Information, 
a prerequisite for veterinary activities

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Summary: Information is vital to veterinarians whatever their specialisation, whether in practice, laboratory diagnosis, teaching, research, food hygiene, epidemiology or disease control.

The authors review the sources of information in the veterinary sciences, considering both primary (scientific and technical literature) and secondary sources (data bases and data banks).

They outline the components of national veterinary information services which assist the planning, implementation and evaluation of actions aimed at protecting animal and human health.

Finally, the authors describe the worldwide information system of the OIE, which has undergone continuous improvement and progressive automation, making it an irreplaceable instrument in international veterinary cooperation.

KEYWORDS: Animal diseases - Data banks - Data bases - Epidemiological surveillance - Information systems - International cooperation - Legislation - Publications - Public health - Veterinary services.

INTRODUCTION

Every human activity is based on information, which demonstrates the usefulness and determines the orientation of activities. Activity, in turn, generates information which gives rise to new needs and new solutions.

Veterinary science is no exception to this rule, for information is vital to practitioners, also to teachers, laboratory technicians, research workers and epidemiologists whose function is to maintain animal health or protect human health.

The purpose of this article is to review the principal existing sources of information in the veterinary field, to outline the components of a national veterinary information system, and finally to describe the features of the OIE worldwide information system.

SOURCES OF INFORMATION IN THE VETERINARY SCIENCES

Sources of information in the fields of animal production and animal health have been reviewed recently in this Revue (6, 7). This section summarises and updates the earlier review.

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PRIMARY INFORMATION

Primary information consists of books, reference works and periodicals.

**Books** in English are by far the most numerous, as shown by the 258 listed in *Index Veterinarius* in 1986, compared with only 16 in French.

Multilingual veterinary publications are issued by the following international organisations: EEC, ILCA, FAO, IICA, OIE, WHO, PAHO.

As far as the OIE is concerned, its 1988 catalogue lists 27 works, most of which are available in three languages (English, French and Spanish).

**Reference works** include:
- practical manuals, the most popular of which is *The Merck Veterinary Manual* (6th edition of 1986);
- two veterinary encyclopaedias in English;
- various dictionaries and thesauri;
- annual collections of statistics, which on the world scale comprise the *Animal Health Yearbook* (published by the FAO in collaboration with the OIE and WHO) and *World Animal Health* (published by the OIE);
- the *International Animal Health (Zoo-Sanitary) Code*, which contains recommendations concerning international trade in animals and animal products, and norms for diagnostic techniques and for preparing and testing biological products.

**Periodicals** are the main source of scientific information, and they currently number about 900.

Three international organisations produce periodicals devoted to animal health and production:
- in Africa, ILCA publishes two quarterly periodicals, *ILCA Bulletin* and *ILCA Newsletter*;
- the Interafrican Bureau for Animal Resources (of the Organisation of African Unity) produces a quarterly *Bulletin of Animal Health and Production*;
- the OIE publishes a monthly *Bulletin* in three languages (English, French and Spanish) and the quarterly *Scientific and Technical Review*, also in three languages.

SECONDARY INFORMATION

**Traditional tools**

There is so much scientific and technical veterinary literature that consultation has become increasingly difficult.

The reviewing of new publications of veterinary interest has been going on for over a century, in bibliographical bulletins and lists of titles issued monthly or quarterly.

*Index Veterinarius*, which lists only titles, and *Veterinary Bulletin*, which provides abstracts, both published by Commonwealth Agricultural Bureaux International (CABI), are without doubt the best-known bibliographical bulletins in the world.
Photocopied lists of contents of periodicals are produced in order to overcome the delay between publication of a periodical and its citation by bibliographical bulletins. The best-known are the various *Current Contents* from the Institute of Scientific Information (ISI) in the USA, which appear weekly. The field of animal health is at present covered by the series *Agriculture, Biology and Environmental Sciences*.

**The data base explosion**

The development of computerised techniques for processing and transmission of data has led to a veritable explosion of bibliographical data bases of veterinary relevance. They contain the items published in printed abstract journals, but may contain unpublished information as well.

The five main data bases of veterinary interest are CABI, BIOSIS, AGRICOLA, MEDLINE and PASCAL (the latter being in French and English, while the first four are in English only).

The CABI file has the advantage over the other files of including veterinary subjects as covered by *Veterinary Bulletin, Index Veterinarius, Animal Disease Occurrence* and *Small Animal Abstracts*.

BIOSIS is produced by an American non-profit organisation, and it covers all biological subjects. In the veterinary field, its strong points are parasitology, public health, pathology, microbiology and toxicology.

AGRICOLA is produced by the National Agricultural Library of the USA, and is the on-line version of *Bibliography of Agriculture*. It includes documents published by the United States Department of Agriculture (USDA) as well as items from world literature.

MEDLINE is the on-line version of *Index Medicus*, and it covers many aspects of veterinary medicine, particularly small animals (leaving many aspects of large animals to be dealt with by AGRICOLA).

PASCAL is produced by the Centre for Scientific and Technical Documentation of the National Centre for Scientific Research (CNRS), France. It includes veterinary and medical aspects of fundamental and applied biology.

Among the more specialised data bases may be mentioned VETDOC, produced by Derwent Publications Ltd (UK) to provide information on pharmaceutical products, and NAIS (National Aquaculture Information System) which is concerned with fish farming, and produced by the National Oceanographic Data Center (USA); this contains numerous references to diseases of aquatic animals.

On the international scale, AGRIS (Agricultural Information Service) is a data base created by the FAO to deal with bibliographical references indexed by that organisation and also by cooperating centres in various countries. AGRIS was developed to meet the information needs of developing countries in the fields of agricultural research, food production, agricultural economics, rural development, natural resources and the environment (1). It supports the setting up and operation of agricultural information systems in developing countries. Its objective is to overcome duplication of effort by specialised information services, and to improve their efficacy. Participants in AGRIS include 117 national agricultural documentation centres and 14 international organisations.
AGRINDEX is the printed product of the AGRIS system. This monthly listing of bibliographical references is also available on magnetic tape. Subjects of veterinary interest are contained in the section "Animal production", but there are other relevant sections, such as animal nutrition, microbiology and toxicology of animal feed, animal physiology, etc.

Another product of the AGRIS scheme, of particular interest for its multilingual approach, is the AGROVOC agricultural thesaurus.

On the subject of veterinary pharmaceuticals, a data base was started in 1985 by the Inter-American Institute for Cooperation on Agriculture (IICA), with the support of the Food and Drug Administration (FDA) and the Department of Agriculture (USDA) in the USA. This data base will be used to produce an Inter-American Compendium of registered veterinary products. The status of this project as of 1987 is presented in this issue of the Scientific and Technical Review (15).

The future of data banks

In contrast to data bases which furnish only bibliographical references, data banks provide actual facts.

An "International directory of animal health and disease data banks" published in 1982 by the National Agricultural Library (USA) lists about 80 veterinary data banks in some 20 countries (7).

The one best adapted to the needs of official animal health services is undoubtedly the data bank initiated in 1972 by the Emergency Programs Information Center (EPIC), part of the Animal and Plant Health Inspection Service of USDA at Hyattsville, Maryland, USA (4).

Originally conceived to deal with the formulation and implementation of emergency programmes against animal diseases exotic to the USA, the scheme has been extended to diseases present in North America, notably brucellosis, Aujeszky's disease, bluetongue, vesicular stomatitis and Newcastle disease.

To conclude this first part, it can be stated that the specialised literature and the existing systems of data bases and data banks cover the overall requirements for scientific information in the veterinary sphere. Two gaps noted by Gray (8) in 1979 have not yet, or have only partly, been filled. These are veterinary economics, for which there is no data base, and veterinary pharmacology and therapeutics, for which the only international data bank is the IICA Compendium.

However, the dispersal of the topics of veterinary interest within numerous institutions, in which a given topic may be of only minor importance, and incompatibility between systems still make it difficult to retrieve the information required.

Finally, developing countries do not generally have the resources to obtain the available primary information, and in many cases they do not even have access to secondary sources of information, for technical and above all financial reasons. The cost of consulting files, in 1987, was US$ 35-84 per hour when using the five main data bases mentioned above.
NATIONAL SYSTEMS FOR VETERINARY INFORMATION

The desirable components for every national system of veterinary information have been outlined in a previous article in the OIE Bulletin in 1979 (3).

Apart from provision of access to scientific and technical publications dealt with in the first part, a national system must include the following elements simply in order to meet the needs of animal health:

- animal population statistics;
- incidence and prevalence of animal diseases;
- survey of financial, material and human resources;
- regulations supporting activities of the Veterinary Service;
- environmental factors which influence these activities.

Statistics of livestock populations are usually compiled by another branch of the administration, from which the Veterinary Service has to obtain them. It may prove possible, however, for the Veterinary Service to make its own, more detailed census, during national vaccination campaigns.

Elements other than the incidence and prevalence of animal diseases are of an internal nature; only the Veterinary Service needs to know about them.

Data concerning the incidence and prevalence of notifiable diseases of animals should, theoretically, fall into the same category. In fact, these declarations are often incomplete, and it would be better to consider them, in the same way as other diseases of animals, as external to the Veterinary Service.

The state of health of the animal populations governs their productivity. Animal health is thus the fundamental fact which should be better understood, particularly as far as morbidity and its economic consequences are concerned.

SURVEILLANCE: INFORMATION TO ACT UPON

Epidemiological surveillance consists of collecting data before taking action, and it is vital for the success of actions. It involves the following steps.

Planning

It is necessary to know the incidence and prevalence of a disease, as well as the economic losses which may result, in order to obtain the resources needed for a control programme. Such information is also required for planning the strategy and defining reasonable objectives for a scheme for controlling, or even eradicating, a disease.

It seldom happens, however, that the statistical data available permit precise planning, and so it is often necessary to conduct surveys or special investigations in order to gauge the extent of the problem.

Evaluation

Data gathered as a result of surveillance make it possible to verify that the programme is having the desired effect, and if not, to modify the programme.
Implementation of measures aimed at averting the spread of an epizootic

The nature of these measures depends on the immediate investigation of outbreaks. This will establish whether they are primary or secondary outbreaks, and will reveal their origin, and also allow a search for other outbreaks, taking into account the movement of animals, products or persons.

In the case of an endemic disease, such as foot and mouth disease, which is controlled by regular vaccination of herds, the investigation will clarify if an epizootic flare-up is due to ineffectual vaccines or inadequate vaccine protection.

SURVEILLANCE PROCEDURES

Procedures for surveillance of animal diseases depend on compulsory notification, observation at strategic points in order to collect information from the various personnel in contact with animals, observation of sentinel herds and flocks, special investigations, and investigation of outbreaks of the epizootic.

Compulsory notification

Notification of the most contagious or most devastating animal diseases, such as foot and mouth disease, rinderpest and contagious bovine pleuropneumonia, has been a fundamental stipulation of veterinary legislation ever since the first Official Veterinary Services were founded in the nineteenth century.

This principle is still present in the veterinary legislation of most countries, for notification is the starting-point of various compulsory steps, referred to as veterinary policing.

However, such diseases may not always take a spectacular course, immediately alerting the owner and the veterinarian in every case or in every country. This may occur with foot and mouth disease, both types of swine fever and Newcastle disease, which can take an insidious course in countries where they are endemic.

Moreover, the sanctions taken against owners who do not notify a disease are not always sufficiently severe to ensure that they comply. The owner needs to be encouraged to take a direct or indirect interest, and convinced that if he fails to declare a disease, the Veterinary Service will soon find out.

Systems based on compulsory notification may lead to an underestimate of actual incidence, but they are still valuable for following changes in a disease.

Any improvement in such systems, particularly in developing countries, depends on:

- strengthening the diagnostic service, which is usually inadequate;
- the efficacy of steps taken by the central administration once informed of the situation. If this condition is not fulfilled, the field officers and the animal owners will come to believe that it makes no difference whether a disease is notified or not.

Observation at strategic points

Officers of the Official Veterinary Service cannot be present on all farms all of the time. Hence it is important to identify the strategic points at which animal diseases can be detected.
The Veterinary Service is then able to conduct active surveillance, in contrast to the passive attitude of awaiting a notification.

Typical places of observation are:

– markets and, in general, all places where animals are brought together;
– abattoirs;
– carcass disposal premises (knackers’ yards);
– veterinary diagnostic laboratories.

Information gathered at such places is useful both for alerting to the presence of a notifiable disease and for following a control programme (e.g. against tuberculosis or parasitic diseases), and also for research.

Other observation sites may be used for the last two disease categories:

– public health services for zoonoses;
– artificial insemination centres for reproductive diseases;
– dairies in cases of brucellosis, mastitis and enzootic bovine leukosis;
– veterinary practices for metabolic disorders and similar conditions;
– zoos and game reserves;
– fish farms for diseases of freshwater fish reared in captivity, and for environmental pollution incidents;
– organisations which sell veterinary drugs.

While it is theoretically possible to assemble a large volume of data, one must first determine the use to which they will be put, and confine the data to what will be useful; they will otherwise be difficult to manipulate.

In addition, it is essential to ensure that the data are valid and that the persons who supplied them understand their usefulness.

Finally, the cost of collecting and processing data is far from negligible, particularly in developing countries.

**Observation of sentinel herds and the use of serum banks**

Western countries have adopted procedures for eradicating certain chronic diseases such as bovine tuberculosis and bovine brucellosis by detecting and eliminating infected animals, followed by periodic testing of all herds. Such procedures cannot be adopted for all diseases nor for all countries, on account of their cost.

This has led to the concept of limiting surveillance to a small number of sentinel herds. The type of surveillance varies according to the objectives, and includes epidemiological surveillance, detection of clinical or subclinical infections, and investigation of the economic impact of a disease or group of diseases.

For epidemiological surveillance or surveillance of subclinical infections, blood samples are taken from a representative sample of the animals, usually at monthly intervals. The serum samples are stored to constitute a serum bank, which can be used for immediate or retrospective epidemiological investigations.

Apart from sentinel herds, serum banks can also be built up to study the prevalence of endemic diseases, using samples taken annually from a certain percentage of herds, representative of the whole.
Special investigations

These are conducted in order to determine priorities when there is a choice between several disease control programmes.

For example, during the 1970's the New Zealand government was faced with demands from sheep farmers' organisations for support in investigating disease problems, particularly contagious keratoconjunctivitis (14).

Their importance was assessed by means of questionnaires addressed to farmers, followed up by a series of discussions.

A special investigation may also be required for high mortality in a certain age group of an animal population, with implementation of a procedure for investigation (5).

Investigation of outbreaks of an epizootic disease

The precise identification of the pathogen responsible for an outbreak or outbreaks, from samples submitted to the laboratory, provides a basis for the measures to be taken to eliminate the disease.

Knowledge of movements of animals is required for investigation of the origin of an outbreak and assessment of the risk of spread to other herds. For this purpose certain countries require farmers to keep a record of admissions and departures, and the herd of origin or destination. For the purpose of controlling certain diseases, animals being moved must be accompanied by documents which can facilitate investigations.

Maintenance of maps and dates of transhumance of livestock and information concerning commercial transactions are important administrative tasks of the local governmental veterinarian.

A disease can be spread by means not involving live animals, for animal products, arthropod vectors and human beings may also be responsible in certain cases. Investigation then becomes more difficult, for information has to be obtained from adjoining territories or countries, and by patient interrogation of farmers and traders, in addition to identifying the strain or biotype of pathogen responsible.

To conclude this second section, it would be no exaggeration to state that the quality of national systems of veterinary information is an essential factor for decisions and actions taken by Official Veterinary Services.

Without doubt there are numerous examples of programmes which have been implemented successfully in the past by applying common sense and good reasoning. Such basic qualities cannot be replaced by the mere accumulation of facts, investigations and statistics.

Nevertheless, it is impossible to direct programmes and to justify decisions without information, and lack of information on the incidence and cost of animal diseases is a considerable handicap, particularly in developing countries, for the implementation of veterinary actions.

This is one of the reasons why the OIE, particularly in recent years with its worldwide information system, has been devoted to aiding and encouraging its Member Countries to improve their national information systems.
THE WORLDWIDE INFORMATION SYSTEM OF THE OIE

As H.O. Königshöfer has pointed out (9), the start of systematic collection and international diffusion of animal disease information dates from the founding of the Office International des Epizooties in 1924.

The provision of information is a priority task for the OIE, being written into the Statutes attached to the International Agreement of 25 January 1924, which calls upon the organisation "to collect and bring to the attention of the Governments or their sanitary services, all facts and documents of general interest concerning the course of epizootic diseases and the means used to control them".

There are two components of the OIE worldwide information system, publications and a notification system, the establishment of which has been described by Blajan (3) together with progress up to 1977.

PUBLICATIONS

As already mentioned, the publications consist of books, reference documents and periodicals.

Among the books are proceedings of conferences of specialists and of the OIE Regional Commissions, as well as reviews of topics of current interest, most of which are published in the Technical Series.

Current reference documents are:

- *World Animal Health*, published since 1986 in three volumes devoted, respectively, to annual statistics for "List A" diseases, annual reports of Veterinary Services, and tables showing the animal health situation in Member Countries. These are compiled from information submitted by the Member Countries on data forms which were drawn up jointly by the FAO and OIE.

Countries belonging to both organisations complete a single form, one copy of which is used by the OIE to compile *World Animal Health*, while the other copy goes to the FAO for the FAO/WHO/OIE Animal Health Yearbook.


The OIE publishes two periodicals:

- Monthly *Bulletin* (since 1927) which provides monthly statistics for "List A" diseases reported by Member Countries, and also epidemiological information and official notices concerning OIE activities;

- *Scientific and Technical Review* (since 1982) which publishes review articles, original articles, communications and proceedings of meetings of the OIE and other international organisations.

Open to authors throughout the world, it is without doubt the only international journal which makes it possible for scientists in developing countries to find a large readership for their veterinary work. Thanks to the care and competence of the referees on its Editorial Committee, the *Scientific and Technical Review* has an educational role which commercial publications would find hard to copy.
Since March 1987, the OIE has been a copublisher, with the International Technical Consultation on the Registration of Veterinary Drugs, of a *Veterinary Drug Registration Newsletter*.

This trilingual publication, issued twice a year, provides news of various scientific and legislative aspects of veterinary drug registration, relating to public health, animal health and international trade.

**THE NOTIFICATION SYSTEM**

Article 1.2.0.2 of the *International Animal Health (Zoo-Sanitary) Code* provides the basis of the notification system and stipulates that: “Countries shall make available to other countries, through the OIE, whatever information is necessary to minimise the spread of important animal diseases and to assist in achieving better worldwide control of these diseases”.

On the advice of the Specialist Information Group, the OIE International Committee drew up two lists of diseases notifiable to the OIE, namely:

- List A which includes “communicable diseases which have the potential for very serious and rapid spread, irrespective of national borders; which are of serious socio-economic or public health consequence and which are of major importance in the international trade of animals and animal products”.
- List B including “communicable diseases which are considered to be of socio-economic and/or public health importance within countries and which are significant in the international trade of animals and animal products”.

“List A” at present contains 16 diseases, while “List B” contains 87. Both lists are reproduced as Appendix 1.

According to Article 1.2.0.3 of the OIE Code, veterinary administrations must notify the OIE, by telegram, telex or facsimile transmission, within 24 hours of:

- for List A diseases, the first occurrence or re-occurrence of the disease, if the country or region of the country was previously considered to be free from the particular disease;
- for List A diseases, important new findings which are of epidemiological significance to other countries;
- for List A diseases, a provisional diagnosis of the disease if this represents important new information of epidemiological significance to other countries;
- for diseases not in List A, if there are new findings which are of exceptional epidemiological significance to other countries.”

This notification is supplemented by a weekly report by telegram, telex or facsimile transmission, providing further information concerning diseases reported under the 24-hour rule. Immediately upon receipt of these reports, the alerting service of the OIE Central Bureau issues communiqués by telegram, telex or facsimile transmission to countries directly threatened by the disease, while other countries are informed by bulletins.

Since July 1988 these bulletins have been brought together in a weekly OIE Disease Information, which contains notifications of an urgent nature, and also notices of forthcoming international veterinary meetings, and new books received by the OIE.
Article 1.2.0.3 of the *Code* also stipulates that veterinary administrations submit:

"— Monthly reports on the absence or presence and evolution of diseases in List A, and findings of epidemiological importance to other countries with respect to diseases which are not in List A;

— annual reports on all diseases in Lists A and B and any other diseases considered to be of socio-economic importance or of major veterinary interest."

The information contained in the monthly and annual reports is processed at the OIE Headquarters and is distributed in the monthly *Bulletin* and *World Animal Health*, respectively.

**THE NEED FOR AUTOMATION**

The increasing number of OIE Member Countries and the growing volume of data have created a need for computerised processing. Such processing is possible, however, only if the notifications made to the OIE are presented on a standard form.

Standard forms were introduced experimentally for a group of volunteer countries in 1984. This pilot scheme demonstrated that they could be brought into general use, and so the OIE International Committee recommended their adoption by all countries in 1987.

The forms are known by the English initials of "Status Report" as SR-1 for immediate notifications, SR-2 for weekly notifications and SR-3 for monthly reports, and they realise a longstanding wish of Official Veterinary Services.

The conclusions of an international conference held in Paris on 25-28 May 1921, which led to the founding of the OIE, in fact adopted a resolution to the effect that "printed periodical bulletins shall be issued, following a uniform model" (2).

In the past many attempts were made by the OIE to standardise animal health bulletins (10, 11, 13, 16), but without success.

It is too early to claim that the problem has now been resolved. In 1987, only 62 of the 110 OIE Member Countries used form SR-3 for their monthly reports, and only 11 of the 25 countries making an emergency report used form SR-1.

**To break a vicious circle**

It is mainly developing countries which fail to provide the OIE with information on the animal health situation, and which fail to use the forms designed for this purpose.

There are various reasons for these difficulties:

— some countries have only incomplete data, because the information system is inadequate or even non-existent;

— others are not sufficiently familiar with the procedures for notifying the OIE;

— still others do not appreciate the advantages which they may derive from sending information to the OIE. This applies particularly when they fail to find, in the notes distributed by the OIE, information concerning neighbouring countries, which share the same opinion.
To break this vicious circle, which hinders the improvement of data received and distributed by the OIE, and the actions which could be taken as a result of the data, regional workshops are being organised to familiarise national officials with the information systems.

The first workshop took place in Buenos Aires in 1985 for Latin American countries, followed in 1986 and 1987 by workshops for certain countries of Asia and French-speaking Africa. Every country of the Far East, Pacific and English-speaking Africa, then the Near East will be covered by meetings to be held in 1988 and 1989.

These workshops are the occasion for an exchange of views between participants from Member Countries and the staff of the OIE, who come to understand better the problems of different regions.

The national representatives come to understand that the OIE information system is more than just a statistical operation: it is a tool for international cooperation, leading to activities of value to Member Countries.

The following examples may be mentioned:

— The recrudescence of rinderpest in West Africa in 1980, once it was reported to the OIE, was followed by initiatives to find the financing for an emergency campaign. The latter, in turn, provided more information about rinderpest, which led to the establishment of an eradication programme for the disease in tropical Africa, with the OIE as one of the most active promoters.

— The occurrence of African horse sickness in Spain was reported on 14 September 1987 to the OIE, which organised an emergency meeting in Paris on 18 September. The recommendations adopted and the advice of the international expert brought in for the meeting enabled the Spanish authorities to take the most appropriate measures to eliminate the disease and to ensure that the Spanish horse population would not be banned in coming years.

— Rift Valley fever led to many human deaths and much loss of animals in Mauritania at the end of 1987. Under the auspices of the OIE and FAO, an international meeting was organised by the authorities in Dakar (Senegal) on 10 and 11 March 1988, and this led to the adoption of measures, supported by international aid, which should avert the return of a disastrous epidemic.

Future prospects

The epidemiological data base created by the OIE in 1987 might, upon its completion, be extended by arranging for countries to have on-line access to it.

However, the hopes and wishes expressed by users of data to be able to communicate easily with the various suppliers will remain unfulfilled as long as the computer suppliers and telecommunications experts fail to agree on compatible systems.

Moreover, the scanty resources of many developing countries will preclude them from having access to international data banks and data bases in the foreseeable future.

CONCLUSION

During the past twenty years there has been much debate about information in the field of veterinary sciences. Such debate has revealed the existence of many sources
of data, but it has also demonstrated gaps in coverage and difficulty of access. Among major gaps mentioned in this article are the economics of animal health, and veterinary drugs.

One may add the lack of an international data base on the techniques of laboratory diagnosis and on current research. Although knowledge of the latter is essential for decisions regarding funding of research into animal diseases, it is extremely difficult to compile a full list of research topics.

The OIE participated in such an investigation, as initiated by the European Commission, concerning research throughout the world on a group of twenty diseases of animals (12).

The difficulties of obtaining the available veterinary information are due to its dispersal in a variety of data bases (some of which are non-specialised), the incompatibility of different systems, and the cost of using them.

In addition, there are many developing countries which cannot reap the benefit of progress in information technology and in communications.

It is an obligation imposed on the international community to help deprived countries to institute or improve their information systems, a vital requisite for the development of their animal resources. The OIE, with its worldwide information system, hopes to be of use in this regard.

Despite the progress which remains to be accomplished to make it more effective and to improve its quality, this system is unique in the veterinary field by reason of its specificity and worldwide coverage. It may also serve as a model for adoption by those who seek to fill the gaps in information on research and other important subjects.

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Appendix 1

LIST A DISEASES

Foot and mouth disease  Bluetongue
Vesicular stomatitis  Sheep pox and goat pox
Swine vesicular disease  African horse sickness
Rinderpest  African swine fever
Peste des petits ruminants  Hog cholera (classical swine fever)
Contagious bovine pleuropneumonia  Teschen disease
Lumpy skin disease  Fowl plague
Rift Valley fever  Newcastle disease
LIST B DISEASES

Multiple species
Anthrax
Aujeszky’s disease
Echinococcosis/hydatidosis
Heartwater

Leptospirosis
Q fever
Rabies
Johne’s disease

Cattle
Anaplasmosis
Babesiosis
Bovine brucellosis (*B. abortus*, also to be reported in sheep)
Bovine genital campylobacteriosis
Bovine tuberculosis
Cysticercosis (*C. bovis*)
Dermatophilosis

Enzootic bovine leukosis
Haemorrhagic septicaemia
Infectious bovine rhinotracheitis/
infectious pustular vulvovaginitis
Malignant catarrhal fever
Theileriosis
Trichomoniasis
Trypanosomiasis (tsetse-borne)

Horses
Contagious equine metritis
Dourine
Epizootic lymphangitis
Equine encephalomyelitis
Equine infectious anaemia
Equine influenza (virus type A)
Equine piroplasmosis
Equine rhinopneumonitis

Glanders
Horse pox
Infectious arteritis of horses
Japanese encephalitis
Mange
Salmonellosis (*S. abortus equi*)
Surra
Venezuelan equine encephalomyelitis

Pigs
Atrophic rhinitis of swine
Cysticercosis (*C. cellulosae*)
Porcine brucellosis (*B. suis*, also to be reported in wildlife)

Transmissible gastroenteritis
Trichinelllosis

Sheep and goats
*B. ovis* infection
Caprine and ovine brucellosis
(*B. melitensis*)
Caprine arthritis/encephalitis
Contagious agalactia
Contagious caprine pleuropneumonia

Enzootic abortion of ewes
Nairobi sheep disease
Pulmonary adenomatosis
Salmonellosis (*S. abortus ovis*)
Scrapie
Visna/maedi

Fish
Viral haemorrhagic septicaemia
Infectious pancreatic necrosis
Myxobolosis
Spring viraemia of carp
Infectious haematopoietic necrosis
Herpesvirosis of salmonids

Yersiniosis
Renibacteriosis
Pseudomonosis
Pike fry rhabdovirosis
Herpesvirosis of ictalurids
Branchionephritis
Rodents
  Myxomatosis
  Tularaemia

Poultry
  Avian infectious bronchitis
  Avian infectious laryngotracheitis
  Avian tuberculosis
  Duck virus hepatitis
  Duck virus enteritis (duck plague)
  Fowl cholera
  Fowl pox
  Fowl typhoid (S. gallinarum)
  Infectious bursal disease (Gumboro disease)
  Marek's disease
  Mycoplasmosis (M. gallisepticum)
  Psittacosis/ornithosis
  Pullorum disease (S. pullorum)

Bees
  Acariasis of bees
  American foul brood
  European foul brood
  Nosemosis of bees
  Varroasis

Other
  Leishmaniasis

Appendix 2

ABBREVIATIONS

AGRICOLA: Agricultural Online Access
AGRINDEX: AGRIS publication
AGRIS: Agricultural Information Service
AGROVOC: Agricultural Vocabulary
BIOSIS: Biosciences Information Service
CABI: Commonwealth Agricultural Bureaux International
CEC: Commission of European Communities
CNRS: Centre national de la Recherche scientifique (National Centre for Scientific Research)
EEC: European Economic Community
EPIC: Emergency Programs Information Center
FAO: Food and Agriculture Organization of the United Nations
FDA: Food and Drug Administration
IBAR: Inter-african Bureau for Animal Resources
IICA: Inter-American Institute for Cooperation on Agriculture
ILCA: International Livestock Centre for Africa
ISI: Institute for Scientific Information
MEDLARS: Medical Literature Analysis and Retrieval System
MEDLINE: MEDLARS Online
NAIS: National Aquaculture Information System
OAU: Organisation of African Unity
PAHO: Pan American Health Organisation
PASCAL: Programme appliqué à la sélection et la compilation automatique de la littérature
USDA: United States Department of Agriculture
VETDOC: Veterinary Literature Documentation
WHO: World Health Organization

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REFERENCES

(see p. 461)