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Specification of Subject of Reader's Query : Reader-Computer Dialogue.
(Non-conventional methods in document retrieval. 20).

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[Reader's query statement may not specify coextensively the subject of his interest at the moment. He may approach the document finding system by the name in the natural language of any one of the component ideas of the subject he may be interested in at the moment. The document finding system should have the built-in facility to enable the reader enter the system *via* the name of the component idea he brings up; help him recall other component ideas he may be interested in; help him to formulate the subject coextensively given only some of its fragments; help him structure and express the subject of his interest at the moment in the same manner as the subjects of documents have been structured and expressed; and present to him in a small range of scanning all the entries for the documents on the subject of his interest at the moment. The features of S R Ranganathan's document finding system model, which provides these facilities, are briefly described. The need for a dialogue between reader, documentalist, and document finding system in specifying the subect of reader's query is indicated. Two methods of conducting this dialogue between the reader and the computer in a computer-based document finding system are described. The method developed earlier displays to the reader parts of the schedules and the alphabetical index to it in the scheme for classification used and the dialogue is based on this. In the second method, appropriate parts of the alphabetical index to the subjects of the documents in the main part of the catalogue-on-tape is used. The alphabetical index is derived by the POPSI method — Postulate-based Permuted Subject Indexing System. The relative advantages of the latter method and its likely impact on the design of document finding systems are indicated.

1 Factors Affecting Document Finding System

11 Two Major Factors

A priori considerations as well as practical experience in the working of document finding systems indicate that the two major factors affect to be their design, development and using.

1 Attributes of the universe of subjects; and
2 Reader's psychology.

This paper will be mainly concerned with reader's psychology, particularly his psychology in searching for information, and his attitude and reaction to the use of library tools — such as classification, catalogue, and documentation list —, dialogue with the documentalist, the feedback etc.

12 Other Attributes of Reader

Some of the other attributes of the reader about which the documentalist might find it helpful to know are:

1 The specific purpose for which the information is needed at a particular time — for example, for learning about a subject as a basis for research, or to make a write-up for a report, or for discussion in a seminar, etc;
2 His intellectual standard — that is, whether an undergraduate, a postgraduate, a post-doctoral fellow, a teacher etc;
3 The patterns, if any, in his information gathering and document-usage habits;
4 His preference for a particular variety of documentation service — for example, state-of-art report, abstracts, bibliography etc;
5 His preference for a particular kind of presentation of the text of a document.

A knowledge of these attributes of the reader on the part of the documentalist will make the service more individualised and acceptable to the reader. Let us assume here that the documentalist has already made the necessary studies of the readers to gather such knowledge about each of them.

2 Query Statement by Reader

A reader usually expresses his information need in the form of a statement in a natural language. The query statement may specify one or more of the following attributes of the documents that may satisfy his information needs:

1 Subject of interest at the moment;
2 Name of author(s) — Personal or Corporate;
3 Language of exposition;
4 Form of publication;
5 Published during a particular period;
6 Published in a particular place;
7 Published in a particular series;

8 A particular variety of document, such as, book, article, in a periodical, technical report, patent, thesis, and standard; and
9 Bearing a particular code number.

The reader's statement can be fairly specific about the attributes 2 to 9. It is usually the query statement about a subject that raises problems.

This paper deals with the specification of the subject of a reader's query in a computer-based document finding system.

Subject Analysis and Structuring

The document finding system should facilitate the search and selection of entries for documents on a specific subject to any pre-determined degree of pin-pointedness, exhaustivity, expeditiousness, and economy of operation. The efficacy of the system in this direction will be improved if the structuring of the subjects of the documents forming the input to the system is similar in pattern to the structuring of the subject of the reader's query. Then the matching of the structures of subjects in the two sets will be relatively more precise and economically done (5, 6). In Sec 78 of Paper Y in this issue and elsewhere (4, 7, 8) it has been shown that a freely-faceted classification model in which the pattern of assembling components of a subject — that is, the Facet Syntax — is made parallel to the Absolute Syntax of Intellection and is guided by a hierarchy of normative principles, is a helpful model for organising the data base in a document finding system. Therefore, it is preferable to secure the same pattern of structuring the subject of a reader's query.

4 Problems in the Specification of the Subject of Query of Reader

41 SUBJECT

A subject embodied in a document is a systematised body of ideas whose extension and intension are likely to fall coherently within the field of interest and comfortably within the field of intellectual competence and inevitable specialisation of a normal person. Therefore, a precise specification of a subject of interest to a reader at the moment would consist in

1 Recognising each of the component ideas in the subject;
2 Recognising the correct degree of interrelation and mutual filiation among them;
3 Expressing the totality of the subject coextensively and uniquely — that is, free of homonym and synonym;
4 Determining the relation and mutual filiation of the subject as a whole with other subjects; and
5 Associating with the subject of the query with other subjects according to their mutual filiation in order to recognise a field of likely interest to the reader.

42 QUERY STATEMENT BY READER

An idea or a combination of ideas — that is, a subject — is about an entity, concrete or conceptual. The reader's grasp of the idea may not be perfect for one reason or the other. For example, it may be a new, just-emerging idea or subject. Or his ability to use the available words of the language to express the idea or subject may not be perfect. In a given context there may be a combintaion of two or more of these deficiencies. As a result, the reader's statement may not express coextensively the subject of his interest at the moment.

The resulting deviation of the query statement by the reader from his actual subject interest at the moment leads to inefficiency — particularly noise and leakage — in document selection in answer to the query.

43 FOCUS ON A SPECIFIC IDEA

A reader may recall at the moment only one or a few of the component ideas reflecting only a few aspects of the subject in which he may be deeply interested. We can consider three varieties of situations here:

1 Among the component ideas in a subject, a specialist may, at the moment, be working intensively on one or only a few of them. As a result of such specialisation-at-the moment, in his search for information on the subject of his interest, he may more often recall and use the name of the component idea he is working on at the moment. Different readers may be specialising at-the moment on different facets of one and the same subject. Therefore, in their search to find documents on the subject of their respective interests, the name of the facet of interest at the moment will feature predominantly. Such a concentration of attention may shift from one facet to another from time to time even with the same specialist even though the totality of interests of a specialist is likely to fall generally on ideas going with a particular basic subject.

2 A specialist may continuously — and not temporarily — concentrate attention on a particular facet of a subject. For example, "Raman spectroscopy" in Physics of light; "Antibiotic treatment" of disease in human beings; and "Methods of treating alcoholic addiction" is Sociology and Social work Here again, the specialist is likely to use in his query statement when using the document finding system the name of the facet he is interested in.

3 Area studies constitute a variety of specialisation on a particular component idea occurring in different subjects. For instance, a specialist on China may want information on the state of the different natural sciences, the arts, education,

geography, history, politics, economics, sociology, and law in China. Naturally, in his approach to the document finding system the term 'China' will be frequently and predominantly occurring in his query statement.

4 Similar to area studies is the interest on a particular idea irrespective of the subject-context in which it may occur. For example, "Leisure", "Peace", "Management", and "Symbolism" are such ideas. In such a case, also the reader is likely recall frequently the name of the idea of interest to him.

5 Conventional Dialogue

51 No Difference in the Mode of Thinking

The way in which a reader expresses a query about a subject may not coincide with the facet syntax used in the structuring of subjects of documents. This may be due to

1 Differences in the linguistic syntax (11); and/or

2 The variety of specialisation on a specific component idea as mentioned above.

These variations do not imply any basic deviation from the Absolute Syntax of Intellection (11) among specialists. What is needed is a mechanism built into the document finding system which will

1 Enable the reader to enter the system *via* the name of the component idea he brings up;

2 Recall to his mind other component ides he may be interested in;

3 Help to formulate the subject (s) coextensively, given only some of its fragments;

4 Help to structure and express the subject of his interest-at-the moment in the same manner as the subject of documents have been structured and expressed; and

5 Bring together within a small range all the entries for the documents on the subject(s) of his interest-at-the moment.

52 An Available Model

S R Ranganathan has suggested a system for document finding that takes into consideration the normal mode of thinking among a majority of normal intellectuals (that is, Absolute Syntax of Intellection), the varied approaches of readers arising from their respective specialisation-at-the moment, and other features of the psychology of readers when searching for information on a subject. The system consists of a catalogue/documentation list divided into two parts:

1 Classified Part; and

2 Alphabetical Part.

In the classified part the entries for documents forming the input

to the system are arranged in a classified sequence — that is, according to the ordinal value of the digits in the Class Number. The subjects of the documents are classified in depth according to a freely-faceted scheme for classification based on explicitly stated set of postulates and other guiding principles (12). Each entry is fitted with a suitable feature heading — that is, representation of the subject in the verbal plane, structured as in the Class Number. The helpfulness of the classified arrangement to the reader has been dealt with in detail elsewhere. The alphabetical part gives the alphabetical index to the names of authors, collaborators, series, subjects etc of the documents listed in the Classified Part. The index to subjects are derived on the basis of a systematic procedure, such as the Chain Procedure or its modified versions (1, 10).

53 Stages in the Specification of the Subject of Reader's Query

Using the document finding system of the kind mentioned above, the precise formulation of the subject of a reader's interest at-the moment may involve the following stages:

1 Rough enunciation, by the reader, of the subject about which he needs information;

2 Step by step facet analysis (12, 13) of the subject by the documentalist;

3 If found helpful, display of parts of the schedules of a well structured scheme for classification of the subject concerned in order to provide cues to help the reader recall as many component ideas as possible in the subject of his interest.

4 Consulting the alphabetical subject index to the subjects for a closer enunciation of the subject and to pick out the class number for it;

5 Landing the reader in the classified part of the catalogue or documentation list in the pack of entries bearing the class number (picked up from the alphabetical part) covering or coming close to the subject of the reader's interest-at-the moment;

6 Reader browsing among the pack of entries arranged in a classified sequence and provided with feature headings, displaying the subjects in a helpful sequence according to their mutual filiation;

7 Narrowing down the search range to as small a pack of entries as possible on the basis of the feedback while browsing; and

8 Selecting the entries for documents of maximum relevance to the reader's subject interest.

54 Need for a Dialogue

It will be noted from the discussion in Sec 53 that a dialogue between the reader and the documentalist and aided by

the document finding system is developed. Such a dialogue is usually found helpful in a more precise formulation of the subject of the query. Specifically it can help:

1 The reader to

11 Recall, as may as possible, the component ideas of the subject of his interest at the moment.

Annotation.— If the number and variety of ideas making up the subject are beyond the "span of immediate recall" it would be comparatively more difficult for the reader to remember them all. The time lapse between the stimulus to know and the expression of the need and other psychological characteristics of the reader also influence the situation.

12 Conceptualise the component ideas in such a way as to secure coextensiveness between the verbal plane and the ideas denoted by it; and

2 The documentalist to

21 Grasp precisely and unerringly the reader's subject interest at the moment;

22 Supply any missing facet in the reader's query such that the document selection becomes pinpointed;

23 Arrange the component ideas of the subject derived during the dialogue in a sequence to represent nearly coextensively the reader's subject interest at the moment;

24 Transform the facet-analysed query into the language of the document finding system; and

25 Modify the search strategy, if necessary, on the basis of the continuous feedback arising at the different stages of the interaction between reader, documentalist, and the document finding system.

6 A Computer-Aided System

61 Features

For use in our feasibility studies on the development of a computer-aided integrated document finding system incorporating a freely-faceted version of the Colon Classification, a program-package has been compiled (3). Most of the programs have been successfully tested. The main facilities and features of the integrated document finding system are as follows:

1 Retrospective search for entries of documents relevant to a reader's query about a subject in a catalogue-on-tape;

2 Selective dissemination of information based on a reader profile catalogue-on-tape;

3 Selection of documents by name of subject, author, collaborator, series, etc, from the catalogue-on-tape;

4 Reader profile catalogue in which the subject of interest to the reader may be in the form of class number only, or feature heading only, or class number and feature heading;
5 Acceptance of reader's query about a subject in the form of kernel terms in random sequence;
6 Replacement of non-standard terms, if any, in the name of the subject in the query by standard terms in the classification schedules-on-tape;
7 Rearrangement of the kernel terms of a subject in the facet structure sequence using the classification schedules-on-tape;
8 Assembly of the components of class number for a subject of document or of query using the schedules of Colon Classification-on-tape;
9 Translation of class number into kernel terms to form a structured feature heading;
10 Generation of alphabetical index to subjects of various kinds, such as POPSI, KWIC, and KWAC on the basis of the feature heading;
11 Different formats of the main entry in the output;
12 Output on lineprinter, punched card, and magnetic tape;
13 Updating the catalogue-on-tape, the catalogue of reader profiles-on-tape, and classification schedules-on-tape;
14 Direct reader-computer "dialogue"; and
15 Guidance by computer to help readers to use the system.

The programs were prepared in Autocoder language for the IBM 1401 computer. Some of the programs have also been prepared in PLAN language for the ICL computer 1900 series. The design of the system is versatile enough for adaptation to suit variations of the document finding system.

In the succeeding sections, two approaches to designing the reader-computer dialogue for specification of the subject of interest to the reader at the moment, are described. The method used earlier is described first and then the new approach.

7 Dialogue Method 1

71 Input

The following are the inputs on tape:

1 Catalogue-on-tape of the documents included in the document finding system. This catalogue consists of the classified part only and is prepared in the manner described earlier (15).
2 Schedules of the scheme for classification used for classifying the documents forming the input to the system. A freely-faceted version of Colon Classification was used in our studies.
3 Alphabetical index to the schedules of the scheme for classification (*See* Paper Y in this issue).
4 Text for use in the dialogue.

72 START

To call the Dialogue program the reader types on the console typewriter the word "DIAL". It can be any other suitable word or symbol. The computer types out on the console typewriter (or displays on the CRT, if available) the following message

---

I AM READY FOR THE DIALOGUE TO HELP YOU SPECIFY YOUR SUBJECT INTEREST AT THE MOMENT.
PLEASE RECALL AS MANY OF THE COMPONENT IDEAS IN YOUR SUBJECT AS POSSIBLE.
NOW TYPE ON THE CONSOLE TYPEWRITER (CT) A TERM IN THE NAME OF THE SUBJECT OF YOUR INTEREST.

---

73 DISPLAY OF TERMS IN THE NAME OF SUBJECT

Let us suppose that the reader is interested in the subject "Effect of exercise on blood circulation". Let us also suppose that he recalls first the idea "Circulation". He, therefore, types on the CT the term 'CIRCULATION'. The computer scans the alphabetical index to the schedule and displays on the CT all the Basic Subjects with which the term 'CIRCULATION' may be found associated. This display is in the following form:

CIRCULATION
1 2 LIBRARY SCIENCE (BS) (1MP1);6
2 2V LIBRARY SERVICE (BS) (1MP1);6
3 D2 BUILDING ENG (BS) (1MP1);93
4 L MEDICINE (BS) (1MP1);36
5 X ECONOMICS (BS)(1MP1);6

THE IDEA YOU TYPED IN OCCURS IN ASSOCIATION WITH EACH OF THE DISCIPLINES MENTIONED IN COLUMN 3. CHOOSE THE SUBJECT YOU ARE INTERESTED IN AND TYPE ON CT THE SERIAL NUMBER GIVEN AGAINST IT IN COLUMN 1.

The computer adds a serial number to each entry as it displays. These serial numbers are not given in the entries in the alphabetical index to the schedules.

74 FURTHER SPECIFICATION

The reader types in the serial number '4'.

The computer scans the schedules of the scheme for classification for Medicine and displays as shown below a block of terms

starting with 'CIRCULATION', given in the schedule.

```
1     ;36     CIRCULATION
2     ;361    MICROCIRCULATION
3     ;363    CAPILLARY EXCHANGE
4     ;367    HEMODYNAMICS

CHOOSE THE IDEA YOU ARE INTERESTED
IN AND TYPE IN THE SERIAL NUMBER
GIVEN AGAINST IT IN COLUMN 1. YOU
MAY RECALL ANOTHER IDEA IN THE SAME
SUBJECT. TYPE IT ON CT. OTHERWISE
TYPE 'OVER'.
```

Let us suppose that the reader is interested in "MICRO-CIRCULATION". He would then type on CT the serial number '2'.

He may recall other ideas in the subject of his interest at the moment. The "Dialogue" can be continued until he types in 'OVER' or until the scanning of schedules for any term fails to match the given term in the query statement of the reader. This may indicate a new idea not included in the schedule. The schedules may then require updating.

75 ALTERNATE TERM

A reader interested in the subject "Circulation of blood in human body", may bring to the document finding system a term that may be a synonym to the term 'CIRCULATION'. Let us say, he types in 'FLOW' on the CT. The computer scans the alphabetical index to the schedule-on-tape as before. The index is structured to include true synonyms and near synonyms. Now the display takes the following form:

```
FLOW
1     B7      MECHANICS (BS) (1MP1);3
2     L       [CIRCULATION] MEDICINE (BS)
                (1MP1);36
3       ..          ..    (CPI);b733

THE IDEA YOU TYPED IN OCCURS IN
ASSOCIATION WITH EACH OF THE DISCI-
PLINES MENTIONED IN COLUMN 3. CHOOSE
THE SUBJECT YOU ARE INTERESTED IN
AND TYPE ON CT THE SERIAL NUMBER
GIVEN AGAINST IT IN COLUMN 1
```

The further steps will be similar to those mentioned in Sec 74.

76 BROAD SUBJECT

A reader may bring in the name of a broad subject such as that denoted by a Basic Subject. Suppose that he types in 'MEDICINE'. The computer scans the alphabetical index to the schedules and displays as follows:

```
MEDICINE
I     L      MEDICINE (BS)

THIS IS TOO BROAD A SUBJECT. THE
NUMBER OF REFERENCES IS LARGE.
NAME THE PARTICULAR ASPECTS OR IDEAS
WITHIN THE SUBJECT YOU ARE INTE-
RESTED IN
```

77 STRUCTURING OF SUBJECT AND ASSEMBLY OF CLASS NUMBER

It may be noted that simultaneously with the display of schedules on CT and selection of terms by the reader, the necessary elements for structuring of the components of the subject of interest to the reader in a preferred sequence and/or assembly of the digits for the component ideas in a preferred sequence to form a class number, are made available. The procedure for structuring of the subject in the Verbal Plane and/or assembly of class number for it by computer has been discussed in Paper Y in this issue.

8 Dialogue Method 2

81 BASIS

The second method for conducting the dialogue is a recent development based on the Postulate-based Permuted Subject Indexing System (POPSI). This method of structuring the component ideas in a subject in a preferred sequence and expressing it in the words of a natural language is based on the principles for facet sequence and the Postulational Method of Classifying of the General Theory of Library Classification (12). The details of POPSI and its helpfulness in document finding are given in other papers (1) and in Paper ZE in this issue.

82 PARTS OF THE CATALOGUE-ON-TAPE

821 *Classified Part*

Each subject of each document forming the input to the system is classified according to the Postulational Method of Classifying (13) upto and including step 5, that is Transformed Title in Standard Terms. It may be recalled that the structuring of the subject in the verbal plane arrived at this step using a freely-faceted scheme for classification can be done by the computer, given the kernel terms of the subject and the schedules of the scheme for classification (9). The name of a subject structured in this way can also be used as a Feature Heading (2. 14) in the

catalogue. The necessary bibliographical details of each of the documents classified is also given in the entry. In the classified part of the catalogue the main entries may be arranged alphabetically by the name of the subject in the verbal plane. Obviously, this will scatter the related main subjects according to their names. For example, if the schedule of Basic Subjects of Colon Classification is used. the sequence of some of the Main Subjects will be as follows:

AGRICULTURE	GEOGRAPHY
ANIMAL HUSBANDRY	GEOLOGY
BIOLOGY	HISTORY
BOOK SCIENCE	LAW
BOTANY	LIBRARY SCIENCE
CHEMISTRY	LITERATURE
EDUCATION	MEDICINE
ENGINEERING	SOCIOLOGY
FINE ARTS	ZOOLOGY

Such an arrangement of the Main Subjects will not be helpful in browsing. Therefore, it has been found helpful to assign each subject, using the schedules of the scheme for classification, its Basic Subject number and, if necessary, the number for the first isolate facet. The remaining components in a subject are not given any notation. Here is a specimen of such a main entry in the classified part of the catalogue.

I,0Z;3
BOTANY, PLANT; PHYSIOLOGY-METABOLISM-NITROGEN
HEWITT and CUTTING, *Ed* RECENT ASPECTS OF NITROGEN METABOLISM IN PLANTS. 1968.

The entries can then be arranged by the Class Number. Related Main Subjects will be brought together. The list of Main Subjects given above, will now get arranged as follows if Colon Classification is used:

2	LIBRARY SCIENCE	KX	ANIMAL HUSBANDRY
3	BOOK SCIENCE	L	MEDICINE
D	ENGINEERING	N	FINE ARTS
E	CHEMISTRY	O	LITERATURE
G	BIOLOGY	T	EDUCATION
H	GEOLOGY	U	GEOGRAPHY
I	BOTANY	V	HISTORY
J	AGRICULTURE	Y	SOCIOLOGY
K	ZOOLOGY	Z	LAW

822 *Alphabetical Part*

From the Feature Heading, the computer generates the permuted subject index, arranged alphabetically in the alphabetical part of the catalogue. From the Feature Heading for

the subject mentioned in Sec 821 the following permuted subject headings will be generated:

METABOLISM-NITROGEN/BOTANY, PLANT; PHYSIOLOGY-NITROGEN/BOTANY, PLANT; PHYSIOLOGY-METABOLISM-PHYSIOLOGY-METABOLISM-NITROGEN BOTANY, PLANT; PLANT; PHYSIOLOGY-META BOLISM-NITROGEN/BOTANY,

It may be noted that the indicator digits of the Colon Classification are retained with their respective ordinal values, both in the Feature Heading and in the permuted subject indexes. This is found helpful in bringing relatively closer together, even in the alphabetical arrangement, related ideas in a subject than is possible in a strict alphabetical arrangement of the terms only.

The appendix to this paper gives an illustrative list of main entries and the subject headings derived by the POPSI method.

83 START

Similar to that described in Sec 72.

84 DISPLAY OF PART OF ALPHABETICAL SUBJECT INDEX

Let us suppose that the reader is interested in the subject "Spoilage of food by bacteria". Let us also suppose that he recalls first the idea "BACTERIA" and, therefore, types on the CT the term 'BACTERIA'.

The computer scans the alphabetical part of the catalogue-on-tape and displays on the CT entries under BACTERIA such as the following:

---

1 BACTERIA; GENETICS/MICROBIOLOGY, GV,2
2 BACTERIA; HABITAT-SOIL/MICROBIOLOGY, GV,2
3 BACTERIA/TECHNOLOGY-COMMODITY PRODUCTION, FOOD; SPOILAGE- F,3
4 BACTERIA/TECHNOLOGY-COMMODITY PRODUCTION, FOOD-MEAT AND MEAT PRODUCTS; SPOILAGE F,3

READ THE ENTRY CYCLICALLY STARTING WITH THE TERM AFTER THE SLANT STROKE. IT WILL READ BETTER AND WILL BE MORE MEANINGFUL.
THEN CHOOSE THE SUBJECT(S) IN WHICH YOU ARE INTERESTED AND TYPE ON THE CT THE SERIAL NUMBER(S) GIVEN AGAINST THE ENTRY IN COLUMN 1.

The reader would type on the CT the serial numbers '3' and '4' one after the other.

85 SCANNING THE CLASSIFIED PART

The computer scans the classified part of the catalogue-on-

tape among the entries with class number beginning with the digit 'F'. After locating F,3 in that set, the computer would compare the Feature Headings with the structured name of the subject picked up in the alphabetical part displayed to the reader. These are:

TECHNOLOGY-COMMODITY PRODUCTION,
FOOD; SPOILAGE-BACTERIA
TECHNOLOGY-COMMODITY PRODUCTION,
FOOD-MEAT AND MEAT PRODUCTS;
SPOILAGE-BACTERIA

All the main entries for documents whose Feature Heading matches with one or the other of the above-mentioned structured name of the subjects will be printed out in the preferred sequence.

86 BROAD SUBJECT

Similar to that described in Sec 76.

87 ADVANTAGE

Some of the advantages of Method 2 over Method 1 are as follows:

1 The number of displays by the computer is fewer;

2 The total time taken for the dialogue is less;

3 The reader gets on the display not just a schedule of terms but the name of subjects, the terms in which are structured in a consistent pattern;

4 The structured name is fully indicative of and coextensive with, the subject embodied in the corresponding documents; and

5 In the alphabetical part itself the reader learns about the specific subjects on which documents are available in the system. In the subject heading prepared using the conventional Chain Procedure this will not be possible; a consultation of the classified part will be necessary (1).

85 IMPACT ON THE DESIGN OF DOCUMENT FINDING SYSTEM

The design of the documentation list for the dialogue method 2 described in the preceding section will have an appreciable impact on the design of the total document finding system, including depth classification. Particularly the work in the notational plane will be greatly simplified. The nature of the impact on the attributes of the different components of the document finding system are being studied.

More recently, a KWOC type subject index generated by computer from the structured Feature Heading for a subject has been found equally, if not more, helpful in the dialogue.

91* APPENDIX

91 Alphabetical Index to Subjects

Note:—After locating the term denotng the idea of your interest, read the name of the subject cyclically starting with the term immediately following the slant stroke.

AFRICA/ZOOLOGY, AVES; NATURAL HISTORY. K,96
AGRICULTURE (BS)
ALGAE/BOTANY–SPECIALS–WATER–OCEAN, THALLOPHYTA– I–9U97,22
ALGAE;NATURAL HISTORY. UNITED STATES OF AMERICA/BOTANY–SPECIALS–WATER–FRESH WATER, THALLOPHYTA– I–9UK7,22
ANATOMY/ZOOLOGY, ANIMAL, NERVOUS SYSTEM; K,0Z
ANIMAL (BS)
ANIMAL HUSBANDRY (BS)
ANTHROPOGEOGRAPHY–MIGRATION ''BIBLIOGRAPHY/GEOGRAPHY– U,46
ANTIBIOTICS/AGRICULTURE, CROP; DISEASE: THERAPEUTICS; DRUG– J,0Z
ARTHROPODA–INSECTA;REPRODUCTION/ZOOLOGY, K86
AVES;ECOLOGY;MIGRATION/ZOOLOGY, K,96
AVES;NATURAL HISTORY. AFRICA/ZOOLOGY, K,96

BACILLUS–TUBERCULOSIS/MEDICINE, RESPIRATORY SYSTEM–LUNG;DISEASE–MICRO-ORGANISM L,45
BACTERIA; GENETICS/MICROBIOLOGY, GV,2
BACTERIA; HABITAT–SOIL/MICROBIOLOGY, GV,2
BACTERIA/TECHNOLOGY–COMMODITY PRODUCTION, FOOD–MEAT AND MEAT PRODUCTS; SPOILAGE– F,3
BACTERIA/TECHNOLOGY COMMODITY–PRODUCTION, FOOD; SPOILAGE– F,3
BIBLIOGRAPHY/GEOGRAPHY–ANTHROPOGEOGRAPHY; MIGRATION'' U,46
BIOLOGY (BS)
BOTANY (BS)

CARCINOMA/MEDICINE, RESPIRATORY SYSTEM–LUNG;DISEASE–TUMOUR–MALIGNANT– L,4
COMMODITY PRODUCTION, FOOD–MEAT AND MEAT PRODUCTS;SPOILAGE–BACTERIA/TECHNOLOGY– F,3
COMMODITY PRODUCTION, FOOD; SPOILAGE–BACTERIA/TECHNOLOGY– F,3
CONTINUOUS/MICROBIOLOGY, MICROORGANISM;CULTURE– GV,0Z
CONTINUOUS/MICROBIOLOGY, MICROORGANISM; PHYSIOLOGY (INFLUENCED BY) MICROBIOLOGY, MICROORGANISM;CULTURE GV,0Z
CROP;DISEASE:THERAPEUTICS;DRUG–ANTIBIOTICS/AGRICULTURE, J,0Z
CROP;DISEASE–INSECT/AGRICULTURE–SPECIALS–TROPICS J9UA3,0Z
CULTURE–CONTINUOUS/MICROBIOLOGY, MICROORGANISM GV,0Z
CULTURE–CONTINUOUS/MICROBIOLOGY, MICROORGANISM;PHYSIOLOGY (INFLUENCED BY) MICROBIOLOGY, MICROORGANISM GV,0Z
CULTURE/ZOOLOGY–SPECIALS–EMBRYO, VERTEBRATA; K–9B,916

DISEASE–INSECT/AGRICULTURE–SPECIALS–TROPICS,CROP; J–9UA3,0Z
DISEASE–MICROORGANISM–BACILLUS–TUBERCULOSIS/MEDICINE,RESPIRATORY SYSTEM–LUNG; L,45
DISEASE:THERAPEUTICS;DRUG–ANTIBIOTICS/AGRICULTURE,CROP; J,0Z
DISEASE–TUMOUR–MALIGNANT–CARCINOMA/MEDICINE,RESPIRATORY SYSTEM–LUNG; L,45
DRUG–ANTIBIOTICS/AGRICULTURE,CROP;DISEASE:THERAPEUTICS; J,0Z

ECOLOGY/BIOLOGY; G,0Z
ECOLOGY/BIOLOGY–SPECIALS–LAND,ORGANISM; G–9UB;5
ECOLOGY/BIOLOGY–SPECIALS–POLAR–ORGANISM; G–9UA6Z;5
ECOLOGY/BOTANY, THALLOPHYTA–FUNGUS; I,23
ECOLOGY–MIGRATION/ZOOLOGY, AVES; K,96

EMBRYO,VERTEBRATA;CULTURE/ZOOLOGY–SPECIALS– K–9B,916
EVOLUTION (APPLICATION OF) STATISTICAL CALCULUS/BIOLOGY; GENETICS G,0Z,66

FOOD–MEAT AND MEAT PRODUCTS;SPOILAGE–BACTERIA/TECHNOLOGY,COMMODITY PRODUCTION, F,3
FOOD;SPOILAGE–BACTERIA/TECHNOLOGY,COMMODITY PRODUCTION F,3
FRESH WATER,ALGAE;NATURAL HISTORY. UNITED STATES OF AMERICA/BOTANY–SPECIALS–WATER– I–9UK7,22
FRESH WATER, VERMES–NEMATHELMINTHS–NEMATODA/ZOOLOGY–SPECIALS–WATER– .K–9UK7,631
FUNGUS;ECOLOGY/BOTANY,THALLOPHYTA– I,23

GASTEROPODA–PROSOBRANCHIATA;NATURAL HISTORY. GREAT BRITAIN/ZOOLOGY, MOLLUSCA– K,753
GENETICS–EVOLUTION (APPLICATION OF) STATISTICAL CALCULUS/BIOLOGY; G;0Z
GENETICS/MICROBIOLOGY,BACTERIA; GV,2
GEOGRAPHY (BS)
GREAT BRITAIN/ZOOLOGY, MOLLUSCA–GASTEROPODA PROSOBRANCHIATA; NATURAL HISTORY. K,753

HABITAT–SOIL/MICROBIOLOGY,BACTERIA; GV,2

INSECT/AGRICULTURE–SPECIALS–TROPICS, CROP; DISEASE– J–9UA3,0Z
INSECTA;REPRODUCTION/ZOOLOGY,ARTHROPODA– K,86
INVERTEBRATA, NERVOUS SYSTEM ZOOLGGY K,1
LAND,ORGANISM;ECOLOGY/BIOLOGY–SPECIALS G,0Z
LUNG;DISEASE–MICROORGANISM–BACILLUS–TUBERCULOSIS/MEDICINE RESPIRATORY SYSTEM– L,45
LUNG;DISEASE–TUMOUR–MALIGNANT–CARCINOMA/MEDICINE, RESPIRATORY SYSTEM L,45

MALIGNANT–CARCINOMA/MEDICINE,RESPIRATORY SYSTEM–LUNG; DISEASE–TUMOUR– L,45
MEAT AND MEAT PRODUCTS;SPOILAGE–BACTERIA/TECHNOLOGY. COMMODITY PRODUCTION–FOOD– F,3
MEDICINE (BS)
METABOLISM/ANIMAL HUSBANDRY, RUMINANT;PHYSIOLOGY– I,0Z
MICROBIOLOGY (BS)
MICROORGANISM/ANIMAL HUSBANDRY,RUMINANT,RUMEN; KX,2Z
MICROORGANISM–BACILLUS–TUBERCULOSIS/MEDICINE,RESPIRATORY SYSTEM–LUNG; DISEASE– L,45
MICROORGANISM;CULTURE–CONTINUOUS/MICROBIOLOGY, GV,0Z
MICROORGANISM;CULTURE–CONTINUOUS/MICROBIOLOGY,MICROORGANISM; PHYSIOLOGY (INFLUENCED BY) GV,0Z
MICROORGANISM;PHYSIOLOGY (INFLUENCED BY)/MICROBIOLOGY, MICROORGANISM; CULTURE–CONTINUOUS GV,0Z
MIGRATION ''BIBLIOGRAPHY/GEOGRAPHY, ANTHROPOGEOGRAPHY; U,46
MIGRATION/ZOOLOGY,AVES;ECOLOGY– K,96
MOLLUSCA–GASTEROPODA–PROSOBRANCHIATA;NATURAL HISTORY. GREAT BRITAIN/ZOOLOGY, K,753

NATURAL HISTORY. AFRICA/ZOOLOGY, AVES; K,96
NATURAL HISTORY. GREAT BRITAIN/ZOOLOGY, MOLLUSCA–GASTEROPODA–PROSOBRANCHIATA; K,753
NATURAL HISTORY. UNITED STATES OF AMERICA/BOTANY–SPECIALS–WATER–FRESH WATER, THALLOPHYTA–ALGAE; I–9UK7,22
NATURAL HISTORY. UNITED STATES OF AMERICA/BOTANY–SPECIALS–WATER–FRESH-WATER,ALGAE I–9UK7,22

92 Classified Part

[Note.— The full bibliographical details of the d ocument are not given in these specimen entries].

F,3
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