Mechanical Methods of Displaying Catalogues and Indexes.¹

THIS paper is not concerned with the rules and principles which ought to govern the compilation of catalogues and indexes, but simply with the various mechanical methods which have been invented for the purpose of displaying or holding such catalogues and indexes.

The subject has never been systematically treated during the whole period of seventeen years through which the Library Association has existed; and from this conclusion I do not exclude the imperfect attempt made to describe some of these mechanical methods in the small tract on "Library Appliances," issued in 1892. One or two individual devices have been described at different times, but most notice has been bestowed on the printed catalogue, and the endless ways of compiling it. Considering the great importance to every librarian, of a thorough knowledge of the many methods of maintaining perfect alphabetical order in a library catalogue, printed or manuscript, to which additions are constantly being made, I must confess to a feeling of surprise that the subject has not been more frequently introduced. No doubt it is to this apathy that most of the childish makeshifts here and there visible can be traced. Who does not recall, for example, the foolscap folio or demy quarto volume, ruled faint and margin, in which was once kept that alphabetical catalogue, or list of names? First came the careful spacing-out of the virgin volume in due proportion, to insure that letter B had more leaves than letter Y; then came the entries, nicely measured by vowels or second letters; then the little congestions here and there, leading to the gradual invasion of adjoining pages reserved for something else; then the general disorder suggestive of a Salvation Army procession; and, finally, the purchase of another virgin volume, double the size, in which, after a bit, the same phenomena were repeated. It is almost impossible to believe, though it is nevertheless true, that, in spite of all the teachings of experience, the plain folio book continues to rank as a labour saving tool! Notwithstanding its very

¹ Read at a monthly meeting of the Library Association, November, 1893.

obvious defects, this indexing apparatus must be considered the mother, if not grandmother, of all the various methods invented to circumvent the permutations of the alphabet. The book, guarded or otherwise, in which a *Page* or leaf containing several entries forms the unit for arrangement, is really the first of the five groups into which the various existing methods naturally divide themselves. I need only mention the public catalogue of the British Museum as a type of this group. The second group comprises most of the *Card* systems, in which, as a rule, a single entry is the unit for arrangement, though I shall show you forms which admit of a different treatment. The third group I prefer to name the *Sheaf* system, from the fact that entries on slips are collected or bound up in bundles. In this system, the whole of an author's works can be made to form the unit for arrangement. The fourth group may be called the Broadside or *Placard* system, from the circumstance that a series of entries or single movable titles are arranged in frames of various kinds. In this the column of entries is the unit for arrangement; and it, therefore, closely resembles in principle the "Page" systems of the first group, though differing from them in the method of display. The fifth and last group may be called the *Panoramic* system for want of a better name: and in this the unit for arrangement is the single entry applied to a continuous column of limited capacity. Mr. Mason's revolving drum may be mentioned as one type of this group. I have now set forth the five heads under which I propose to describe some of the cataloguing methods in existence; and, I trust, if the difficulty of the subject excludes the hope of making it amusing, your professional interest will, at least, move you to follow me with a decent show of patience.

There are probably twenty or more "Page" systems in use, including those with fixed and movable leaves, besides two methods in which the single entries are also movable, as well as the leaves.

I shall only mention two of the fixed "Page" systems, because they are representative of all the rest. One is the catalogue of the British Museum, in which the alphabet of entries is distributed over a large number of volumes, thereby rendering one copy of the catalogue of service to very many readers. The other is the Mitchell Library Catalogue, in which an entire alphabet fills one volume, thus making necessary the provision of many complete catalogues before an adequate number of readers can consult it at one time. There are several

points deserving notice in connection with these variations of a single idea. To me, it seems almost impossible to resist the conclusion that, for a large library, a catalogue on the distributive plan of the British Museum is more economical as regards labour and cost; more serviceable to the consultors, especially if arranged in separate author and subject alphabets; and more likely to remain longer uncongested, than the plan of concentration adopted at Glasgow. It is only once in a while that several persons wish to consult the same division of a sectional catalogue, and even then, having to wait their turn is just the same as having to wait for a chance of seeing a complete catalogue when all are in use. Apart from this, and the fact that a divided "Page" catalogue will serve many more persons at once than a dozen or more complete catalogues of a similar nature, my objections to guard-books of any kind greatly out-weigh all that I can say in their favour. There is first, their enormous comparative cost; second, the continuous and unhealthy labour of mounting them up to date; third, their unfailing tendency to become congested at all times and particularly at places where special precautions are adopted as a certain preventive; and fourth, the ease and rapidity with which they become soiled and destroyed in a busy library; not to speak of the continual peeling away of entries.

This brings me to the guard-book, or "Page" variety of catalogue, which possesses means for the insertion or abstraction of leaves when required. There are numerous methods of attaining this end, and in the specifications filed at the Patent Office, there are probably a hundred different kinds of binders, files, and albums, in which means for adding or withdrawing leaves are provided by the use of springs, wires, gut or cords, and screws. The earliest of these is doubtless the album laced together with cords, of which I have here an example. Mr. Cowell, of Liverpool, showed a book something like this at the London conference in 1877, and at Liverpool in 1883, but the method of adjustable binding is really old, and has been used in Holland and Germany, probably also in Britain, for many years. Still, it has recently been patented, though not possessing one scrap of novelty. Mr. Cowell's 1877 album provided for the insertion of single slips, a fact worth notice at this point. Another somewhat similar book is used in France, and no doubt some of you who visited Paris in 1892 will recognise the style of catalogue as that used in the Bibliothèque National and elsewhere. In principle it differs from the cord binders in several

respects. The leaves are held by the pressure of two wooden slats, which are drawn together by means of two or more endless screws, turned by a key. Leaves can be inserted at any place, till the volume is full, and then the contents may be divided, and two books used ; this subdivision and spreading being continued as the entries increase. The last of the fixed entry "Page" catalogues to which I will direct attention, is that recently patented by Professor Magnùsson, of Cambridge.¹ The special feature of this is the provision of a series of hooks hinged to the back, which pass through and secure double leaves or folded sheets. It only remains to point out the defects of all catalogues in which a page of miscellaneous fixed entries forms the unit for arrangement. The most obvious drawback is that, accurate and simple intercalation is in time rendered impossible, because of the entries having to be pasted down, hence true alphabetical order can never be maintained, save for a short period, or till the spaces left for additions are filled. A like fate awaits the inserted leaf, which is sometimes fastened in guard-books adjoining the congested page, and easily placed in movable page books, such as I have described, but this only dislocates the order of entries, and gives two or more places for one author or subject. At the British Museum the slip-entries are secured to the pages only at the ends, and are lifted up and rearranged when congestion becomes too pronounced ; but no other English library has such resources or such readers at command, so that no particular importance attaches to the fact. I should like to add, as a matter of personal opinion, that to an untrained person, there is absolutely no advantage in being able to scan a number of different entries on a page, with one sweep of the eye. For proof of this, ask any ordinary person of moderate education to turn up a word in a dictionary. The two catalogues I am about to show you are free from the defects mentioned before, in that, besides having movable leaves, the single entries are also movable. The first of these is only intended for staff or private use, and is the invention of Mr. Vernon Kirkby, of Leicester. You can see at a glance that the ends of loose slips are simply pushed under the threads, and become temporarily secured in any order desired. By leaving liberal spaces, or better still, keeping the leaves unbound in boxes, or one of the many cheap adjustable binders now on the market, additional leaves can be inserted,

¹ Patent specification, No. 7,588, 1892.

and the contents of any congested pages easily re-distributed over the fresh space. The second "Page" catalogue with movable entries is a modification of the Rudolph Continuous Indexer, to which I will draw your attention later on. It is perfectly elastic and movable in every respect, full provision being made for the congestion difficulty, so that its expansion in any direction is practically limitless. In this respect it resembles the "Card" and "Sheaf" catalogues to be described in another part of this paper. It is the invention of Mr. A. J. Rudolph, of the San Francisco Public Library, who has also applied the same idea to cabinets of drawers. My admiration of the principle of this catalogue-holder is very great, but my opinion is that the construction of the book is not adapted for much use at the hands of ordinary readers. The binding arrangement does not seem sufficiently secure, and the cardboard slips bearing entries are almost certain to fall out in course of time. There is a general lack of security in all the catalogue holders with movable leaves which I have just shown, and this must be regarded as a serious defect; at least among British librarians, who have to deal with more readers than are to be found anywhere abroad, among whom are a large number of persons not yet educated to regard public property with suitable respect. I need not describe any more of the binders in which provision is made for leaves being moved, as I shall discuss the whole question on fresh lines when dealing with the "Sheaf" systems. It is only necessary to add, before passing on, that most of the patented "Page" binders, so far as I know them, are useless for library purposes.

I should not like to enter upon an inquiry on the origin of the "Card" catalogue. One thing appears certain; its origin is not American, as seems to be generally supposed. One of our own members brought forward evidence at Paris last year, proving that cards for indexing purposes had been used by the French in 1775,* while the library now called the Bibliothèque National used them even earlier. It is also recorded in our own transactions that cards were used for cataloguing purposes at Trinity College, Dublin, and elsewhere in Ireland, early in the present century.* My own opinion, which is at present only based on suspicion, is that cards have been in use for indexing since the days of Dick Whittington. The idea of an index on cards or slips, giving

* Prosser (Richard B.): "The Origin of the Card-Catalogue," 1892, 4 pp.
"London Conference," 1877, p. 156.

unlimited means of expansion and intercalation, must have occurred very early to persons habitually engaged in the maintenance of alphabetical order. The simple plan of keeping cards on edge in boxes or drawers is quite common in business houses all over the world; and the Bank of England may be mentioned as a conspicuous case, having introduced them in 1852; after which other banking houses adopted them. When general access to these nests of alphabetical order became common, various safeguards were introduced to prevent intentional or accidental misplacement, and so in course of time arose the wire, the bar, the rod, the shoulder, and other methods of obtaining security. I am not going to weary you with a dissertation on the nature of "Card" catalogues, nor am I proposing to explain what they are, as I assume every librarian with an elementary knowledge of his profession must at least have heard mention made of this appliance!

The "Card" catalogue stored in cabinets with fixed drawers, is probably the most familiar in this country. It may be seen in London in different forms, at the Guildhall, Royal College of Surgeons, St.-Martin-in-the-Fields, Whitechapel, and Clerkenwell. The cards are secured by a rod which passes through holes punched in them, and the rod is either locked or screwed into the back or front of the drawer. This is the form almost universally used in the United States, but I am disposed to think the American cabinets excel our own in manufacture, and in greater uniformity as regards sizes of cards, guides, and the provision of slides, on which the drawers can run out quite clear of the cabinets without falling or sagging.⁴ Before passing to other points connected with the cabinet variety of "Card" catalogue, I should mention the fixed drawers which are in some libraries fitted along the front of counters, either in single or double rows. This seems to be peculiar to this country, and I may mention examples at Battersea, Lambeth (Tate Central Library), and Shoreditch. My impression as regards the "Card catalogue" in cabinets of fixed drawers is that its popularity is greatly on the decline. The reasons for this are obvious to any one who gives the subject a single thought, but it may be as well to mention a few of its drawbacks. In a cabinet of six drawers to the tier, it is impossible to adjust it so that both tall and short persons

⁴ See Catalogue of the Library Bureau, Boston, 1893, pp. 19-65.

will find it equally accessible. In fact, a stool is almost a necessity, for the tall man to sit on, and the short one to stand on. One person using a cabinet of similar dimensions monopolises from 6,000 to 8,000 entries, as it is impossible for two readers to consult it at the same time. Hence ten six-drawer cabinets provided at immense comparative cost will only serve ten readers simultaneously, if it so happens that each one desires to see a different tier of the cabinet; but this seldom occurs, it being much oftener the case that all ten want drawers in two or three of the cabinets. In addition to these objections may be mentioned the large amount of space they occupy, and the difficulty of obtaining a good light on the lower drawers. For these, and other reasons, the cabinet catalogue may almost be considered a thing of the past, save in libraries where huge expenditures have already been made in maintaining this cumbersome form of appliance. In America, which may be regarded as the land where the card cabinet has been "boomed" into almost universal use, there is a rapidly-growing feeling of antagonism to the cabinet; and during my recent wanderings in that wonderful country, I met quite a number of librarians who expressed themselves favourable to *movable* trays or drawers of cards. In the progressive State Library at Albany I found movable trays stored in pigeon-holes in actual use, and at Chicago, I noticed various sorts of trays or boxes which were intended to be removed by readers to tables or benches for consultation. Of this kind of movable tray there are a number of varieties, the oldest being probably of French origin. But I will first draw your attention to a recent English tray made by Mr. T. B. Vernon, inventor of a letter-filing method. I have here a specimen which will speak for itself, but I may add that this style of tray is what our American cousins are now adopting in preference to cabinets. The great advantage possessed by the movable tray is that it will serve a very large number of readers at one time.

There are numerous plans for securing the rods and blocks, but none of them are easily described, and I have been disappointed in getting as many models as I expected. In 1871, Mr. H. W. D. Dunlop, assistant librarian of the Royal Dublin Society, patented a tray system for the display of card catalogues, which in my opinion beats everything of the kind for eccentricity and perverted ingenuity.⁶ I shall not attempt to describe it, but

⁶ Patent Specification, No. 945, 1871.

must ask you to look at this illustrated specification and understand it for yourselves. I may say that the cost of providing hinged discs or slats of metal or card board in the elaborate shapes devised by Mr. Dunlop would be enormous. The main feature of the invention is, I think, the means given by the long slot cut in the lower part of the plates for lifting the entry wanted above the level of the tray and folding it back for convenience of reference. I cannot say if this invention has ever been put into operation, but should be glad to receive information on the point.

This is a drawing of another tray invented by Dr. Carl Dziatzko in 1879, while he was librarian at Breslau. His successor, Professor Stænder, made various minor improvements and it is largely used in Germany, Austria and Switzerland. The main feature, as you will observe, is the broad brass bar passing *over* the cards to keep them in place. It is necessary to secure the block tightly when the tray is not full of cards, otherwise it is easy to slip a card up under the bar. A similar principle has been several times applied to cabinets and trays, the main difference being that rods or stout wires are used instead of flat bars.

The French model to which I referred was first described in 1866, and afterwards made in an improved form in 1874.*

The inventor, Mr. F. Bonnange, of Paris, is the originator, so far as I can ascertain of the hinged card, and those of you who were at Paris in 1892, or have visited any of the large Paris or other French libraries, must have seen this style of tray "Card" catalogue. I have been unable to obtain a model from Mr. Borgeaud, the maker, but I can show you an almost identical Italian device, which was introduced by Mr. Staderini of Rome, over ten years ago. The Bonnange tray is similar in principle to this, save that, instead of a sliding block gearing with a ratchet, it has a powerful endless screw worked by a key, on which a block travels as required. The hinged cards shoulder into the side-grooves, as in the Staderini system, but there is also a large slot cut to enable the cards to be placed astride of the screw without resting on it. When the key is turned to the right the block travels along till the cards are all firmly clamped; when turned to the left the cards are released. A feature of some little importance possessed by both the Bonnange and Staderini

* Bonnange (F.): *Nouveau système de catalogue au moyen de cartes.* Paris, 1866.

methods is that the lower part of the hinged card forms a counterfoil when firmly clamped. If the accession or other number of the book catalogued on the upper half is written on the clamped part, it will remain in the tray as a record, if anyone accidentally or wilfully tears off and destroys the entry. This is a merit not possessed by any of the ordinary card methods, because when cards are torn from the rods they become lost for evermore, and nobody can say whether the catalogue is perfect or not. There is another decided merit possessed by these hinged card methods, and that is both sides of each card can be written upon. I have not seen the Bonnange system used in this way, but I have filled up a few Staderini cards to show how it works in actual practice. When this is done, of course each card may carry two or more entries. It will also be observed from the pictures I am about to hand round, that the Staderini trays are intended to lie parallel with the front of the table instead of at right angles, as in ordinary drawer cabinets.¹ When these merits are mentioned, I am afraid their good points are exhausted, because when the very important test of comparative price is applied they will be found among the most expensive of systems. The plan of breaking up "Card" catalogues into trays or boxes holding from 1,000 to 1,500 entries, has been carried even further in Germany, particularly in the university libraries, where small boxes with handles and falling sides are much used. The specimen now shown is used at Giessen, Berlin, and other places, but it is not sufficiently safe-guarded for general public use; besides which, it is awkward to manipulate, and the boxes are a trifle flimsy. They are generally stored in revolving book-cases with contents labels attached to the flap of each lid. For private use this style of catalogue may be very useful, but it would never do for ordinary public libraries.² I think I have now mentioned the more important "Card" methods which present much difference in the manner of arrangement. There are quite a number of varieties of trays, boxes and cabinets, all differing in minor points, but the same in principle, so that it is needless to describe more of them. I have great doubts as to the efficiency of cards for all cataloguing purposes, and fear that the objections

¹ Staderini (Aristide): *Brevi cenni sopra due sistemi di schedario per cataloghi.* Roma 1890.

² A small card catalogue case in box form was patented by Mr. Walter Thomas Rogers of the Inner Temple Library, London, in 1890. Patent Spec., No. 17,599, 1890.

from the public point of view alone are too many and too serious to be easily overcome. The one difficulty of handling the cards with the necessary speed is in itself sufficient to repel many readers, and forms an insurmountable objection to others. At Clerkenwell, when we had book catalogues and card cabinets side by side, the former were invariably used by our readers to the neglect of the latter. I observed the same conduct among the readers in American libraries, and believe this will be found the general experience everywhere. The considerations of comparative cost, space occupied, and unpopularity with readers should be enough to make librarians reflect before adopting any "Card" system.

The "Sheaf" system of keeping catalogues is not so well-known in Britain as the "Card" or "Page" system, but it has for many years been adopted in Italy, Holland, France, Germany, and generally throughout Europe. America has only recently bestowed serious attention on the plan, and has contributed one or two varieties to the common stock. The "Sheaf" system aims at combining the advantages of both card and book catalogues, and to a considerable extent succeeds. The main objects of the system are to break up the catalogue into handy sections, so that the maximum number of readers can be served at once; to provide means for continuous expansion in strict alphabetical order; to thoroughly safeguard the sections; to reduce the amount of space occupied; and to furnish readers with a volume which can be used with as much facility as an ordinary book. The idea is by no means novel. Where it actually originated I cannot say, but I know that a primitive example of the system was used by Dr. Crestadoro, of Manchester, thirty years ago, and that Mr. Sutton showed a sample of it at Nottingham in 1891. This consisted of an iron bar, on which were two bolts slightly apart, having a small nut on each. The slips were punched to fit on to the bolts, and the bundle was clamped by the nuts. It was an invention only adapted for private use.* In 1871, was invented the Leyden slip catalogue, so named because it was designed for use in the University Library of Leyden, in Holland. It consists, as may be seen from the example now in my hand, of a pair of boards, hinged,

* Mr. Robertson, of Aberdeen, devised a similar apparatus for the University Library, which he described in *Monthly Notes*, 1883, p. 84; and Mr. C. M. Torboss, of Philadelphia, described a one-screw arrangement in *Library Notes*, 1887, p. 214. I am not aware if this has been used.

and slotted at top and bottom near the back. The slips are slotted to correspond, and a piece of cord or gut is tied firmly round the volume and through the slots so as to bind the whole. There is no firmness or security about this book, and anyone could easily undo it. Nevertheless, I am disposed to think it is a cheap and convenient method of temporarily binding slips for private or staff use.¹⁰ A very similar plan, but with holes instead of slits, has often been tried in various places; and I have here a specimen of Mr. George Shaw's catalogue book, which he contemplates introducing at the Athenæum Library, Liverpool. Of much more importance than either of these is the "Sheaf" catalogue holder, made by Mr. A. Staderini, of Rome, who invented one of the forms of "Card" catalogue already mentioned.¹¹ It comprises a fixed back and boards, to which two iron screw bolts are attached, and the slips when inserted are clamped by means of two brass screw caps turned by a key. These volumes are numbered and kept in pigeon-holes, which bear the volume numbers and letters denoting the section of the alphabet contained in each volume. The pictures now exhibited show the arrangement better than it can be described. A "Sheaf" catalogue book on a principle very similar to this, has been invented by Mr. W. C. Lane, now of the Boston Athenæum; and at Harvard University other forms have been tried. The main objection to the Staderini holder, apart from its cost, is that, by reason of the rigid back, it always occupies the maximum space, while the slips are much inclined to sag when the holders are not quite full. Its clumsiness is also a disadvantage. A "Sheaf" holder on exactly the same principle, but with a different fastening arrangement, is that invented some years ago by Mrs. Sacconi, of the Marucellian Library, Florence.¹² It has a rigid back also, but I think the manner of securing the slips, and the superior way in which the volume lies open make it rather better than Staderini's holder. On the other hand, it is open to the same objections as to sagging and space occupied, which I pointed out against Staderini. It is intended to be kept in pigeon-holes, as this picture shows. An invention, almost identical in principle, was recently patented in this country by Messrs. E. and A.

¹⁰ See Paper by Du Rieu in *Library Journal*, 1885, p. 206.

¹¹ See Note 7.

¹² Sacconi (Giulia) "Un Nuovo Sistema di segatura meccanica per Cataloglie," Firenze, 1891.

Derepas, of Paris.¹¹ It was not particularly described as a catalogue holder, however, but rather as an ordinary binder. The last of the "Sheaf" catalogue holders which I propose to mention is that patented by myself last year. This has a flexible expanding and contracting back, and the slips are bound by the action of two cylindrical screws, turned by a metal key. It is not necessary, as in the cases of all other "Sheaf" holders, to undo this one in order to remove the slips to make an addition, the loosening of the screws being all that is necessary. The keyed slot cut at the back of the slips gives a sufficient catch, when the screws are tightened, to firmly bind the slips in place. The book numbers, if written on to the clamped portion of the slips, will remain in the books, if entries should be wilfully torn out, and so no catalogue could be made imperfect without the librarian's knowledge. The little xylonite label-holder on the back enables contents slips to be changed at will, without damaging the back. These holders should be kept in numbered pigeon-holes, which will facilitate finding and replacement. Their small size makes them very convenient for general use, and they occupy very little space compared with their capacity. One of these volumes will hold, on an average, 1,000 entries, and it occupies but 56 cubic inches of space. A card tray, to hold a similar number of entries, will occupy at least 225 cubic inches. The whole of the "Sheaf" systems have advantages not to be got from any other method at the same cost. As both sides of each slip can be used for the works of the same author, and each slip can carry from one to a dozen entries, it follows that a moderately sized volume will hold a comparatively large number of titles. The Staderini holder, on thin paper, contains 450 leaves; with linen mounts, 320. Sacconi's ordinary holder has a capacity of 250. The Leyden, and similar holders, are strongest when kept thin, and, probably, 150 slips would be a maximum. My own variety of holder will contain 600 thin manilla slips for type-writing, 500 of fairly thick paper for handwriting, and from 300 to 350 thick manilla or ledger paper slips. I allow, as the result of careful calculation, an average of two entries per slip in an author catalogue, where one writer's works can be recorded on a single slip. For the convenience of those who desire a comparison of storage capacities and prices, I have compiled a table, which shows at a glance these particulars for "Card" and "Sheaf" catalogues :—

¹¹ Patent Specification, No. 13,229, 1881.

COST AND SPACE OCCUPIED BY 1000 ENTRIES.

	Cost.	Space occupied.
American Card Cabinet	22/-	840 cubic inches.
Stone's Card Cabinet	21/-	748 " "
Vernon Card Tray	25/-	380 " "
Bonnange Card Tray (42'6 if 500 cards used both sides)	65/-	480 " "
Staderini Card Tray (500 only)	31/-	400 " "
Staderini Sheaf Holder (900 only)*	11/8	135 " "
Sacconi Sheaf Holder (2 vols., 250)*	20/-	200 " "
Leyden " "	6/-	128 " "
Brown " "	8/-	56 " "

* These are ruled on one side only, as if it were intended that the front side alone should be used; but in my calculation I have allowed for the use of both sides.

Applying these results to a catalogue of 10,000 entries, the American Cabinet would cost £11, at the American price, probably more when imported here, and accommodate two readers at a time. Stone's cabinet would cost £10 10s., and also accommodate but two readers. Vernon's Trays would cost £12 10s. (probably only £10 10s. for this number), and accommodate ten readers. The Bonnange Trays would cost £32 10s. (£21 6s. if both sides of cards used), and accommodate five readers at double trays, or ten at single. Staderini's Card Trays would cost £15 10s., and accommodate ten readers. Staderini's Sheaf Holders would cost £5 16s. 8d, and accommodate ten persons. Sacconi's Sheaf Holders would cost £10, and accommodate twenty readers. The Leyden Holders would cost £3, and accommodate forty readers; and Brown's Holder would cost £3 15s., and accommodate ten readers. Of course allowance should be made for the racks or pigeon-holes required by the sheaf holders, which would in most cases nearly double the space. Before concluding these notes on the "Sheaf" catalogue system, I should mention that all the appliances before described have slips which are well adapted for type-writing, and this cannot be said of any of the card plans; as the Hammond machine seems to be the only one which lends itself readily to card printing. But all the machines now on the market, including the Hammond, can be used for printing slips for the "Sheaf" system. This is a very important consideration. I may also point out that manuscript additions to any slip can be made without removing it from its place, which is an important advantage not possessed by any of the "Card" systems. I should have mentioned that there is a German slip album which is used for cataloguing in the university libraries, but it is clumsy, and the slips are only

secured by a brass catch which anyone could undo. There is nothing novel in its principle, and I only mention it to show that I am not passing over anything worthy of notice. The principal disadvantages of the "Sheaf" system are these: The volumes do not lie open so well as could be desired, indeed there is an automatic shutting tendency not yet overcome, but this is a gain when careless readers leave them lying on the tables, instead of replacing them in the rack. There is also the danger of misplacement, which, by the way, applies equally to any form of portable catalogue. But the great danger to every kind of catalogue, whether guard-book, card, or sheaf is DIRT, and there seems no possible way of getting over this difficulty. Nevertheless, I think the slip books suffer less than cards. At least it has been the case in Clerkenwell, as you will easily observe by comparing these cards for recent additions, now withdrawn, with the little slip book which I showed before.

I will not detain you over the "Broadside" or "Placard" system of displaying catalogues, because I know every librarian has invented one for himself. The glazed frame with movable back on which we stick sheets with lists of additions to the library, is such a universal library appliance, that I must ask pardon for mentioning it. But it was the forerunner of more elaborate devices, such as the Liverpool one, with divisions for holding movable blocks on which were pasted and arranged entries of new books. At Middlesbrough, Cardiff, and elsewhere in England these "Placard" systems have been adopted in various forms, chiefly for lists of additions. At Boston, in the United States, I saw nearly one side of a wall covered with long grooved slats arranged in vertical columns, which had once been used for displaying cardboard slips bearing entries of new books. They were not being used while I was there, so that I assume they had proved a failure on such a large scale, no doubt because of the enormous labour and difficulty of transposing and adding to such a great collection of columns of single entries. The plain glazed frame with columns of type-written entries arranged in rough alphabetical order, seems to be all that the public desires in the way of a temporary catalogue of additions. Personally I have always found it just what is necessary. I do not think the "Broadside" or "Placard" form of catalogue is desirable, save for temporary purposes, lists of additions, special class lists, or similar lists.

The "Panoramic" system of cataloguing is of comparatively

recent origin. My first intimation of this idea was received nearly ten years ago, when Mr. Mason, then in Glasgow, hinted in a mysterious way about a plan he had of revolutionizing the prevalent methods of displaying catalogues. He took no steps to achieve this result till 1891, when he showed us at Nottingham a somewhat crude specimen of his contrivance. Since then he has greatly improved upon the manner of operating his cylinders, and anyone can see in daily use at St.-Martin-in-the-Fields the revolving drum form of "Panoramic" catalogue, which is, so far as I can ascertain, the very first of its species. I have no idea of its cost, or to what extent, and how, it is used by the public. The idea of a continuous band with entries attached in alphabetical order, occurred to Miss James as it has occurred to Mr. Mason and others, and she prepared, some time ago, the little model which I have here to show you. With rollers in the cellar and attic, there is no reason why this style of appliance should not be made to carry the whole catalogue of a library, and perhaps make a useful lift! The most recent of these "Panoramic" catalogue holders is the Rudolph Continuous Indexer, invented by the Mr. Rudolph whom I have already mentioned. The illustrations which I have will serve to give some idea of its appearance and method of working. It consists of a cabinet standing 3ft. 6in. high, by 1ft. 8in. wide, and 2ft. 6in. broad, with a plate-glass top, through which the catalogue can be examined. Inside there are 600 slats, which revolve over two hexagonal drums in a continuous chain, and these are looped up for storage purposes in hanging folds by the very ingenious mechanical means provided. Each slat has metal grooves at the edges, under which cardboard slips bearing entries are arranged as desired. The slats are detachable, so that a fresh one can be inserted anywhere in the chain when congestion occurs. The machine is operated by a crank, and I can bear testimony to the claim that it works rapidly, easily, and without noise. Each slat will hold 136 single line entries, and the total capacity of a complete cabinet may be put at 40,800 double line entries. It has, therefore, some advantage as regards storage capacity, adjustability, and ease of working. On the other hand, I regard it as a fatal defect, as far as library use is concerned, that one constructor can monopolize the whole 40,800 entries. Even when broken up into smaller cabinets the objection would be but little remedied, and the additional expense might make any advantage

too costly. As well as I can recollect, the price of a 600 slot cabinet was quoted at Chicago as between £50 and £60, and this practically puts the contrivance out of reach of all save the largest and wealthiest libraries. I should also mention that when Mr. Cowell and myself were carefully examining one of these indexers at Chicago, the chain suddenly snapped in two, which rather shook my faith in the integrity of the fastening. If no more security can be given than this, what will happen when the small boy engages in a record-breaking grind? For various purposes of commercial indexing I should be disposed to think the Rudolph Indexer would be extremely useful, but as a catalogue for ordinary public use in libraries I do not think it would be a success. As an accession list it might, however, prove of the utmost service, though its cost must ever be an obstacle to wide adoption in Britain.

I have now concluded my survey of cataloguing and indexing appliances, and trust the specimens now on the table may be thoroughly examined before the meeting disperses.

JAMES D. BROWN.

Nov. 13, 1893.

NOTE.

[Mr. Brown's paper was illustrated by a large number of cataloguing appliances, selected from the Museum of the Association. These can be seen by librarians interested at the Clerkenwell Public Library, Skinner Street, London, E.C.—ED.]

By way of appendix to this paper I have selected from my private notes a few of the more important contributions to the literature of cataloguing; but have confined the list to writings in the English language. This list includes rules for cataloguing, specimens of catalogues which are typical of some principle, and practical notes on the matters of arrangement and display. The whole is arranged in chronological order so that the gradual development of British and American catalogues and systems may be to a small extent traced. At some future time I propose to publish the whole of my notes on the literature of cataloguing, which are rather extensive.

1597. Maunsell (Andrew) Catalogue of English printed bookes. .
Gathered into alphabet, and such method as it is.
London, 1597. Part i., Divinity; Part ii., Science.
[First printed catalogue of printed books ?]
1605. Bodleian Library, Oxford. Catalogues. 1605, 1620,
1674, 1738, 1814 (classed catalogue of topographical
books), 1843-57 (authors), 4 v.
1650. Durie (John) Reformed Librarie-keeper. . London, 1650,
“ . . . all the books and manuscripts, according to the
titles whereunto they belong, are to bee ranked in an
order most easie and obvious to bee found, which I
think is that of Sciences and languages; when first all
the books are divided into their *subjectam materiam* where-
of they treat. . . ” “ . . . in the printed catalogue a
reference is to bee made to the place where the books
are to be found in their shelve or repository.” “ . . . a
catalogue of their Titles made alphabetically in refer-
ence to the author's name with a note of distinction to
shew the science to which they are to bee referred.”
[See *Lib. Chron.* 1884, p. 1; *Lib.* 1892, p. 81.]
1658. London (William) Catalogue of the most vendible books
in England orderly digested, under the heads of
divinity, history, physic, law, &c., London, 1658.
1692. Advocates' Library, Edinburgh. Catalogues, 1692.
("Books arranged under a few general headings.")
New catalogue commenced by Ruddiman, 1742-1807,
3 v. Present catalogue, 1867-79, 7 v.
1699. Kirkwood (James). An Overture for founding and main-
taining of bibliotheks in every paroch throughout the
kingdom [Scotland]. . . 1699 *anon.* Every parish
library shall have “ . . . exact alphabetical catalogues ”
[of books] “ with the place where, and the time when
they are printed. . . ” From these local catalogues
“ . . . a general catalogue of all the books in the king-
dom. . . shall be printed and distributed through every
paroch of the kingdom. . . ” “ It will be convenient
that all the Bibliotheks in the kingdom observe the
same method of ranking and placing their books, which
method may be to rank the books according to their
name and number, in the general catalogue, which name
and number must be written upon a piece of paper and
battered [*i.e.*, pasted] to the back of the book. . . that

it may be easily seen and read by any person that comes into the Bibliothek. . . " [Reprinted in Greenwood's Public Libraries, 3rd edition, 1890, and by Mr. H. T. Folkard, of Wigan. There are the germs of many advanced modern ideas in this interesting tract, alphabetical and uniform cataloguing, classification and press-marking, open access, and newsrooms.]

1734. London, Middle Temple Library. *Catalogus librorum Bibliothecæ Honorabili Societatis Medii Templi Londini, ordine Dictionarii dispositus*. London, 1734. [This is the earliest English use of the word *dictionary* applied to the arrangement of a catalogue I have been able to find. Mr. Cutter mentions 1742 occurring in a German catalogue, as the earliest use of this term he had found up to 1876.]
1773. London Catalogue of Books in all languages, arts and sciences that have been printed in Great Britain from the year 1700, properly classed under the general branches of literature, and alphabetically disposed under each head. . . London, 1773.
1787. British Museum. Catalogues of printed books, 1787, 2 v.; 1813-19, 7 v.; 1841 (v. 1., A-Az., all published. Contains cataloguing rules. 1849 (books of reference). Present great author and title catalogue in progress.
1792. Signet Library, Edinburgh. First catalogue, 1792. Catalogue. . . (arranged according to classes by George Sandy. . . librarian); with an alphabetical index of authors and subjects, 1805. 1820-37 (dictionary index; 1856 (law books. . . with an alphabetical index of authors and subjects); 1871, &c. (Present catalogue in two vols., with supplement.) [The 1805 catalogue is elaborately classified (on De Bure's plan?) and has what is practically a dictionary catalogue for an index.]
1809. Royal Institution, London. Catalogue. . . methodically arranged, with an alphabetical index of authors, by William Harris, 1809. New classified catalogue. . . with indexes of authors and subjects, and a list of historical pamphlets, chronologically arranged, by Benj. Vincent. 1857-59.
1809. Boston Athenæum, Mass. Catalogues, 1809 (classed); 1827, &c. 1874-82, 5 v. (Mr. Cutter's elaborate classed catalogue, with indexes).

1829. Letter to the Bishop of London on the expediency of establishing parochial libraries in the Metropolis, and the formation of a national catalogue on all subjects of philosophy and literature. By a subscriber to King's College. London, 1829.
1835. London Institution. Catalogue of the library, systematically arranged. London, 1835-52, 4 v. (Has an "introductory preface" with "some judicious remarks as to the importance of classed catalogues.")
1835. Penny Cyclopædia. . . v. 4 1835. [See article "Bibliography" for some interesting notes on catalogues and cataloguing.]
1837. Panizzi (Sir A.) Letter on a new catalogue of the library of the Royal Society, 1837. Letter to S. P. Rigaud respecting catalogue of Royal Society Library, 1838. Catalogue of the scientific books in the library of the Royal Society, 1839. [See next entry. Panizzi, assisted by others, compiled the B.M. rules.]
1839. British Museum Cataloguing Rules. Adopted 1839. First printed in catalogue of printed books, 1841. Also in Nichols' "Handbook for Readers at the British Museum," 1866, p. 38-54: Sims' "Handbook to the Library of the British Museum," 1854, p. 91-95 (condensed); Stevens' "Catalogue of American Books in the British Museum," 1866 (the revised rules of 1862); "Library Association Year Book," 1893, p. 42.
1841. Encyclopædia Britannica. Seventh edition, 1841. [Article, "Bibliography," pp. 629-32. An author's "separate treatises ought to be entered under the subjects to which they belong."]
1843. Brown University, Providence, Rhode Island. Catalogue. [Author entries, with biographical notices, and alphabetical subject-index, with cross-references. Compiled by Mr. C. C. Jewett. In 1838 biographical notices were included in the author catalogue of the Andover Theological Seminary of Massachusetts.]
1852. Jewett (C. C.) Smithsonian report on the construction of catalogues of libraries. . . . with rules and examples. Washington, 1852.
1854. Boston Mercantile Library. Catalogue, 1854. [Dictionary of Authors, Subjects, &c., by W. F. Poole. "This is the first complete triple asyndetic dictionary catalogue"—Cutter.]

- 1855. Edwards (Edward) Special report on the plan, preparation, and printing of a classed catalogue of the reference department of the Manchester Free Libraries. Manchester, 1855.
- 1856. Crestadoro (Andrea) "Art of Making Catalogues of Libraries," by a Reader in the British Museum. London, 1856. *Anonymous*. [See also the preface to the catalogue of the Manchester Free Reference Library, 1864.]
- 1858. Low (Sampson). Index to the British Catalogue of Books. . . . 1837-57. London, 1857 [? by Crestadoro]. This was preceded by "Bibliotheca Londinensis: A Classified Index to the Literature of Great Britain. . . . 1814-46." London, 1848. It is assumed by Mr. Cutter that this was the immediate forerunner in England of the dictionary catalogue. See "U. S. Report on Libraries," 1876, p. 534-35.
- 1876. Public Libraries of the United States of America, special report. . . . Bureau of Education. Washington, 1876. [Contains useful articles on various aspects of cataloguing, by Messrs. Cutter, Dewey, Noyes, Schwartz, &c.]
- 1876. Barnwell (J. G.) A universal catalogue: its necessity and practicability. *Lib. Jour.*, 1876, p. 54.
- 1876. Cutter (C. A.) Rules for a printed dictionary catalogue. Washington, 1876; second edition, 1889; third edition, 1891. Issued by the Bureau of Education.
- 1876. Dewey (Melvil). Decimal classification and relative index for arranging and cataloguing libraries. . . . Boston, third edition, 1888. [Described in U. S. Report, 1876, but first "developed early in 1873."]
- 1877. Cross (J. Ashton) Universal Index of Subjects. *L. A. Trans.*, 1877, p. 104; *Lib. Jour.*, 1877, p. 191.
- 1877. Depping (G.) Note on Co-operative Cataloguing. *L. A. Trans.*, 1877, p. 100; *Lib. Jour.*, 1877, p. 188.
- 1877. Walford (C.) New General Catalogue of English Literature. *L. A. Trans.*, 1877, p. 101; *Lib. Jour.*, 1877, p. 1888.
- 1877. Stevens (H.) Photo-bibliography. *L. A. Trans.*, 1877, p. 70; *Lib. Jour.*, 1877, p. 162.
- 1878. L. A. U. K. Report and Evidence on General Catalogue of English Literature, and Universal Catalogue of Printed

- Books. *L. A. Trans.*, 1878, pp. 8-9; 1872, p. 6: 1880, p. 9.
1878. Thomas (E. C.) Proposed Index to Collectaneous Literature. *L. A. Trans.*, 1878, p. 88.
1879. Cambridge University Library. Rules to be observed in forming the Alphabetical Catalogue of Printed Books. In *Cambridge University Reporter*, 1879, pp. 768-71.
1879. L. A. U. K. Report on Title Entries, *L. A. Trans.*, 1879, p. 8; do. 1880, p. 5; Cataloguing Rules, 1880, p. 174; Title Entries, 1881, p. 6; Cataloguing Rules, 1881, 83; Report on Illustrations to the Cataloguing Rules, 1883, p. 8; Cataloguing Rules as revised at Liverpool, *Lib. Chron.*, 1885, p. 25. See also *Lib. Assoc. Year Book*, 1890, &c. [These Rules are for Author and Title Entries only, and were published separately, as well as in the publications noted above.]
1882. Bodleian Library, Oxford. Compendious Cataloguing Rules for the Author-Catalogue, 1882. [Includes a Size-Notation. See *Monthly Notes*, 1883, p. 5-9 and 31-33; *Lib. Jour.*, 1883, p. 298-301: *Lib. Assoc. Year Book*, 1893, p. 57.]
1883. American Library Association. Condensed Rules for an Author and Title Catalog. *Lib. Jour.*, 1883, p. 251-54, 263-64.
1884. Garnett (R.) Photography in Public Libraries. *L. A. Trans.*, 1884, p. 66.
1884. Perkins (F. B.) San Francisco Cataloguing. Public Libraries. A Manual of the System used in the San Francisco Free Public Library. San Francisco, 1884.
1886. Fletcher (W. I.) Co-operative Cataloguing. *Lib. Jour.*, 1886, p. 74; *Nation*, vol. 42, p. 147.
1886. Library Notes. Card Catalogues. 1886, p. 33-42.
1886. Garnett (R.) Card Catalogue Systems. *Lib. Notes*, 1886, p. 182.
1886. Library Notes. American *versus* English Catalogs. 1886, pp. 179-95.
1886. Schwartz (J.) A Dozen Desultory Denunciations of the Dictionary Catalogue, with a Theory of Cataloguing. *Lib. Jour.*, 1886, p. 470.
1887. Library Notes. Library Handwriting. 1887, p. 273.
1888. Garnett (R.) Prof. Dziatzko's Cataloguing Rules. *Lib. Chron.*, 1888, p. 166.

1888. Dewey (M.) "Rules for author and classed catalogues, with 52 facsimiles of sample cards; with a bibliography of cataloguing rules," by Mary S. Cutler. Boston, 1888; second edition, 1889; third edition, 1890; fourth edition, 1892. [Originally issued for Columbia College Library, New York, but now the Rules of the Library School at Albany.]
1889. Wheatley (H. B.) *How to Catalogue a Library.* Lond., 1889.
1890. Linderfelt (K. A.) *Eclectic Card Catalog Rules.* Author and title entries. Based on Dziatzko's "Instruction," compared with the Rules of the British Museum, Cutter, Dewey, Perkins, and other authorities. With Appendix, containing a list of oriental titles of honour and occupations. Boston, 1890.
1892. Garnett (R.) *British Museum Catalogue as the basis of a Universal Catalogue.* *Lib.*, 1893, p. 93. [Read at Paris, 1892.]
1892. Law (T. G.) *Co-operative Catalogue of English Literature up to 1640.* *Lib.*, 1893, p. 97. [Read at Paris, 1892.]
1892. Green (H. E.) *Card Volumes versus Card Drawers.* *Lib. Jour.*, 1892, p. 5.
1892. Rudolph (A. J.) *Progressive Machine Index.* *Nation*, vol. 55, p. 125, 1892.
1893. Sacconi-Ricci (Giulia) *Various forms of Catalogue used in Modern Libraries, with special reference to a system of Mechanical Binding.* *Lib. Jour.*, 1893, p. 423.
1893. Brown (J. D.) *Mechanical Methods of displaying Catalogues and Indexes.* L. A. U. K. Meeting, Nov., 1893. [The paper to which this list is an appendix. *Lib.*, 1894, p. 45.]