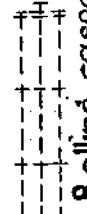
a. Free standing brackets, stacks FIG. 2 of tubular bracket columns supported by shelf base and shelves adjustable every inch.

b. Standard bracket type fitted with steel ends and divisions continuous steel base, and cornice cover plate

c. Bracket type shelving with sliding shelf attached to under side of adjustable shelves and contained in the stack compartment when not in use.

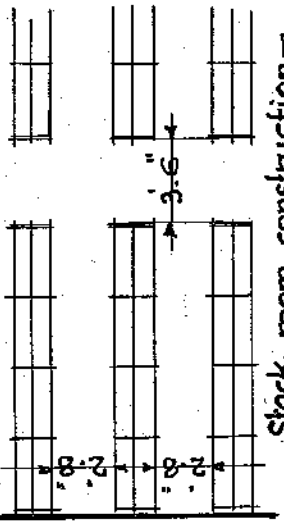


## ROLLING CASES.



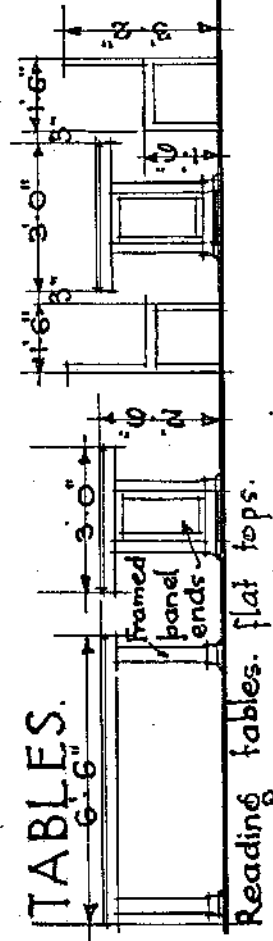
Rolling cases stacked side by side and mounted on wide tread rollers to give increased accommodation.

## MULTI-TIER STACKS



Stack room construction—3-6 gangways, 2-8 between stacks, shelves average length 3-0 and 8- to 12- wide, adjustable.

# TABLES.

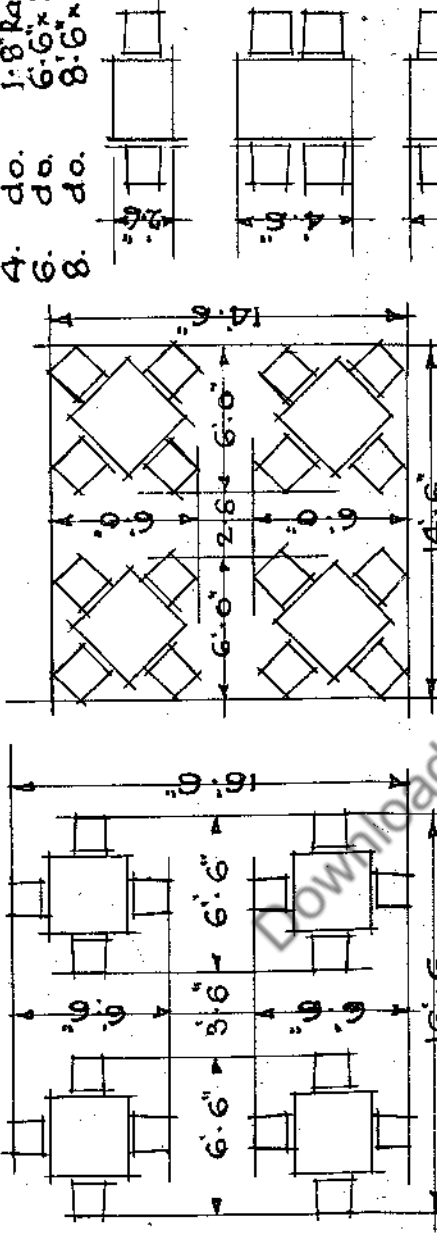


Reading tables. flat tops.

FIG. 1.

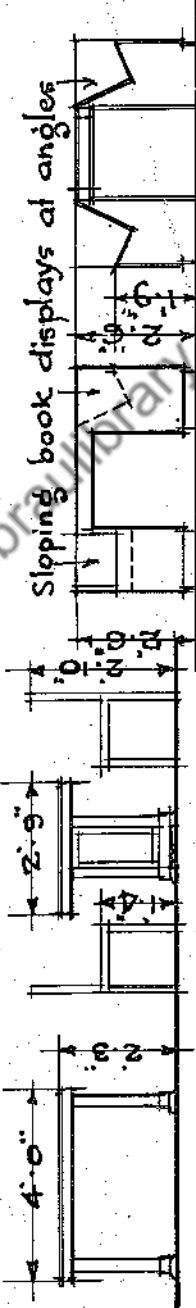
## FLAT TOP READING TABLES.

- SIZES.  
 2. Readers. 2'-6" x 3'-0"  
 4. do. 3'-3" x 3'-3"  
 4. do. 4'-6" x 3'-0"  
 4. do. 1'-8" Radius  
 6. do. 6'-6" x 3'-0"  
 8. do. 8'-6" x 3'-0"



GROUPING OF TABLES. for 4. Readers, tables 3'-3" square.

SLOPING TOP TABLES. with title frames for periodicals, etc. FIG. 2

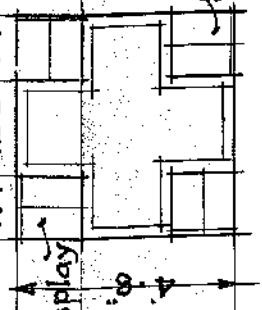


CHILDRENS TABLES. FIG. 3.

- SIZES.  
 2. Readers. 2'-3" x 2'-9"  
 4. do. 2'-9" x 2'-9"  
 4. do. 4'-0" x 2'-9"  
 4. do. 1'-5" Radius  
 6. do. 6'-0" x 2'-9"

FIG. 4.

## SPECIAL TABLES for four readers with angle book displays for new and special editions etc.

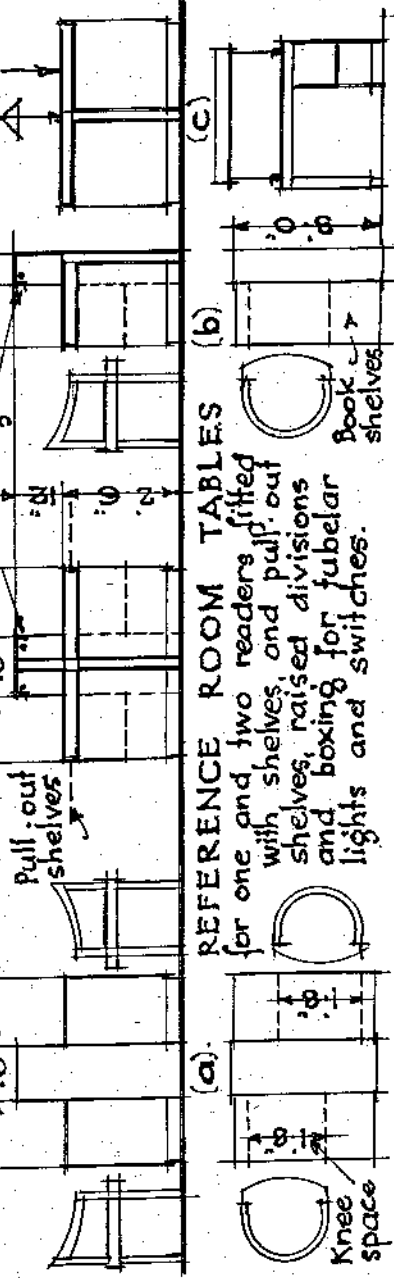


book display slope.



Scale.

FIG. 5.



REFERENCE ROOM TABLES

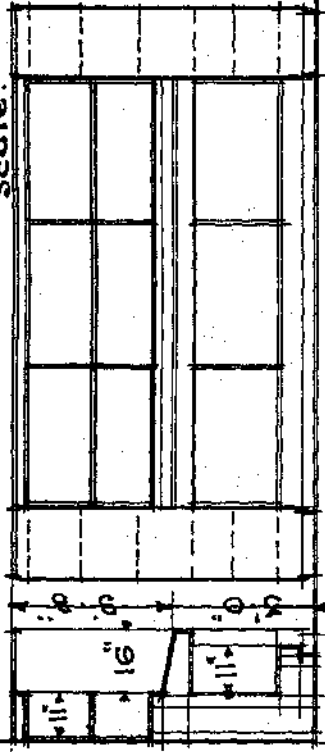
for one and two readers fitted with shelves, and pull out shelves, raised divisions and boxing for tubular lights and switches.

Tables for two or more readers with light reflectors and switches



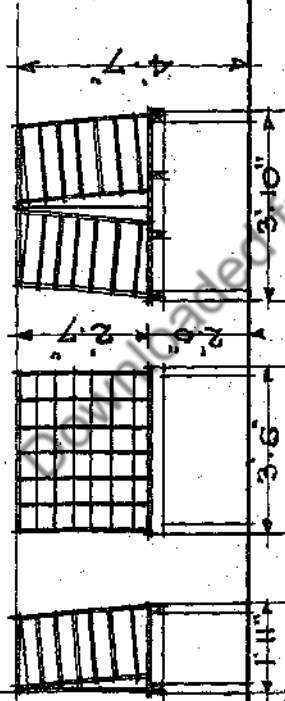
# MISCELLANEOUS FITTINGS

FIG. 1.

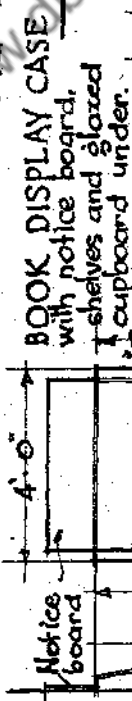


DIRECTORY STAND and desk for reference.  
with shelves at ends, and below for back editions.

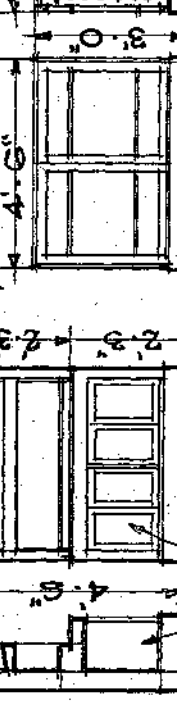
Desk and adjustable shelves



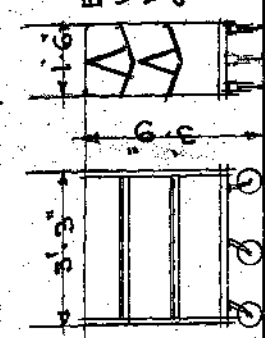
SINGLE AND DOUBLE CARD, FIG. 3  
CATALOGUE CABINETS, with sloping fronts, and drawers fitted rod, stop block, safety catch, pull and label holder.



BOOK DISPLAY CASE with notice board, shelves and glazed cupboard under.



Show case cupboard



BOOK TROLLEY with rubber tyred wheels, ball bearings, and spring mounted.

FIG. 7.

MUSIC LIBRARY TABLE, fitted with pressed metal trays, and roll top cover, adjustable shelves and drawers.

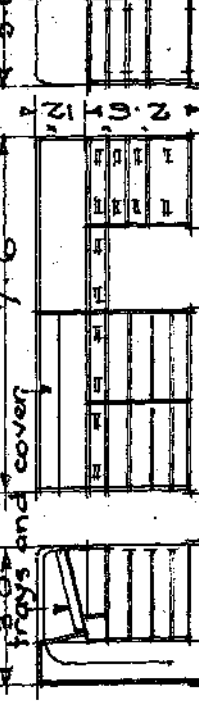
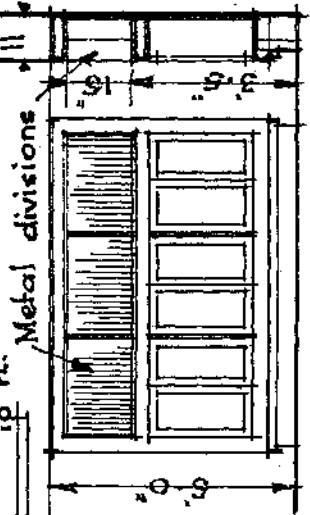
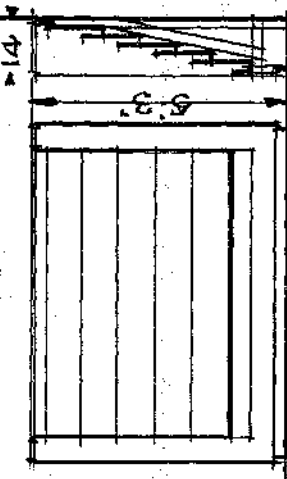


FIG. 9.

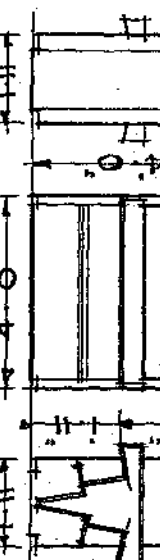
Trays and cover



PERIODICAL RACK, with periodicals filled vertically, with pressed metal divisions, and display cupboard below.

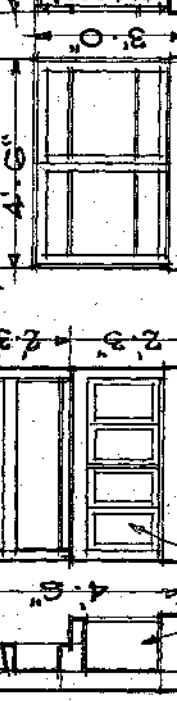


SLOPING PERIODICAL RACK.

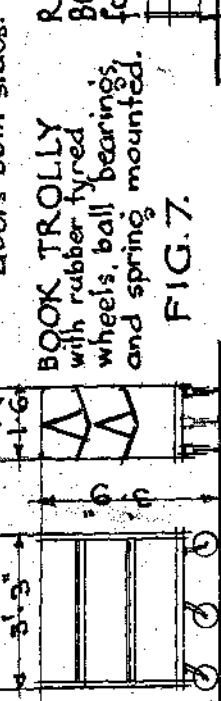


BOOK DISPLAY CASE

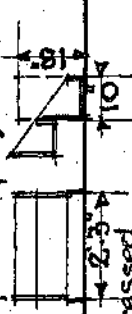
with notice board, shelves and glazed cupboard under.



FOLIO FITTING & TABLE ORDNANCE SURVEY for large volumes with glass doors both sides.



READING CENTRE BOOK BOX used for display.



BOOK TROUGH for table display.



MUSIC LIBRARY TABLE, fitted with pressed metal trays, and roll top cover, adjustable shelves and drawers.

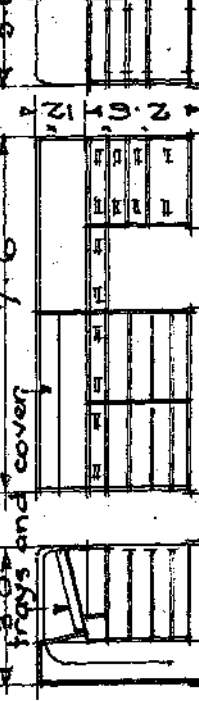
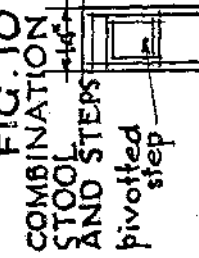


FIG. 9.

Trays and cover

FIG. 10.



COMBINATION STOOL AND STEPS with pivoted step

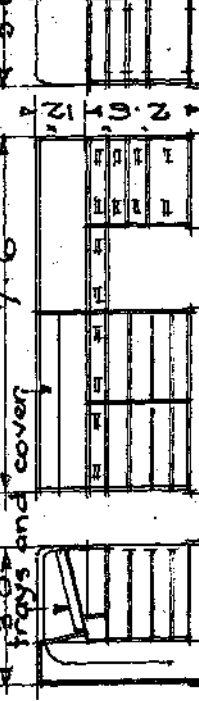
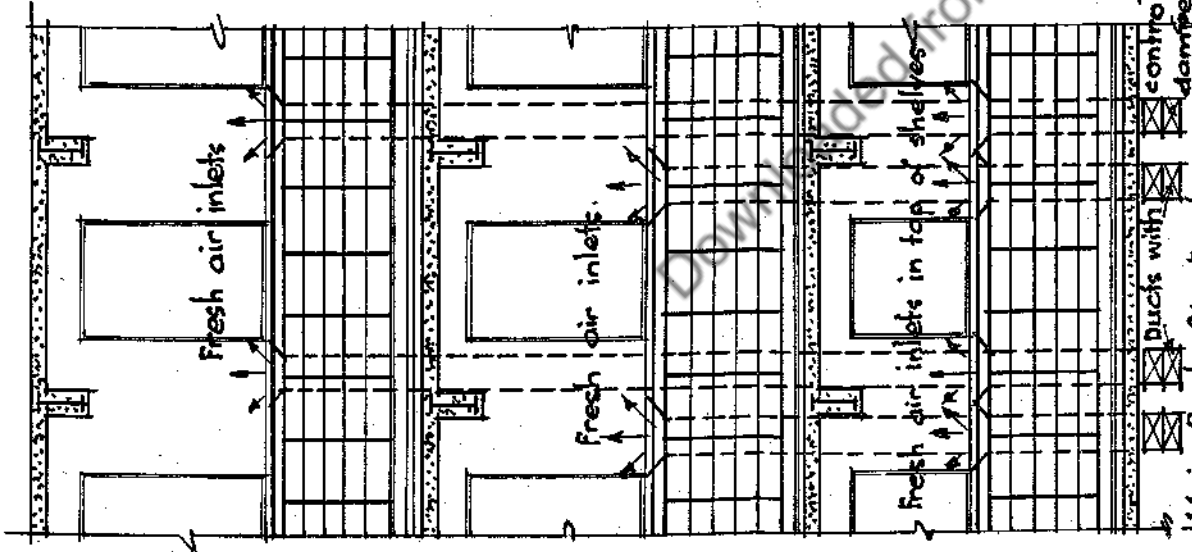
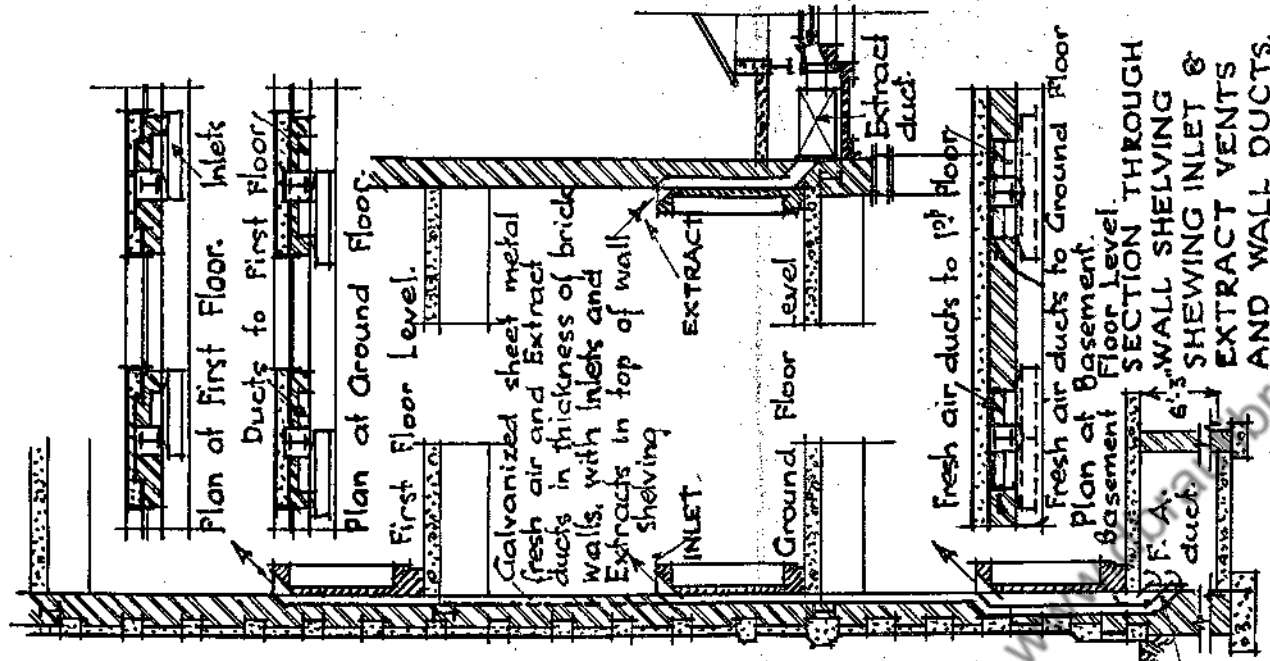


FIG. 9.

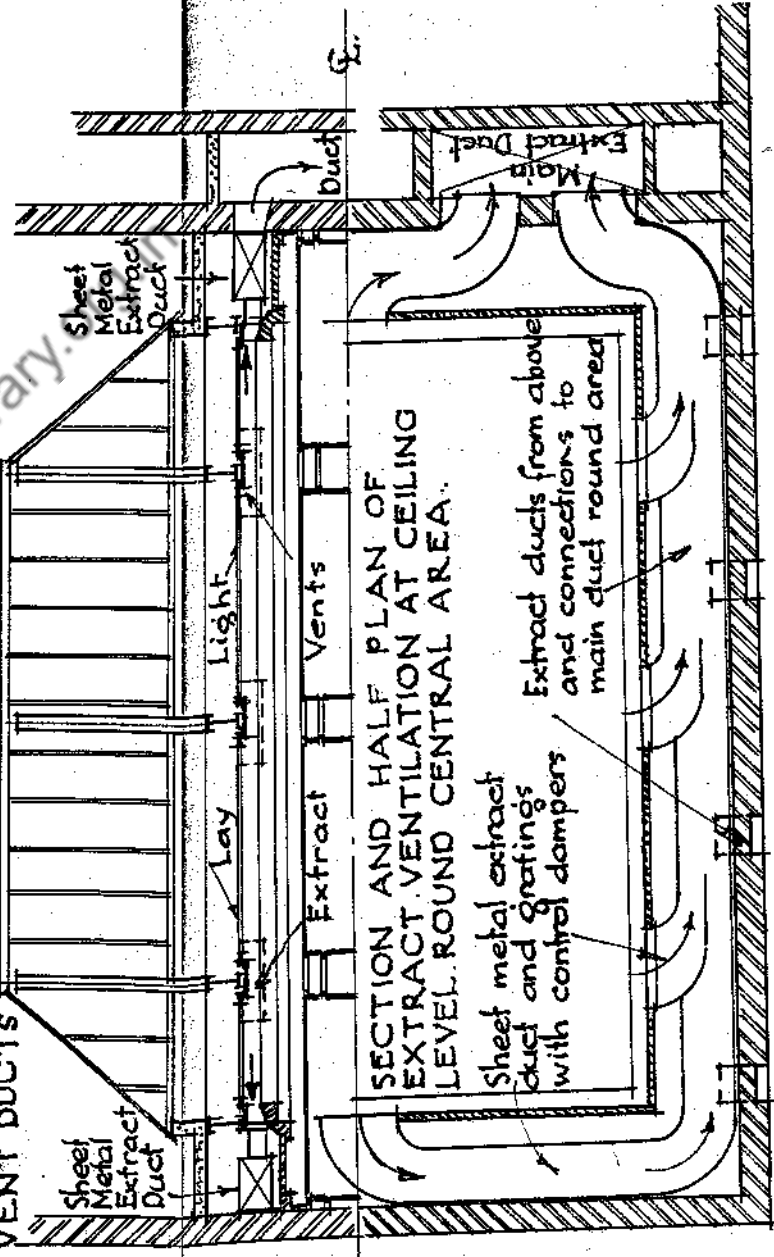
Trays and cover

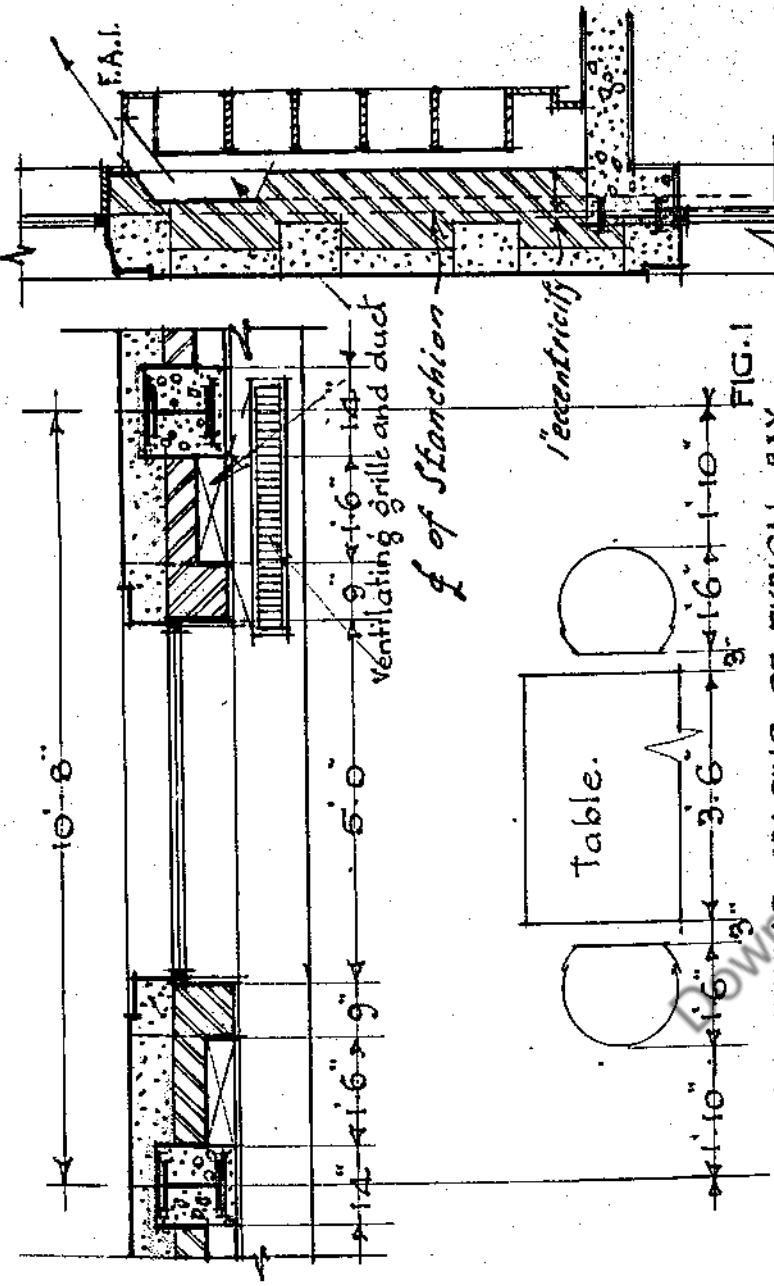


SECTIONAL ELEVATION OF VENT DUCTS



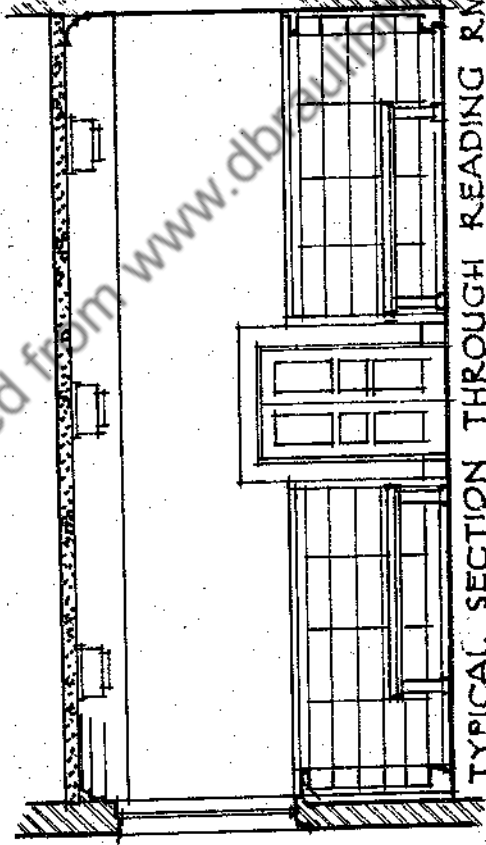
SECTION THROUGH 6" WALL SHELVING INLET & EXTRACT VENTS AND WALL DUCTS.



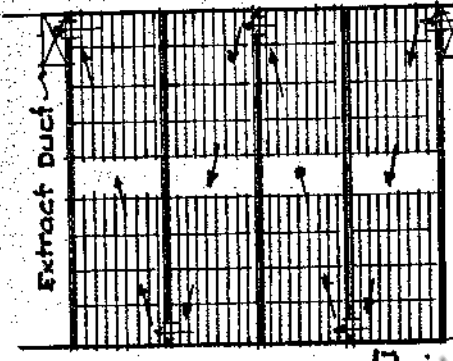


PLAN SHEWING SPACING OF TYPICAL BAY

Section through wall showing vent ducts in wall at back



TYPICAL SECTION THROUGH READING R.M.



Ventilation of Stack  
Rearmie filters, Conditioned air passed in at low level and through stacks as indicated by arrows, and extracted at high level duct.

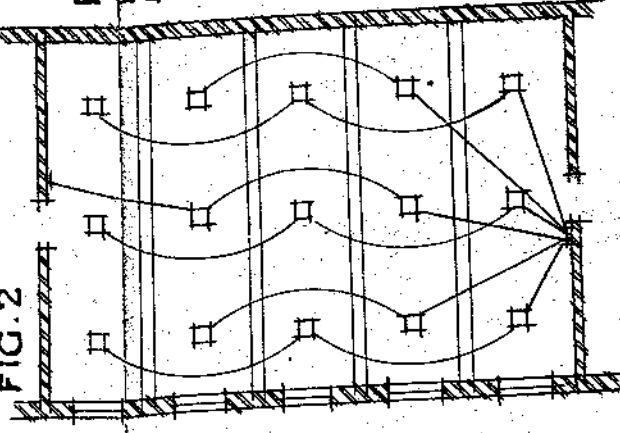


FIG. 4.  
Electric light points for typical Reading Room, showing general switching and 2-Way switching for pilot lighting.

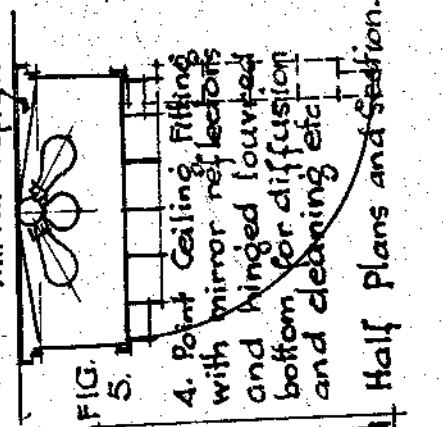


FIG. 5.  
4. Point Ceiling Fitting with mirror reflectors and winged louvers at bottom for diffusion and cleaning etc.

Half Plans and Section.