

CONTRIBUTIONS TO MUSEUM TECHNIQUE

I. CATALOGUING MUSEUM SPECIMENS¹

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AN essential feature in connection with a museum, is the maintenance of a careful record or history of the objects forming the various collections, since a specimen deficient in data referring to the locality, date and conditions under which it was obtained, is practically valueless in comparison with one correctly catalogued.²

The inadequacy of the systems commonly employed, even in prominent museums of America and Europe,³ by which rarely more than a number, name, and locality of uncertain value, are more or less heterogeneously arranged in cumbersome and often inaccessible volumes,⁴ is apparent to any one who has attempted to locate a desired specimen, or when fortunate enough to ascertain the location, to obtain concise information concerning it. This condition of affairs is particularly obvious to the systematist wishing to study the material belonging to a certain group or from a definite area in a museum, for he may indeed be considered

¹ Contributions from the Biological Laboratory of Kenyon College, No. 5.

² I have merely given expression to the principle laid down by Goode in his admirable paper on museum administration (Annual Report of the Museums Association, 1895, also republished in the Annual Report of the Smithsonian Institution, 1897) where he says, "A museum specimen without a history is practically without value and had much better be destroyed than preserved."

³ The museums as well as many other institutions abroad, are subservient to precedents which, under the changing conditions, have too often outlived their usefulness. The remarks of Dr. Meyer in a note on a succeeding page (unintentionally on his part) furnish excellent evidence in corroboration of the above statement.

⁴ Both the Field Museum of Chicago and the Carnegie Museum of Pittsburg make use to a limited extent of card or slip catalogues in connection with the book system. From their form and size ($3\frac{1}{2} \times 9\frac{1}{4}$ in the former, $5\frac{1}{2} \times 8$ inches in the latter museum) method of filing, and arrangement of data however, it is questionable whether a decided advance has been made over the old book catalogue.

a fortunate individual if, after the loss of much time examining the collections on exhibition and in storage, both catalogued and uncatalogued, and in consulting the various volumes in which the data are supposed to be kept, he obtains the data which he wishes.¹

Consequently the following suggestions in respect to the cataloguing (often spoken of as 'registering' or 'recording') of specimens have been brought together primarily with a view toward facilitating the maintenance of such records in museums of Natural History, although it is hoped that they may prove of practical advantage in connection with other institutions of a similar nature. The paper was outlined and partially written while engaged in the rearrangement of certain collections in the American Museum of Natural History, New York, during the summer of 1901. The completion, however, although a brief review was published in the *Ohio Naturalist* for 1904, has been delayed in order to make further inquiries concerning the systems of cataloguing used in various museums, as well as for the purpose of profiting by a more extended practical application of the method. This latter result has been accomplished in the cataloguing of specimens during the last three years for a foundation of a small museum at Kenyon College. It may be noted that very few changes from the plan first proposed have been rendered necessary.

The literature relating to the subject of cataloguing museum specimens is chiefly conspicuous by its absence, notwithstanding the mass of information in regard to museums and museum administration which has been brought together in the *Museum Journal* and a few other periodicals devoted to the interests of such institutions, and in the papers by Meyer :00-03, Gratacap :02-03,

¹ In a vigorous article by Bather (How may Museums best retard the Advance of Science, Annual Report of the Museums Association, p. 90-105, 1896) some of the difficulties of locating museum specimens are described as follows. "Many years ago I journeyed to Strassburg on purpose to examine certain specimens that had been described by Mr. de Loriol. The various curators whom I met at the Museum assisted me very willingly throughout three days searching for these specimens, but they could not be found, and I went on my way sorrowing. Arrived at Freiburg, I mentioned the fact to my friend, Professor Steinmann, who suggested that possibly the specimens might have been overlooked as being in the Cartier collection. At considerable expense and inconvenience I therefore returned to Strassburg, and sure enough, there were the specimens carefully obscured."

Murray :04, etc. Meyer (p. 419) briefly outlines the method used in the Field Columbian Museum, while Murray (v. l. p. 264) somewhat naïvely suggests that "As a rule it is of importance that the exact locality from which each specimen has been obtained should be recorded.... This does not apply to archaeological objects alone.... The date of finding or acquisition is often likewise of importance."

There are nevertheless a few papers which should be mentioned.

Hoyle, '91, described the cataloguing of specimens in the Manchester Museum and formulated a system of 'registration' in book form, and of 'cataloguing' through the use of cards. His registration catalogue corresponded to that designated in the succeeding pages as The Department Catalogue. It consisted of fourteen volumes bearing reference letters A-O, beginning with A-Mammals, B-Aves, etc., and ending with N-Mineralogy, and O-Anthropology. Each volume contained space for 12500 specimens and was ruled in perpendicular columns so that space for data concerning 'date,' 'name,' 'locality,' and 'remarks,' was afforded. When a specimen arrived at the museum, the first vacant number in the volume corresponding to the group to which the specimen belonged, was affixed to it and the data concerning it noted in the appropriate column. After the specimen was thus 'registered' (*i. e.*, our Department Catalogue) it was farther catalogued in what Hoyle described as the "Curators Catalogue" (*i. e.*, our Reference Catalogue) by means of which an official record of the contents of the museum arranged according to a natural classification, was maintained. This is very similar to that which I have termed The Reference Catalogue. It consisted of a buff 'family-card' $5 \times 3 \frac{1}{8}$ inches, on which the name of the family (*e. g.* Cidaridae) was written, a gray 'genus card' containing the generic name (*e. g.* Cidaris), and a white 'species card' having the specific name (*e. g.* hystrix) and the mode of preservation, the register number (*i. e.* department number), and locality.

The method of registration presents, in comparison with a card system, the usual disadvantages of the book catalogue as noted on a succeeding page. The absence of a practical means of cross indexing the various volumes by tabs and colored cards

representing systematic divisions, geographical distribution, type specimens, etc., is at once manifest. Furthermore no space is given for noting the authority for identification, date collected, etc., name of collector, etc., for all of which data provision should be made.

The "Curators Catalogue" may be criticized on this same basis. Moreover in a catalogue, the chief purpose of which is that of a reference or finding catalogue, there seems every reason for arranging the cards in alphabetical order in preference to classifying on a systematic basis. Hoyle, himself, in noting some objections to the decimal system proposed by Petrie in *Nature*, mentions the fact that "no specialist is ever satisfied with any other specialist's work." Furthermore unless arranged according to the alphabet as suggested under the Reference Catalogue, it would be of no value to the public. The cards adopted should naturally be of a standard size since odd sizes cannot be perfectly cut by reason of the expensive machinery used. Ordinary 'guide cards' would be much better than the 'genus' and 'family cards.'

Dorsey, '99, reviewed the method of cataloguing used in the Field Columbian Museum of Chicago. As suggested in a preceding footnote, this appears to be more or less of an heterogeneous arrangement of cards, books, and manilla envelopes, which could be much simplified.

Walton, :04, published a brief outline of the present paper noting the division into (a) The Accession Catalogue, (b) The Department Catalogue, and (c) The Reference Catalogue, as well as suggesting the general scope and methods of filing the cards employed in each.

Wray, :05, called attention to the adoption of the card system in the Perak Museum of the Federated Malay States, a result brought about by the unsatisfactory nature of the book method of cataloguing. A single type of card (3×5 inch) was used. This contained the following data: 'Accession No.,' 'Date when received,' 'Place in Museum,' 'Description of Specimen,' 'Where procured,' 'How obtained,' 'Presented by,' 'Bequeathed by,' 'Purchased from,' and 'Collected by.' Duplicate cards were made out, one set being filed numerically as a 'Register,' the other according to the arrangement of the specimens in the museum

(each museum case being given a number, and each gallery a letter, e. g. 17 F) as a 'Catalogue.' The 'Register' evidently corresponds to that which I have designated the 'Department Catalogue,' lacking the method of cross indexing by departments, marginal tabs, and colored cards (when desirable). The 3×5 inch cards used by Wray are too small, while the writing of two sets for each specimen nearly doubles the clerical work involved in the use of an Accession, Department, and Reference catalogue as noted in the following pages, since by the latter method a large number of specimens are usually transcribed on a single department and reference card. Space for certain valuable data is likewise omitted by Wray, something unavoidable however with the small card.

From the first it seemed evident that the card catalogue arranged in unit cabinet sections would furnish the most satisfactory solution of the problem. The value of such a system had long ago been recognized in connection with library and general business methods, where it rapidly displaced the bulky volumes formerly considered necessary to contain various records. The advantages resulting from the use of the card system are obvious, since (1) the required data are presented in a compact and easily accessible form; (2) the capacity is unlimited, useless records can be taken out or new ones added; (3) by varying the position of the tab¹ on the upper margin of the card, as well as by using cards of different colors, a variety of cross reference systems may be employed; furthermore, (4) the form of the card allows the condensation of matter which would extend across one or more pages in a catalogue.

The standard sizes of cards² manufactured in America, are 3×5 , 4×6 , and 5×8 , inches, and although other sizes could be made and used, it is well to adopt one of these, inasmuch as the regular card cabinet section can thus be employed as a unit and the special machinery used is particularly adapted for the three sizes. The 3×5 inch cards are too small, and for general purposes the 5×8

¹ The word 'tab' is the term applied to the projecting portion of the upper margin of the card.

² The 'standard size' (No. 33), adopted by the American Library Association in 1878 for library use, is 125×75 mm. ($2\frac{6}{8} \times 4\frac{5}{8}$ in.).

inch cards are too large and unwieldy. The 4×6 inch card, however, is of sufficient size to contain all necessary data, without being cumbersome in manipulation.

Card cabinets to contain the catalogues may be obtained in various sizes, but by the adoption of the 'unit' card index section containing six drawers adopted for the 4×6 in. card, future units may be added as occasion demands, and the cabinet is thus always complete.

Following a chronological order, the data which should be rendered accessible in an adequately catalogued collection, can be separated into three divisions. These are: (A) The Accession Catalogue, containing a general record of all material received by the museum. (B) The Department Catalogue, giving a complete history of each specimen or group of specimens, (a single species, acquired by each department. (C) The Reference Catalogue, having the names of all specimens belonging to each department, arranged alphabetically so that the final disposition of any desired specimen can at once be ascertained.

Of these, the Accession and Department catalogues are essential from a business as well as a scientific standpoint, while the Reference catalogue, although not a necessary requisite, will be found advantageous as a reference index to the specimens, particularly in the larger museums. With the exception of the one pertaining to accessions, which should be in charge of the director of the museum, each catalogue should be controlled by the head of the particular department with which it deals.

While the records considered necessary vary more or less in connection with the needs of the institution and department concerned, they can in general be reduced to the following tabular form, covering the data which may be required in Museums of Natural History.

A. Accession Catalogue (arranged numerically).

1. Accession number.
2. Date received.
3. Description.
4. How obtained.
 - a. Purchase (cost).
 - b. Gift.
 - c. Exchange.

- d. In trust.
- e. Museum collectors.
5. From whom received.
6. Address.
7. Transportation number.
8. Collector.
9. Locality where collected.
10. Date when collected (approximate).
11. Correspondence filed under.
12. Remarks.
13. Date of entry.
- B. Department Catalogue (arranged numerically)
 1. Department number.
 2. Accession number.
 3. Original number.
 4. Number of specimens.
 5. Sex.
 6. Stage of growth.
 7. Scientific name.
 8. Authority for identification.
 9. Date of identification.
 10. Locality where collected.
 11. Name of collector.
 12. Correspondence.
 13. Date when collected.
 14. Character of specimens.
 15. Remarks.
 16. Date of entry.
- C. Reference Catalogue (arranged alphabetically)
 1. Name of specimen (common name and scientific name,—genus, species,—listed on separate cards).
 2. Department number.
 3. Character of specimen.
 4. Location.
 - a. On exhibition. Case No.
 - b. In storage. Drawer No.
 5. Number of specimens.

The following suggestions have been found valuable in regard to the data and their arrangement on the cards.

A. ACCESSION CATALOGUE.

In this catalogue, all material ¹ received or collected at a particular time from a particular source, (an accession), is placed under a single accession number. Thus the catalogue will contain a record of each group of specimens coming into the possession of the different departments in the museums, and by means of a series of cross references, consisting of tabs arranged as indicated

FIG. 1.—Cards (4×6 in.) from *Accession Catalogue*. The position of the marginal tabs suggest the various 'departments' into which it is convenient to subdivide a small museum. The arrangement of data is here uniform for each department. A numerical guide card and year card are represented. The commercial (blue) ruling for guide lines is not reproduced.

in the accompanying illustration (Fig. 1), it will be possible to ascertain at any period the data concerning the accessions acquired

¹ While it is equally the same whether one specimen or one million specimens are received, the terms 'particular time' and 'particular place' are necessarily subject to considerable latitude in their interpretation. If certain systems of cross references are used it may be necessary to place a collection under several different accession numbers. For example, if cards of various colors represent geographical distribution (*e. g.* Nearectic, etc.), it would be necessary to use as many accession cards as there were regions represented in the particular collection.

by each department, whether they have been obtained by purchase, gift, exchange, through museum collectors, or in trust, and if by purchase, their cost, as well as the particular fund made use of in connection with their acquisition.

The disposition of each item on the card should correspond to its relative importance. In the following diagram (Fig. 1) a convenient arrangement is suggested.

Classification by Departments.—A classification by departments can be conveniently maintained by having tabs arranged on the cards in as many different positions as there are departments. Thus with $\frac{3}{4}$ inch tabs as in Fig. 1, eight departments may be tabulated.

Accession number.—This should occupy a prominent place, preferably the upper left hand corner, and in order that it may be easily noted, should be written in a large plain figure with black or red ink.² The numbers should be serially arranged in accordance with the date of arrival of the accession, and at intervals of one hundred cards, a numbered guide card of a particular color (*e. g.* dark blue) may be inserted. Where no previous catalogue of this nature has been kept, it may be well to have new accessions commence with a number sufficiently large (*e. g.* 1001) to allow the eventual cataloguing of former collections which have come into the possession of the museum² in a manner as nearly chronological as possible.

Date received.—The most convenient formula for expressing the date on which an accession is received, is the use of an Arabic numeral for the day of the month and a Roman numeral for the month, followed by the year (*e. g.*, 6-IX-1898 = September 6, 1898). The usual place for the date is the upper right hand margin. At the end of every year, a card can be inserted, on the tab of which the particular year is indicated (Fig. 1). Thus the mate-

¹ It is perhaps unnecessary to remark that in records of this nature india ink should always be employed and cards of the best quality be used. Inks made of aniline colors will fade within a few years.

² When accession catalogues have been maintained separately by the departments, the numbers in the new catalogue must be of a higher order than the sum of the previous ones used, provided it is desired to maintain the approximate chronological order.

rial obtained by the museum during any particular period is at all times readily ascertained.

Description of material.—The general nature of the consignment should be indicated, (*e. g.* archeological material, mammal skeletons, fishes) as well as the manner in which it is packed (number of packages, boxes, etc.). In this connection a record should also be kept as to whether the accession is received as a ‘purchase,’ ‘exchange,’ ‘gift,’ ‘in trust,’ or through ‘museum collectors.’ This can be readily accomplished by having the above words written on the card and placing a cross in the proper space at the time of cataloguing. When procured by purchase, the price should also be indicated.

From whom received.—The name and permanent address of the person sending the specimens, is to be noted here.

Transportation number.—It is often convenient to have a record of the number or numbers placed upon the consignment by the transportation companies, particularly in the event of breakage or loss of any of the contents of a package or box.

Name of collector.—Many collections are deficient in labels bearing accurate information, consequently it is advisable to ascertain the names of individuals concerned in collecting the specimens, so that if desirable, further data may be obtained. The address of the collector is to be noted, provided it differs from that of the locality where the collection was made.

General locality.—When the collection is a small one from a restricted locality, this can be readily indicated. If, however, a large amount of material is represented, the principal region or regions should be given.

Date when collected.—It is necessary to indicate merely the approximate time.

Correspondence.—In order to readily refer to correspondence, invoices, bills, and other memoranda relating to the accession, it is well to indicate the initial name or number, together with the year, under which they are filed.¹

Remarks.—Under this heading can be noted the condition of

¹ Madeley :04 presents an elaborate arrangement for the classification of office papers in Museums based upon a provisional decimal system. It seems unfortunate that the standard decimal system (Dewey) was not utilized.

the specimens whether or not the collection contains any forms of particular value (types, cotypes, etc.), as well as other general information.

General suggestions.—In order to record small collections, which may come directly to a department, blank cards may be provided for those in charge, and upon the arrival of such an accession, these should be immediately filled out and handed to the person keeping the Accession Catalogue. Blank cards to be similarly filled out and returned, can be sent to a person from whom an accession deficient in data is received. The system of cross references can be arranged to meet any demand. The method employed as noted above, appears adequate for ordinary purposes. Thus the name of each department is placed on a tab assigned to a particular position, and when the cards are filed, the accessions of a department will be indicated by the corresponding row of tabs. A further subdivision which may be applied to each department is in the use of colored cards. If for example the department of anthropology, possesses three separate appropriations upon which to draw for as many purposes, *e. g.*: (a) Explorations on the North Pacific Coast. (b) The purchase of Michigan Antiquities, and (c) Collections illustrating the life of the Aztecs; all accessions in Anthropology of (a) obtained by purchase, or at the expense of the museum from the one fund, can be placed on salmon colored cards, while similarly all accessions of (b) and (c) obtained from the corresponding appropriations can be placed on buff and blue cards, respectively. Thus at any time the general condition of the various funds of the department can be readily ascertained. Geographical Distribution (*e. g.* nearctic, neotropical, etc. may be represented in a similar manner.

Placing numerical guide cards at intervals of every hundred cards, will greatly facilitate finding any desired accession number. In a catalogue where the width of the tabs makes it possible to have an area at the right from which no tabs project, it is convenient to place the numerical tab as in Fig. 1.

Inasmuch as the majority of accessions cover a quantity of specimens, such a catalogue as the one described can be easily maintained, and the advantages which result through always having correctly classified data accessible are an important item in the making up of reports.

B. DEPARTMENT CATALOGUE.

The department catalogue has the cards arranged numerically in chronological order and should contain concise information concerning each specimen, or group of specimens belonging to the same species which were obtained at a definite time and place. In the smaller museums the material may be grouped under departments of Zoology, Botany, Palæontology, etc. as represented by

ZOOLOGY DEPARTMENT CATALOGUE KENYON COLLEGE MUSEUM		Number of Specimens
Dept. No. 896		3
Acc'n No. 42		Sex 2 ♂ 1 ♀
Orig. No. 17, 18, 19		Growth Adult
SCIENTIFIC NAME <i>Salvelinus fontinalis</i> (Mitch.)		
IDENTIFIED BY W. Ambler.		DATE OF IDENTIFICATION 21-VII-1903
LOCALITY WHERE COLLECTED Lake Umbagog, Canada.		
COLLECTOR W. Ambler, Cleveland, Ohio.		DATE WHEN COLLECTED 21-VII-03
CHARACTER OF SPECIMEN 2 1/2% Formalin 3 days, then transferred to Formalin Alcohol		
CORRESPONDENCE Ambler #248 '03. Smith #362. 03.		
REMARKS #17 & 18 taken on a "Montreal" fly. #19 on a "Parnachee Belle." #19 - ♂ - weighed 8 lbs.		
Kenyon College Museum		DATE OF ENTRY 26 IX-03 1903-3

FIG. 2. *Department Catalogue*, Zoology, cards (4×6 in.), showing arrangement of data, and method of systematic cross indexing by position of small marginal tabs (e. g. Fishes, Amphibians, Birds, etc.). The color of the card furnishes a second system of cross reference illustrating the geographical distribution (e. g. white=Knox Co. Ohio; salmon=Ohio exclusive of Knox Co.; buff=all territory outside of Ohio. Numerical and year guide cards are also shown.

the Accession Catalogue (Fig. 1) each with its separate department catalogue. In the larger museums, however, it will often be advisable for each department to have several sub-departments or group catalogues having the rank of departments. For example the department of Zoology may maintain catalogues of Vertebrate and Invertebrate Zoology, or of Pathological preparations, Neurological specimens, etc., or on a systematic basis it may have a catalogue for each phylum or branch of the animal and plant kingdoms. The cross-reference classification by means

of tabs, however, as represented in the department catalogue (Fig. 2) will usually be sufficient in the smaller museums.

Here the arrangement of data will meet the needs of the average department. Near the middle of the upper margin of the card should be placed the name of the particular department to which it refers, together with the name of the institution. If the department is large so that group catalogues are necessary, this should also appear, *e. g.* Zoology Department Catalogue, South African Museum, Birds.

Systematic cross reference classification by tabs.—The classification adopted will depend on the nature of the catalogue. If half-inch tabs are used on a 6 inch card twelve divisions are possible which in the zoological department cards above consist of 1. Mammals, 2. Birds, 3. Reptiles, 4. Amphibians, 5. Fishes, etc. 6. Tunicates, 7. Echinoderms, 8. Articulates, 9. Mollusca, 10. Vermes, 11. Coelenterates and Sponges, and 12. Protozoa. For certain reasons an arrangement in the reverse order would be more logical. In a botanical catalogue one could choose between the older classification of Eichler, 1883, where a somewhat arbitrary grouping gives us the 1. Algae, etc., 2. Lichens, 3. Bryophytes, 5. Ferns, 6. Gymnosperms, and 7. Angiosperms, and the recent one of Engler,¹ 1904, with thirteen groups and 35–40 classes. The classification adopted in the other department catalogues, Palæontology, Anthropology, etc., will in a similar manner represent to a more or less extent the personal equation of the curator under whose supervision they are maintained.

Geographical cross reference classification by colors.—Geographical distribution may easily be indicated by having cards of a particular color represent definite areas. Such an arrangement does not appear to render the card system so complex that it is disadvantageous, although over-systematizing is a danger which confronts any general method.

If the collection is local in its character, the majority of specimens being obtained from a given state, an excellent arrangement is that of having all specimens from the county in which the collection is located, catalogued on white cards; all specimens from

¹ Engler, A. 1904. Syllabus der Pflanzenfamilien, 4th edition, Berlin.

the state excluding the county, catalogued on buff colored cards while other specimens from localities outside of the state would be catalogued on salmon¹ colored cards. In the larger museums where collections are made up of specimens from different parts of the world, certain colors can be used to represent various regions, (nearctic, neotropical, palæarctic, etc.). Types, cotypes, etc. could be catalogued on cards having the right half red, the left half in accordance with the color representing the particular geographical distribution.

Department number.—A single department number will cover a series of specimens of the same species, which have been obtained at the same time in a particular locality. This method is more satisfactory than assigning a number to each individual specimen inasmuch as time would be lost by such a method and no particular benefits result. Should the occasion arise at a later period, a separate number may be assigned to any specimen.

Accession number.—This should be indicated on the card, in order that general information regarding the collection may be obtained at any time. The accession number and department number may be indicated in connection with the specimens as a fraction (*e. g.* $\frac{294}{896}$) whose numerator represents the accession number, and denominator the department number, or as a decimal (294.896), or the accession number may be entirely omitted from the specimens, since a reference to the department card will furnish it when desired.

Original number.—This is the number which a specimen may possess on its arrival. Often times it will be the field number placed on it at the time when it was collected or it may refer to a number assigned in a previous collection.

Number of Specimens.—This is essential in order to know the amount of material in any collection. When duplicates are used for exchange, the former number should be crossed out and the new one substituted, while, at the same time, a reference number referring to the exchange may be added.

Sex.—The sex can be designated by the conventional signs, ♂, ♀, ♂, representing, male, female, and hermaphrodite forms.

¹ These colors are suggested inasmuch as the majority of manufacturers of cards in the United States make them in four standard colors, white, buff, salmon, and blue.

Growth.— Embryo, young, adult. Measurements, weight, etc.

Scientific name.— In systematic work of this nature the generic followed by the specific name must be used.

Authority for identification.— This is an important item which is too often omitted from the average museum catalogue. If a specialist subsequently verifies a name previously given, this should also be noted. In case the name is found incorrect a new card is to be written.

Date of identification.— It is well to have this information available.

Locality where collected.— Too much care cannot be exercised in accurately indicating the locality from which specimens are obtained. It is safe to say that every museum has among its collections material which would be of the utmost value, provide the locality, even within a few hundred miles, could alone be ascertained. Unfortunately in most cases of this kind, it is the collector who is at fault. The cataloguer must rely on his data.

Name of collector.— Inasmuch as the 'personal equation' must be taken into consideration, the name of the collector is indispensable. Furthermore it often furnishes a clue to the history of a specimen when all other means have failed.

Correspondence.— Letters, etc., pertaining to the particular specimens can be indicated as suggested in the accession catalogue.

Date when collected.— This can be indicated as in the accession catalogue.

Character of specimen.— The nature of a specimen, whether a skeleton, an anatomical preparation, a mounted skin, etc., should be given. If preserved in a special manner it is well to indicate the formula, *e. g.* 5% formalin; 70% alcohol; killed and hardened in chromosmic 3 hours, preserved in 95% alcohol, etc. Explicit notes here will in the end well repay the time spent in making them. The back of the card will afford additional space, if needed.

Remarks.— This space is only to be filled out when there is something of particular importance to be noted concerning the specimen, and of a nature which cannot be covered under the other records.

(*e. g.* opossum, see *Didelphys*. Furthermore, the reference card indicates the number of specimens of each species on exhibition, or in storage, giving the number of the case or storage drawer in which they are to be found.

A single card will usually contain the data concerning all material belonging to a particular species, consequently the time involved in maintaining a Reference Catalogue is an unimportant item, the data (except location of specimens) being readily obtainable at any time from the Department Catalogue.

The Reference Catalogue should be located in the principal room containing the collections to which it refers, where it will be readily accessible to each of the three classes of people for which a museum primarily exists: (a) the specialist, (b) the amateur, and (c) the general public.¹

One method for arranging the data for a reference catalogue, is shown below (Fig. 3).

Systematic Cross Reference Classification by means of Tabs.—

An excellent method which meets the usual requirements, is that of having the tabs arranged as in the Department Catalogue. Geographical cross reference by colors cannot be used inasmuch as one card will often contain specimens from widely separated localities.

Name of specimens.— Both the scientific name and the common name should be given, the former on the card containing the data, the latter on a separate card referring to the generic or specific name of the particular species. (*e. g.* Brook Trout, see *Salvelinus fontinalis*, Pickerel, see *Esox*, various species). By placing the common name on cards having a particular color they may be readily distinguished.

Department numbers.— Inasmuch as the department numbers will be placed on all material, this will serve to establish the identity of the specimen sought, and in case further data is required, the corresponding number in the Department Catalogue can be consulted.

Character of Specimens.— In alcohol, mounted, skeleton, skin, etc.

¹ See Bather, F. 1904. The Functions of a Museum; a Re-Survey. Pop. Sci. Mo., v. 64, p. 210-218.

Exhibition, Storage, etc.—The location of a specimen is indicated by the particular column under which it is placed. If on exhibition, the number or letter of the case¹ will be given. Alcoves or galleries may be designated by letters. If on storage, the location will be similarly designated.²

Total number of specimens.—These columns will indicate the total number of specimens of a given species³ belonging to the museum. If customary for the institution to make many exchanges a balance column may be added, which will show the material on hand as well as that exchanged.

The necessary steps incident to the cataloguing of a collection which has been received may now be outlined as follows.

- a. Catalogued as an Accession.
- b. Placed in charge of a department.
- c. Catalogued in a Department Catalogue and given a department number.
- d. Identified and labelled. This data then added to the department card.
- e. Placed on exhibition or in storage.
- f. Reference Catalogue filled out from data on department card.

The first three items should be attended to at once. A considerable interval will often elapse however before final desposition of the specimen is made.

It would seem that only two general objections can be urged against any system similar to the one proposed, namely; (1) The plea that too much time will be occupied in the preparation of such a catalogue, and (2) a certain inherent condition which precludes the adoption of new ideas. The only answer that need be given

¹ If the case is a large one and contains a quantity of specimens, it may be convenient to indicate the number of the shelf, etc.

² The practice of having separate department catalogues for the exhibition and storage series, is to be criticised. Different species thus possess identical numbers, and when it becomes necessary to transfer a specimen which has outlived its usefulness for exhibition purposes, to the storage collection, complications at once ensue.

³ When it becomes desirable to include a collection in a guide book to the museum or to issue a general catalogue of the specimens, the question involved is merely that of selecting the data here classified.

to the former is that the space occupied by a specimen unworthy of being properly recorded, is more valuable than the specimen itself, while to the latter no reply is needed.

It is unnecessary and often inadvisable to at once reduce former catalogues to a card system. Incoming material can be catalogued on the cards, and as the opportunity allows, data from the previous records can be transferred to cards.

Conservatism ¹ is a valuable factor in connection with all scientific work. It has its limitations however, and in order to make definite progress in any direction, old methods must give place to new ones — the fittest will survive.

KENYON COLLEGE, GAMBIER, OHIO. Dec. 1, 1906

¹ Meyer, (:00-01) in his excellent review of the museums of the eastern United States depreciates the lack of uniformity among the various American museums in respect to the installation of the collections. In reply to this criticism however it might well be suggested that to a certain extent at least this lack of uniformity is an indication of healthy activity. It is not considered necessary in this country to cling to traditional ideas which are too often brought to the attention of one visiting European museums. New methods of dealing with well known problems are sought and evolved — and if their value is proven — they are adopted.

Since the above paragraph was first written (Aug. 1901) Dr. Jordan in his presidential address before the members of Sigma Xi (Dec. 31, 1903) expressed similar ideas regarding this tendency which he had noted. "In France, in Germany, even in England, the tradition of great names, the customs of great museums, largely outweigh the testimony of the things themselves.—The willingness to adopt new ideas is, broadly speaking, in proportion to the spirit of democracy by which a worker is surrounded."

BIBLIOGRAPHY

DORSEY, G. A.

- '99. (The Cataloguing of Museum Specimens), *American Anthropologist*, n. s., 1, p. 473.

MEYER, A. B.

- : 00-01. Ueber Museen des Ostens der vereinigten Staaten von Amerika. R. Friedlander und Sohn, Berlin. (Also see translation in Report of the U. S. National Museum for 1903, p. 311-808 with 40 plates).

HOYLE, W. E.

- '91. The Registration and Cataloguing of Museum Specimens. Annual Report of The Museums Association, Cambridge, England.

MADELEY, CHAS.

- : 04. The Classification of Office Papers. *Mus. Jour.*, v. 4, no. 3, p. 73-95.

MURRAY, DAVID.

- : 04. Museums, Their History and their Use. 3 vols., J. MacLehose and Sons, Glasgow, Scotland.

WALTON, L. B.

- : 04. The Cataloguing of Museum Collections. *Ohio Naturalist*, v. 4, no. 3, p. 62.

WRAY, L.

- : 05. A System for the Registration of the Contents of Museums. *Museums Journal*, June, p. 407-412.