

NOTES FOR ADMINISTRATORS ON THE CARE AND HOUSING OF LABORATORY ANIMALS

In recent months, the Animal Welfare Institute has heard one basic complaint over and over again. It generally comes from a scientist in charge of laboratory animals or from an investigator who uses them, and it is lodged against administrators who refuse to recognize that laboratory animals must have a reasonable amount of space and comfort and competent care.

To give a specific example, a doctor of medicine doing research in a large institution in one of our major cities wrote to the Animal Welfare Institute saying, "We have recently gone through two epidemics and have lost two colonies of guinea pigs, due to inadequate facilities and inadequate care. Your institution would do well to educate *hospital administrators* concerning the importance of setting aside funds for the housing and care of animals. It must be emphasized that men who take care of animals are *not* to be considered as dregs of humanity who are to be paid \$120 to \$140 per month. Animals must not be housed in any leftover storage rooms, cellars or hallways. Your literature should go to our Board of Directors and Administrators."

Needless to say, the literature was dispatched and, with the permission of the writer, the above paragraph is printed in the hope that administrators in all parts of the country will take note and make a careful check of the conditions under which the laboratory animals in their institutions are being housed and cared for. The Animal Welfare Institute will provide manuals on care and housing and other information from its files, free on request, to persons responsible for administration of scientific institutions where animals are used.

Increasing Interest In Care Of Animals

The stock of one of these manuals, "Basic Care of Experimental Animals", is nearing exhaustion, and before undertaking its revision and republication, the officers of the Institute sought the advice and criticism of those who had requested copies during the three years since it was first issued. Helpful replies have been received from about 125 American scientists to date, and they are almost unanimously in favor of keeping the manual in print. They also show a very considerable interest in improving the care of laboratory animals and the training of animal room personnel.

A similar interest was demonstrated at the Animal Care Panel Meetings held in Chicago, November 29 to December 1, 1956. The session entitled "Principles of Animal Care" proved so popular that the modest room assigned to it was packed and late comers had to stand up, while the regular session which continued in the large auditorium

simultaneously was nearly deserted. A number of men employed in Chicago animal rooms were in the audience, and it is to be hoped that there will be a larger local representation at the next such session. Under the chairmanship of Dr. Victor Schwentker of the West Foundation, lectures on "Principles of Sanitation" were delivered by Dr. L. R. Christensen, New York University, Dr. E. H. Steinmetz, University of California, and Dr. R. J. Flynn, Argonne National Laboratory.

Among papers delivered in the regular sessions, two were especially noteworthy in promoting the welfare of laboratory animals. One, "The Development and Maintenance of Disease-free Animal Colonies at the Walter Reed Army Institute of Research" by Robert D. Henthorne, Capt. V. C. and Robert J. Veenstra, Lt. Col. V. C., presented a practical method of establishing colonies of seven species of small laboratory animals free of the debilitating endemic diseases to which so many of these creatures succumb in most laboratories. The other was an intelligent and comprehensive report by Dr. Alfred E. Earl of Ciba on the British Laboratory Animals Bureau and Animal Technicians Association, a report particularly appropriate at this meeting in view of the growing interest in training animal technicians in this country.

Dr. Earl stated that the ATA is a dignified group entitled to respect because it has attracted a superior type of personnel and gives the animal technician a definite place in the research picture. He recommended that the ATA's quarterly publication should be in the library of every research laboratory in this country.

Why Laboratory Animals Die

Dr. W. Lane-Petter, Director of the Laboratory Animals Bureau, the parent body of the ATA, gives good advice on the fundamental approach to this work in an article published in *Nature*, June 30, 1956 under the title of "Why Laboratory Animals Die": "To compare laboratory animals with chemical reagents is an analogy that has become hackneyed and, if followed too far, is misleading. Reagents they may be to the biologist, but they have characteristics distinguishing them sharply from the inanimate substances with which the chemist has to deal. They are not inanimate but living; and they are not a homogeneous mass but distinct individuals, however nearly the ideal of individual similarity or uniformity may be approached."

This concept of the laboratory animal as an individual is not always easy to bear in mind where large numbers are kept, but it is the basis for the close and careful observation upon which rests not only first-rate research but first-rate animal care.

The article continues, "Laboratory animals are thus [because they are living individuals] exposed to one especial hazard, namely, accidental intercurrent infection. As a result of this hazard the animal may die, or the group lose any degree of uniformity it may have possessed before

infection or might be expected to possess without it, and then its value as a reagent is diminished or destroyed." Thus it may be seen that the protest of the research worker who lost two colonies of guinea pigs due to inadequate facilities and inadequate care may be justifiably echoed by one who lost only a few animals.

The quality of care which animals receive is probably the biggest single factor affecting their health, maintenance of proper standards in food and housing being essential components of the whole. The latter part of Dr. Lanepetter's article comments on the Animal Technicians Association which has so greatly raised the standards of care in British laboratories. Referring to the annual meeting of the ATA and the symposium on infections of laboratory animals, he writes: "A decade ago, certainly two decades, meetings of this kind might have passed unattended and unnoticed. Today, the Laboratory Animals Bureau does not lack encouragement to continue to make both the symposium and the congress annual events. The attendance at the congresses numbers regularly nearly two hundred, and the high standard of contributions by technicians is maintained year after year. Of particular interest this year was the paper by Dr. J. F. D. Frazer on some aspects of the breeding of laboratory animals, in which he pointed out the effect on the natural functions of the animal, especially on breeding, of such environmental factors as light, heat, diet, cage-size and design, quality of care and much besides. He was addressing technicians, animal technicians for the most part, and he seemed to be inviting them to make their own contributions to knowledge of animal care and good husbandry.

"This brings up a point of more than trivial interest. The term 'animal technician' first achieved formal status six years ago when the Animal Technicians Association was founded. After six years it is time for it to be generally adopted and for the older terms applied to animal house staff to be dropped. The grade of animal technician is recognized by many employing authorities, such as the Medical Research Council, which have undoubtedly learned that good animal technicians mean good animal material for research and investigation. Some universities recognize the grade, but others do not; the National Health Service does not, nor is the animal technician represented on the Whitley Council. Where recognition has occurred it has been found to pay in terms of better animals, better work and (if costs are known) less extravagance through avoidable wastage. Why, then, are some employing bodies reluctant to follow the excellent lead given by others? No animal houses in Great Britain are so bad that they could not be worse; but many are not so good that they could not be better if unskilled labour were to be gradually replaced by qualified animal technicians."

In the United States, a much smaller proportion of animal room personnel has sought this type of work (as most British animal technicians do) because of a fondness for and an interest in animals nor has any large proportion received careful training in the care and management of laboratory animals. Standards in the majority of animal quarters could be raised substantially by such selection and training, and the advantages would accrue to scientists and animals alike.

To sum up, wise administrators will seek the best in animal care; they will resist pressures to crowd too large a number of animals into the quarters thus reducing the disease-resistance, comfort and well-being of all of them; they will recognize the importance of each experimental animal and set aside adequate funds for proper care and housing.

"THE GREAT CHAIN OF LIFE"

Thinking which is clear and original has always been a rarity. When such thinking is expressed in a manner as entertaining as it is impressive, readers in any age have reason to rejoice. The appearance in 1957 of a book whose new ideas are more, rather than less, civilized than the old ones is an event of hopeful significance. "The Great Chain of Life", by Joseph Wood Krutch (Houghton Mifflin Company, Boston) is such a book. In it, Dr. Krutch asks many questions that none of the established codes of knowledge are equipped to answer. These questions lead away as firmly from the current intellectual despair, the "age of anxiety" point of view, as they do from the blind optimism of those who place their faith in the expansion of technology. A point to which the author attaches great importance is the need for human beings to regain their self-respect and, with it, respect for the world around them.

He writes, "One of the most important, one of the most fateful developments of thought during the last few centuries has been that which stresses the closer and closer identity of human with animal nature. And that has meant, on the whole, not a greater respect for animal traits and powers and potentialities, but less and less respect for man's. Those potentialities which had once been assumed to be exclusively human now came to be regarded as less and less substantially real. Man was thought of as 'nothing but' an animal and the animal was held to be incapable of exhibiting anything except what had formerly been thought of as 'our lower nature.'

"If we are ever to regain a respect for ourselves it may be that we shall regain it by the discovery that the animals themselves exhibit, in rudimentary form, some of the very characteristics and capacities whose existence in ourselves we had come to doubt because we had convinced ourselves that they did not exist in the creatures we assumed to be our ancestors. Even if man is no more than an animal, the animal may be more than we once thought him."

The capacities for love, joy, and kindness are among those which distinguish man and beast from machines, but Dr. Krutch paints a chilling picture of the marvellous efficiency of the insects, whose actions really do suggest the machine because they are so set and so perfectly devised for the purpose. They therefore seem much more intelligent than what he calls the "bungling" mammals. Long ages before human beings had learned to be so practical, various species of insects had highly developed agricultural systems for the exploitation of aphids or of fungi. They still have them. They are wonderfully equipped for survival. But they lack the awareness, the sort of consciousness that the higher vertebrates display. And Dr. Krutch indicates that this is a sound basis for designating the warm-blooded animals as "higher".

Although he does not suggest a direct analogy with human society, these thoughts are in the reader's mind when he comes to an important paragraph in the chapter entitled *Reverence for Life*: "The grand question remains whether most people actually *want* hearts to be tenderer or harder. Do we want a civilization that will move toward some more intimate relation with the natural world, or do we want one that will continue to detach and isolate itself from both a dependence upon and a sympathy with that community of which we were originally a part? Do we want a physical environment more and more exclusively man-made and an intellectual, emotional, and aesthetic life which has renounced as completely as possible

its interest in everything inherited from the long centuries during which we were, willy-nilly, dependent upon what the natural world supplied? Do we want cities completely sterilized and mechanized; do we want art that imitates exclusively the man-made rather than the natural?"

The epilogue of the book has a particular charm, and one of its many observations of animals deserves quotation here, both for its intrinsic interest and for the practical application which might well be made in laboratories housing small rodents. "In the room with me as I write, but confined to a roomy glass case, is one of those appealing little desert animals called a Kangaroo rat. I do not intend to keep him indefinitely because I do not like to keep 'pets' who are not obviously as glad to stay with me as I am to stay with them. Nevertheless the Kangaroo rat is a solitary animal who, I like to think, is not lonesome in captivity or very much distressed by it. He spends a good deal of time pushing the sand about to make piles near his sleeping box, in filling his cheek pockets with the abundant food I supply, and in practicing that complete abstention from drinking which is his chief claim to fame.

"In his cage I put a little exercise wheel like that which accompanies the old-fashioned squirrel cage. It took him some two weeks to learn what it was good for. The fact that he now races in it fast and expertly seems to me a considerable tribute to his intelligence, because the whole contraption is unlike anything for which his inherited reflexes could have prepared him or his previous experience taught him anything. But the real question in my mind was this: Does he enjoy running in a wheel or does he use it *faute de mieux*? Is this a kind of game or is it merely a poor substitute for the exercise he needs and would have got in freedom?

"Of course I don't know. But an anecdote told me by the naturalist-photographer Lewis Wayne Walker after I had begun to wonder about the matter suggests an answer. Entering his barn one night he was startled to see that an unused exercise wheel stored there was revolving of its own accord. He hid to watch, and presently a brown rat came out, climbed into the wheel, had a fine run, and then went away again. This rat could run as far and in whatever direction he wanted to run. He was not suffering from any enforced lack of exercise. But like a child to whom the family automobile is no novelty but who nevertheless wants to ride round and round on a carrousel, the rat was pleased for a chance to run fast without getting anywhere. It was fun and that is all there is to it."

HUMANE ORGANIZATIONS UNITE AGAINST ANIMAL SEIZURE BILL

For the fourth time there has been introduced into the Massachusetts legislature an animal seizure bill which seeks to force humane societies to surrender dogs and cats from their shelters to laboratories for experimentation over which they have no control. The humane movement is solidly united against this legislation, and if it should pass, no pound in Massachusetts will continue to be operated by a humane society; all have decided to give up this work rather than violate the moral standards upon which they were founded. These standards require that every animal taken into the shelter be considered as an individual, that he be returned to his owner or placed in a good new home, and failing this that he be painlessly destroyed.

Massachusetts citizens and taxpayers have been fortunate in having humanely and efficiently operated pounds, in several cities, which are supported wholly or to a great extent by charitable contributions. A backward step to the old-fashioned city-operated dog pound will occur if the bill is enacted. Reports from Massachusetts indicate that the overwhelming majority of letters received by legislators on this bill asks that it be defeated like its predecessors.

At the public hearing on the bill held Tuesday, January 29, 1957, hundreds of medical students arrived at the State House at 6:30 A.M. and filled nearly all of the seats allocated for the interested public. Many opponents of the bill, some of them elderly persons who had come a considerable distance, were unable to obtain a seat for the 10-hour long hearing. This is the same tactic which has been used repeatedly by proponents of animal seizure legislation. The attorney for the National Society for Medical Research, the national sponsor of animal seizure legislation, was present and testified at the Massachusetts hearing.

REVERENCE FOR LIFE

The following article, written by the well-known Associated Press columnist, Hal Boyle, on the occasion of Dr. Schweitzer's birthday, is reprinted by permission.* The film referred to is one which every doctor and every friend of animals should see.

* * *

If there is a saint now living on earth, many feel it is a gentle giant of the mind and heart who dwells deep in Africa and will be 82 years old today.

He is Albert Schweitzer, a strange multiple-genius, who following a mystic sense of self-dedication, left Europe in 1913 to found a hospital at Lambarene in French Equatorial Africa.

Even then he was famous as a philosopher, theologian, historian, and world-renowned organist. His work as a medical missionary added to his stature. So did his massive "Philosophy of Civilization," written, ironically, in a jungle clearing at night when his hospital chores were done.

But his ultimate immortality rests on a three-word creed he flung into the face of the most murderous generation the human race has produced, his insistence on a "reverence for life."

Man Of The Century

Dr. Schweitzer, famed among scholars, remained to the man in the street little more than a legendary figure in far-off Africa. But in 1950 a group of leading artists, writers and musicians of 17 countries acclaimed Dr. Schweitzer as "the man of the century." In 1952 he was awarded the Nobel award for peace.

Accepting the \$33,200 prize, which he applied toward improving housing for 250 lepers in his hospital, the sturdy, buffalo-moustached doctor explained his philosophy in these words: "You don't live in a world all your own. Your brothers are here, too."

Pilgrims of all kinds and from many lands have journeyed to visit this disturbingly kind philosopher who, instead of stepping on the ants at his feet, put down food for them.

What is he really like?

The world will soon be able to see how he works and lives, in a biography filmed by Erica Anderson, a Vienna-

*Ann Arbor (*Mich.*) News, January 14, 1957

born photographer, and produced by Jerome Hill, grandson of James J. Hill, the railway titan.

Mrs. Anderson got the idea of filming Dr. Schweitzer for posterity back in 1948. She wrote him. The suggestion of a movie of his life so shocked the modest missionary that it wasn't until three years later he let her visit the hospital.

It took another year to win permission to make the film, four more years to do the actual filming and overcome Dr. Schweitzer's wish that the film remain unshown until after his death.

"He gave way finally," said Mrs. Anderson, "only because he cannot bear to have anyone unhappy he knows of and can help.

"His veneration for life is such that rather than cut down a tree that is in the way he will have it transplanted. It even bothers him that as a physician he must destroy bacteria, even though he recognizes that higher forms of life take precedence.

"He lives with utmost simplicity. His favorite food is onion soup. He hasn't smoked since he was 25 nor does he take hard liquor.

"Every morning he cleans the antelope pens himself. He believe in doing things with his own hands.

"He is, in a way, oddly old-fashioned. His mind is of this century but he dresses and looks like the last century.

"He doesn't like to ride in cars and never has been in an airplane. He has seen only three or four movies in his life.

Aware Of Outside World

"But he is aware of everything going on in the outside world. He writes, longhand, 30 to 40 letters every night. He has no secretary and won't let anyone reply to a letter for him.

"He likes particularly to keep in touch with young people, and tells them that, instead of growing pessimistic as they age, they should grow into deeper idealism.

"He travels third class on trains and once, when he was asked why he was traveling third class, he said simply, 'Because there is no fourth class.'"

Schweitzer's birthday will be celebrated at the hospital where he, three doctors, and eight nurses care for 500 to 600 native patients. Mrs. Anderson said, "It will be just

as if it were any member of the staff's birthday. He doesn't like to be fussed over.

"But a half hour before breakfast, a group of the natives and the staff will gather and sing to him. At breakfast small hand-made presents will be put by his plate. As the bell ending breakfast rings, he will rise and say:

"Well, I have one year less. Come! That means we must get to work quicker!"

Hal Boyle

HUMANE SLAUGHTER BILLS INTRODUCED

Bills to require the use of humane methods of slaughter have been introduced in the United States House of Representatives by two Democrats (Hon. Martha Griffiths, Mich. and Hon. George Miller, Calif.) and two Republicans (Hon. William Dawson, Utah and Hon. Edgar Hiestand, Calif.). All bills would give packing plants two years for compliance with the law and empower the Secretary of Agriculture to extend this period in special cases.

Despite this provision which would protect each packer against economic hardship, the American Meat Institute, representative of the largest packing companies, exerted every effort to defeat similar legislation last year. This is the same course that the major packers followed in the early years of this century when a public demand arose to require the use of sanitary procedures in packing houses. Not until the reputation of the whole packing industry had been severely damaged by wide publicity on insanitary slaughterhouse conditions did they finally decide to give up the struggle against meat inspection. The Federal Meat Inspection Act was passed in 1906.

There are indications that individual packers and industry representatives are disturbed by the harm necessarily done to the industry when housewives learn that most animals in our country are killed by cruel, old-fashioned methods which have been outlawed in most Western European democracies and that the packers are actively resisting legislation to require the use of humane methods. This harm to the industry could be prevented if its leaders were willing to learn by experience. Instead of resisting compulsory humane slaughter legislation until every meat consumer in the United States knows the facts about their killing floors, they would be far better advised to withdraw their opposition and permit the legislation to be enacted.

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REPRESENTATIVE OF L.A.B. AND A.T.A. TO VISIT UNITED STATES

On April fourth the Animal Technicians Association held its seventh annual meeting in conjunction with the Laboratory Animals Bureau Congress at the Royal (Dick) School of Veterinary Studies of the University of Edinburgh. The remarkable work of these two organizations, the LAB and the ATA, has, within the space of a few years, brought the care and handling of laboratory animals in Great Britain to a level far surpassing that in any other country in the world. American scientists who are dissatisfied with the care their experimental animals are receiving have written to the Animal Welfare Institute for information on proven methods of selecting and training animal room personnel, and this has been supplied insofar as possible. However, the Institute has been unable to provide the first-hand consultation with an experienced representative of the LAB and the ATA which is called for in many cases.

It is now a great pleasure to announce that the Medical Research Council of Great Britain has very kindly given a three months leave of absence to Mr. G. Porter of the Laboratory Animals Bureau so that he may come to the United States.

Mr. Porter is expected to arrive in September and will divide his time between the Animal Welfare Institute, to which he will give technical advice on its animal care program and publications, and the scientific institutions in various parts of the country which he will arrange to visit. He is an eminently well qualified member of the staff of the Laboratory Animals Bureau where he has served for four years under Dr. W. Lane-Petter, Director of the Bureau and the President of the Animal Technicians Association. Prior to his work with the LAB, Mr. Porter was Experimental Officer at the Agricultural Research Council in Aberdeen where he spent six years in charge of an unusually wide variety of laboratory animals. He has worked closely with the ATA, and has written several Technical Notes for the LAB, as well as a chapter for the forthcoming "UFAW Handbook on the Care and Management of Laboratory Animals."

UNIVERSITIES FEDERATION FOR ANIMAL WELFARE PUBLISHES A NEW EDITION OF

"The UFAW Handbook on the Care and Management of Laboratory Animals"

The second edition of "The UFAW Handbook on the Care and Management of Laboratory Animals" is expected to be ready for distribution early this summer. This greatly enlarged edition is the most comprehensive text on the subject ever to be published. Every laboratory which uses experimental animals should have a copy. Quotations from the reviews of the first edition by the Journals of the American Medical Association and the American Veterinary Medical Association are included in the leaflet enclosed with this Information Report. A listing of the 74 chapters and an even larger number of distinguished authors appears in the leaflet.

An order form is enclosed. Readers are urged to order promptly to ensure delivery as soon as the books are received from England.

CONGRESSIONAL HEARING ON HUMANE SLAUGHTER BILLS

Urging passage of compulsory humane slaughter legislation, humane societies from all parts of the country were represented at the hearing called on April 2 by the Hon. W. R. Poage of Texas, Chairman of the Sub-Committee on Livestock of the Committee on Agriculture of the United States House of Representatives. Other groups testifying in favor of compulsory legislation included the Amalgamated Meat Cutters and Butcher Workmen of North America, the General Federation of Women's Clubs, and the National Farmers' Union.

The Animal Welfare Institute exhibited four of the humane stunning instruments now on the market and readily available to packers who wish to kill animals humanely. It arranged the showing of Mr. Arthur Redman's sound film which documents with devastating clarity the cruel method of slaughtering hogs used by the great majority of this country's packing plants today. Written testimony was also submitted by the Institute, extra copies of which may be obtained by writing to its office.

In order to make first-hand observations on humane and inhumane slaughtering methods, the sub-committee made a series of slaughterhouse inspections. The hearings have provided an additional body of information. Humanitarians throughout the nation are anxiously hoping that it will recommend enactment of one of the seven compulsory humane slaughter bills which have been introduced this year.

CRUELTY TO ANIMALS USED TO ATTRACT CHILDREN TO SCIENCE

If it were the purpose of educators to develop callousness in the coming generation, to train young people to inflict suffering without a qualm and to stifle the normal human feelings of kindness and pity for small, helpless animals, no better way could be chosen than that described in a *New York Times* article of February 28th as a means of "attracting" high school students to science. The article begins by stating: "Viuu Viljur, 16 years old, trembled as she held the squirming white mouse in her left hand. In the other hand she held a hypodermic needle. It had looked easy when Dr. Norman Molmut, director of the Waldemar Medical Research Foundation, had explained the technique to the class. But the mouse was not cooperating. It snapped at the hand holding it. Viuu gritted her teeth and tried again. She jabbed the needle, containing cancerous tissues, into the mouse." It further states that the boys and girls are conducting experiments "to see whether mice made cancerous through injections will transmit cancer to their offspring."

Such experiments are a simplified repetition of experiments which have already been frequently repeated. For children to repeat again such unnecessary animal suffering is not only unjustified, it is profoundly immoral. It should not be tolerated—except by those who want to turn back the progress of our civilization and encourage the growth of cruelty.

A MAJOR ADVANCE IN CAGE DESIGN

Reprinted with the kind permission of the Animal Technicians Association Journal, the following article describes one of the few intelligent advances ever made in cage design and construction. It gives details on a metabolism cage which measures 6'7" x 4'6 $\frac{1}{8}$ " x 4' and which provides a comfortable resting place for the dog. The cage should be adopted by progressive laboratories everywhere. In the United States, the major cage manufacturers are prepared to make cages to order in any amount.

Mr. Worden has also designed a metabolism cage for cats on the same principles as the dog cage, except that he has placed two rests in the cage 16" from the floor because it has been shown that cats acclimate themselves to a cage more rapidly if they have a resting place well above the floor. The internal dimensions of the cat metabolism cage are 42" x 32" x 36" high. The construction is similar to the dog cage illustrated in the following article, except that it is lighter.

Reprinted from the *A.T.A. Journal*,
Vol. VII, No. 3, 1956

A Metabolism Cage for Use With Dogs of Varying Sizes

By A. N. WORDEN, Nutritional Research Unit,
Huntingdon, & C. E. WATERHOUSE Research
Laboratories, Bob Martin Ltd., Southport.

METABOLISM cages for use with dogs are of many and varied designs, but for periods of collection lasting for 5 days or longer, few of those in common use would appear to provide adequate environmental conditions for the comfort and optional performance of the animals. Even over short-term collection periods, urinary retention may occur (Worden, 1939) and some American workers appear to have practised regular catheterisation in order to secure representative samples (e.g., Murlin, Hayes and Johnson, 1953). Such procedures can scarcely be regarded as satisfactory for studies designed to investigate the normal dog.

In the course of our own studies, we found that a relatively large metabolism cage (of floor area approximately 3ft. 6in. x 3ft. 6in. and interior height 3ft.) while suitable for use over periods of 5-12 days with dogs of several breeds varying in bodyweight from 20 to 42 lb., was clearly inadequate for animals of the 65-75 lb. class. These larger dogs were obviously ill-at-ease, uncomfortable (despite the provision of an adequate ledge for rest) and passed irregular urine samples, the chemical composition of which reflected some metabolic disturbance. This disturbance was comparable with that found in dogs such as certain spaniels that are temperamentally unsuited to this type of work, despite the use of a cage of adequate size (Worden, Waterhouse & Partington, 1952).

Environmental temperature may influence several factors operative in metabolism trials. Thus, in some of our recent studies, we found that an increase in environmental temperature of the order of 20°F. decreased the 24 hr. urine output to between one-half and one-third of its original volume.

In studying the urinary excretion of riboflavin, we found that the daily excretion was about 75% greater at the

20°F. higher environmental temperatures (Worden & Waterhouse, 1955). Tarbin (1955) has shown that at higher environmental temperature dogs consume larger volumes of water daily, although this is achieved by taking more drinks daily rather than by any change in the amount of water taken at each drink. Indeed, a given dog appears to favour a characteristic size of drink that is not markedly affected by the total water or food intake. Thus, while for many types of metabolism trial it is permissible to offer the food as only one or two meals daily, a suitable water intake may be effected only through the process of a continuous supply or, when the total has to be restricted, as several drinks each of the size favoured by the individual dog.

With these considerations in mind, a metabolism cage, suitable for use even with large dogs, has been designed, and is depicted in Figs. 1, 2, and 3.

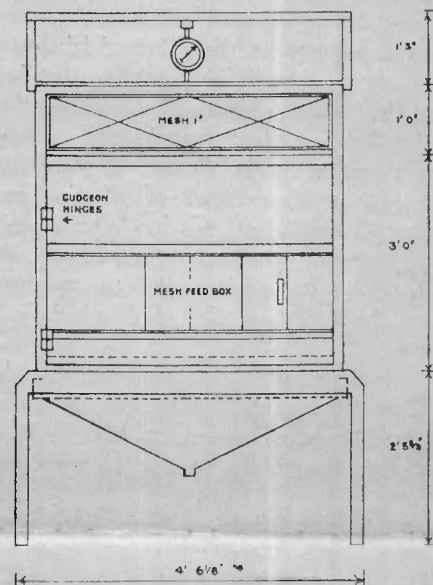


Fig. 1

The main features of the cage and the materials from which it is constructed should be clear from these illustrations, but attention is drawn to the following points:—

Trolley

The trolley consists of a metal frame on which is mounted, on three sides, tubular heaters, controlled by a simmerstat which can be set to provide an even and controlled environmental temperature within the cage. After withdrawal of the trolley the collecting funnel together with the lower mesh which rests in it may be withdrawn in order to facilitate collection of the faeces sample and for cleaning purposes.

Balance and Weighing Platform

The Salter balance is maintained permanently in position as shown, but the weighing platform, the surface of which is covered with a corrugated rubber sheet, is attached only when the dog has to be weighed. Experience to date indicates that quite large dogs up to at least 80 lbs. bodyweight can be trained to sit quietly on this platform while being weighed.

Feedbox

The sliding door may be adjusted and fixed so as to give the proper degree of access to the feedbox for the dog under study. At other than feeding times the door is kept shut. The construction of the box itself is such that spilling cannot readily occur and accessibility by vermin is prevented.

Rest Shelf

This is of sufficient dimensions to permit even a large dog to lie fully stretched upon it, and it slopes very slightly from back to front so that in the event of any urine being voided on or above it this will run forward and through the upper mesh forming the floor of the cage. In practice, urine has not been voided, on or above the shelf, but tests with small volumes of water have indicated that it runs quite freely off the shelf and through the mesh floor.

Maximum and Minimum Thermometer

This is suspended, facing inwards, within a metal container, just visible in Fig. 2 on the gauze above the Perspex on the right-hand side of the cage as viewed from the front. It is out of reach of the dog.

Collection Vessel

This is not shown in the illustrations, but in practice is protected by a wire mesh so as to prevent access by vermin and also accidental displacement.

Water Holder

This too is not shown in the accompanying illustrations, but consists of a detachable, graduated aluminum vessel which fits within a ring at the front right-hand side of the cage. In practice this water has not been contaminated nor does the arrangement interfere with the normal passage of urine.

This cage has thus far given excellent results, and dogs of the larger breeds may be housed within it in comfort for periods of 5 days and longer. Such animals pass normal volumes of urine daily, and do not give any indication of psychological or physiological disturbance as they had done in a cage of internal dimensions 60in. x 40in. x 33in. and similarly fitted with a rest shelf.

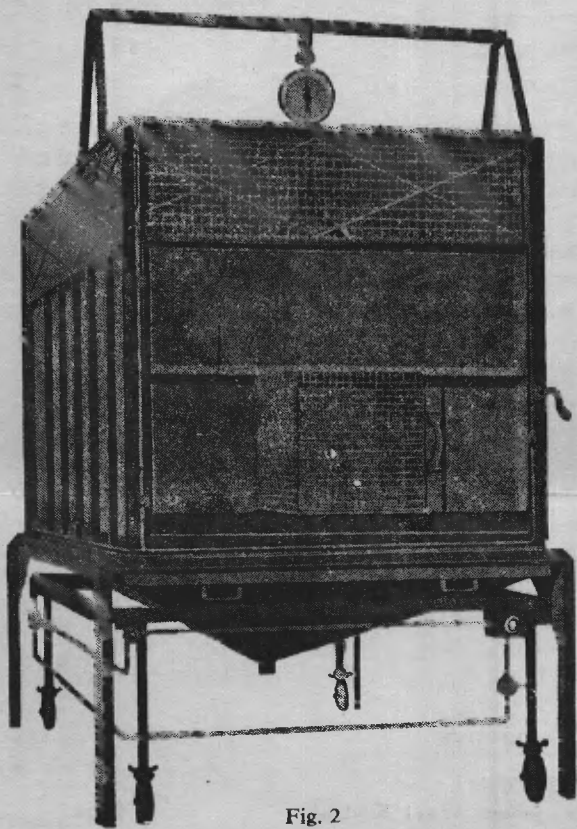


Fig. 2

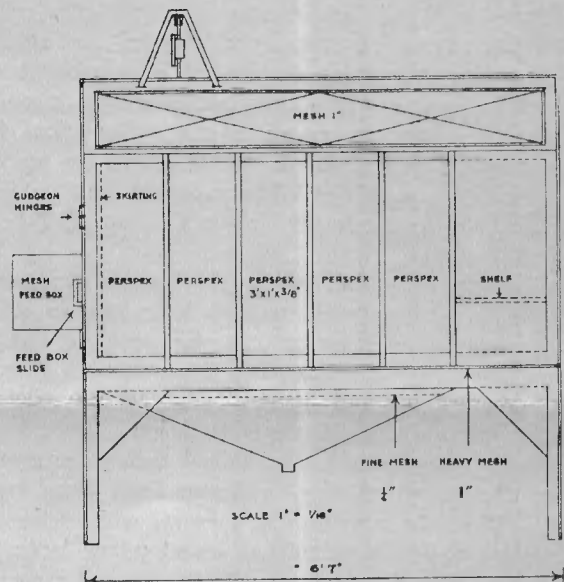


Fig. 3

Acknowledgments

We should like to acknowledge the assistance of Mr. R. N. Jackson and Mr. F. Sim of Bob Martin Limited who carried out the constructional work on the cage and who also made valuable suggestions in connection with its design.

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IRANIAN GOVERNMENT NAMES HUMANE SLAUGHTER EXPERT

The Iranian Government has taken a praiseworthy action in appointing Dr. M. J. M. Houthuis as slaughterhouse expert to advise and assist the Government on all matters regarding the reorganization of slaughterhouse affairs and the construction of slaughterhouses. There can be little doubt that under the direction of Dr. Houthuis the slaughterhouses of Iran will soon be killing animals more humanely than most American slaughterhouses do at present.

Prior to his new appointment, Dr. Houthuis was Director of the exceptionally well-operated Public Slaughterhouse of Rotterdam, Netherlands, where all animals are humanely stunned prior to slaughter.

NEW FINDINGS ON THE IMPORTANCE OF EXERCISE FOR EXPERIMENTAL MICE

Persons who still believe that any kind of a cage is good enough for an experimental animal are urged to consider the study being carried out in the Netherlands Cancer Institute on the effects of environment on the incidence of mammary cancer in mice. Quotations from a paper on this subject by Dr. O. Muhlbock are reprinted below with his permission. The paper was first published in *Acta Unio Internationalis Contra Cancrum* (1951, No. 2, P. 351-53).

It is noteworthy that by far the highest incidence of the disease occurred when animals were kept in solitary confinement without opportunity for adequate exercise. Animals kept in large groups in large cages or provided with exercise wheels showed a much lower incidence. Exact figures are given in the tables below.

Two important principles of animal welfare are involved in conclusions which may be drawn from these experiments. First, the provision of quarters which allow for adequate exercise are essential to sound animal husbandry. Second, in painful experiments (such as many cancer experiments are) no animals should be needlessly used. Since differences in type of housing can result in differences of more than 100% in the incidence of cancer, it is clearly essential from the humane standpoint, and also from the standpoint of scientific accuracy, to stop using cages which are too small and to substitute comfortable, roomy accommodation designed to fit the needs of the animals housed. By reducing mortality caused by unsuitable housing, many animals would be spared needless suffering which, so far from advancing scientific knowledge, can only serve to confuse and retard it.

Influence of Environment on the Incidence of Mammary Tumors in Mice

by O. Muhlbock, Netherlands Cancer Institute, Amsterdam

It is known that a variety of factors influence the incidence of mammary cancer in mice. A group of factors which has been examined more closely of late, the environmental factors, includes influences such as temperature, light, diet, etc. These factors have been shown to influence the occurrence of mammary tumors to a surprisingly high degree, though little of their mechanism of action is known. Some years ago ANDERVONT (1) showed that the incidence of mammary tumors in segregated C3H mice was higher than in non-segregated mice. STRONG (2) made similar observations.

To test the influence of crowding, isolation and activity on the mammary tumor incidence experiments were carried out on virgin females of the dilute-brown strain. Littermates were distributed at weaning age over four types of cages:

1. A zinc cage containing 50 animals, 37 x 47 x 20 cm.
2. A similar cage, sub-divided into ten sections by means of partitions, each of which contained five animals.

3. A glass jar containing five animals, 12 x 17 x 15 cm.
4. A round pot containing one animal, with a diameter of 10 cm.

TABLE 1 shows the following results: 90-100 animals per group were examined. The incidence was only 29% in the cage containing 50 animals. In the second (partitioned) cage the incidence was almost twice as high: 56%. This difference is significant. In the glass jar containing 5 animals, the incidence was 67%, whilst it was highest in the separated animals of the last group: 83%.

The average tumor age did not show any differences.

Thus by placing various numbers of animals in a cage the mammary tumor-incidence is altered.

TABLE 1
Mammary-tumor-incidence in 4 different cages

	Nr.	% ma.-ca.	Average tumor age	Non-tumor age
50 animals in a cage same cage divided	91	29% \pm 4.8	17 m.	17 m.
in 10 sections	90	56% \pm 5.2	16 m.	18 m.
5 animals in a cage	103	67% \pm 4.6	16 m.	17 m.
1 animal in a cage	99	84% \pm 3.7	16 m.	18 m.

There are various possible causes for this marked difference in tumor percentage. As far as possible, all other factors were the same in those experiments. It is known that the amount of food is of great importance. Although food was given ad libitum, the possibility is not excluded that the animals kept in larger groups consumed less food; this was found to be the case by SHIMKIN and GRADY in C3H males (3).

A second factor may be the extent to which activities are possible in the cages; the animals in the larger cages could move much easier than those in the smaller cages. In the second experiment the influence of bodily activity on the incidence of mammary tumors was examined. Five littermates of dba females were kept in a cage as described in group 3 of the first experiment. Wheels were placed in the cages. The animals used the wheels ambitiously, as shown by measurements (they walked several kilometers per night per group).

TABLE 2
Influence of activity on mammary-tumor-incidence

Littermates dba	Nr.	% ma.-ca.	Average tumor age	Non-tumor age
with wheel	98	43% \pm 5	16 m.	18 m.
without	103	67% \pm 4.6	16 m.	17 m.

TABLE 2 shows the influence on the incidence of mammary tumors. 100 animals per group were examined. The incidence in the group with wheels was 43%, in the control group it was 67%. Activity was therefore shown to have an inhibiting effect upon the incidence of mammary tumors. Again there were no difference in average tumor age. There was no marked difference in the general appearance of the animals, nor in weight.

ANIMAL WELFARE INSTITUTE

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MAY-JUNE, 1957

Vol. 6, No. 3

HOUSE AGRICULTURE COMMITTEE ADVANCES HUMANE SLAUGHTER

A new humane slaughter bill introduced by the Hon. W.R. Poage of Texas was reported favorably by the Agriculture Committee of the United States House of Representatives on June 29th. Despite the efforts of the packers to obtain the substitution of a totally ineffective resolution on the subject, instead of Mr. Poage's bill, H.R. 8308 was approved by an overwhelming majority of votes on the Committee: 25 to 3.

The bill provides that after January 1, 1960, the Federal Government will purchase meat only from packers who use humane methods in all of their plants. This moderate approach, providing an incentive for humane slaughter in place of a fine for failure to use humane methods, recommends itself for two major reasons: 1) While removing the stigma of criminal prosecution and the administrative work associated therewith, it provides a large and powerful economic reward which should be much more effective than the relatively small fine originally proposed, and 2) It eliminates the much-discussed question of possible economic hardship on small packers which caused many Congressmen to hesitate in giving their support to the original bills. It has been estimated that 75% of the animals slaughtered in the United States are killed by the biggest companies, no more than a dozen in number. All of these companies have government contracts which they desire to continue. Of their financial ability to purchase humane equipment there can be no doubt; meat packing is the second largest industry in the United States.

The resistance of these companies to effective humane slaughter legislation appears to be almost identical with their resistance in 1905-06 to passage of the Federal Meat Inspection Act, which requires them to adhere to minimum sanitary standards. Congressional action forced these standards upon the packers to the benefit of all. It appears that similar action is about to take place with regard to humane slaughter.

The packers have one formidable ally in their fight to preserve the status quo: the United States Department of Agriculture, headed by Secretary Ezra Taft Benson. Spokesmen for the Department, like the spokesmen for the packers' lobby, are obliged to follow a line of very meager plausibility in opposing humane slaughter legislation because they deem it politic to repeat frequently that they really do favor humane slaughter, only they must keep studying the problem rather than acting on it.

At the Humane Slaughter Hearings conducted by the Hon. W. R. Poage, Chairman of the Subcommittee on Livestock and Feed Grains of the House Committee on Agriculture, Doctors Clarkson and Miller of the Department of Agriculture testified against the seven compulsory humane slaughter bills on the theory that more study was needed, and an interesting interchange took place.

MR. POAGE: Dr. Clarkson, I think that we should have some idea how long the Department assumes they would have to study this problem before they could arrive at some decision. What is your idea of that? How long do you think you would need? That is, to study this problem?

DR. CLARKSON: Mr. Chairman, I do not believe that

our position should be looked at from that standpoint. We are not suggesting a study commission that will put into effect a program of investigation and then report on certain specific methods which then must be put into effect universally.

MR. POAGE: I know, but how long?

DR. CLARKSON: We contemplate a continuing program.

MR. POAGE: If we are to wait until such time as you would never study any further on it, that would go on forever.

Later Mr. Regensburger and Mr. Davies, testifying for the American Meat Institute, the organization representing the biggest packers, struggled to maintain the same untenable line in the face of questions by the Hon. Harold D. Cooley, Chairman of the House Committee on Agriculture. "In other words," said Mr. Cooley, after listening to a series of Mr. Davies' responses, "you are all relying on education and research, and you have been researching and educating for all of these years and you are using exactly the same methods, or substantially the same methods now, as you used 40 years ago?" As slaughtering methods in most plants are the same as they were even more than 40 years ago, Mr. Davies was reduced to trying to keep the argument confined to the handling of livestock prior to slaughter, a quite separate issue, but he did not succeed in keeping Mr. Cooley's attention for long from the issue in question.

MR. COOLEY: In this well-prepared statement you have presented here, you, in effect, say that America operates at such high speed that we cannot afford to be humane.

MR. DAVIES: No, we do not say that.

MR. COOLEY: That is exactly what you said. You said because of the high speed of your operation, you could not do it in a humane fashion as it is done in Switzerland and Norway and other countries.

MR. REGENSBURGER: I think what we said was that the application of improved methods, of different methods, is more difficult than it is in Europe.

Mr. Regensburger's other effort to help Mr. Davies out was more disastrous. American Meat Institute spokesmen have repeatedly written letters to the newspaper editors asserting that the idea that hogs ever get into the scalding tank alive is a false rumor spread by ill-informed fanatics. But after the showing of Mr. Arthur Redman's documentary film, "Hog Slaughter," and Mr. Cooley's comments on it, Mr. Regensburger felt impelled to explain that "Any hog that gets into the scalding tub alive is purely an accident."

Accidents to human beings resulting from the usual inhumane methods were emphasized in the testimony presented by the Amalgamated Meat Cutters and Butcher Workmen of North America.

"We fully realize that the bettering of the lives of human beings and preventing cruelty of man against man, must have as a corollary the prevention of cruelty against animals. This is one reason why we appear before this committee today in favor of humane slaughtering legislation. Some of the processes in slaughtering cattle, hogs and other livestock leave a great deal to be desired from the point of view of humaneness toward animals. Today, comparatively inexpensive means for correcting this situation are available. And, we understand that these means are completely practical.

"Our other reason for supporting the humane slaughtering legislation is our concern for the welfare of the workers in

the packinghouse industry. More than 100,000 packinghouse workers are members of our union. Many of the jobs involved in the current process of killing hogs and cattle are dangerous, dirty and nauseating. The workers do not like these jobs and generally want to be moved to other work in the packinghouse. Probably the most heartily disliked job is the shackling of hogs. Workers must go into a small pen crowded with emotionally disturbed hogs. They must reach down among the animals to put a small shackle chain around one of the hog's hind legs. The chain is attached to a rail and the hog is yanked up into the air, and is pulled to the hog kill. This operation is not only extremely painful for the hog, it also provides considerable danger to the worker. The hogs generally thrash around. Their hoofs are sharp. Workers are often gouged. Although the men wear protective equipment, it is not completely satisfactory and injuries are common. A further danger comes from the great deal of dust which the terrified hogs kick up. As a result, pulmonary diseases, such as tuberculosis and silicosis, are a definite health hazard to packinghouse workers on the shackling job.

"The cattle killing operation is not as dangerous, but it is still nauseating work which is not generally desired. The so-called 'knocking' of cattle, whereby a man hits the animal on the forehead with a hammer, is a physically demanding job. Great effort is involved. The pressure of an 8-hour day of this work is tremendous. Both the shackling and the knocking job would be ended by this legislation. And packinghouse workers will be happy to see them go. Our members have had experience with the captive bolt gun on cattle and the carbon dioxide tunnel for hogs. They have found them both to be effective and to make for far better working conditions."

The General Federation of Women's Clubs urged Federal legislation to require all slaughterhouses to use humane methods, and the President in her testimony offered the information sent to the Federation's affiliates asking them to investigate slaughterhouse conditions locally. She, too, spoke highly of carbon dioxide anesthetization and of instantaneous stunning devices. So did the representatives of the many animal protective organizations who testified.

Only the Department of Agriculture clung to its strange determination to maintain ignorance of what is humane and what is not. To quote Dr. Clarkson, "With the present stage of our knowledge I don't see how we could say that subjection of an animal to CO₂ gas is any more humane than the use of the knife with its quick thrust."

Mr. Poage spoke feelingly to him about the cruelty of the great wheel over which shackled hogs are customarily dragged, which is eliminated when they are anesthetized with carbon dioxide.

MR. POAGE: It is possible we will never have that exact scientific proof that you demand, but we do have scientific proof that we are not breaking their legs, that we are not creating the terror which the wheel creates, that we are not dragging a fully conscious animal through a long process as that wheel does at present. We know these things, don't we?

DR. CLARKSON: Oh, yes.

Experts in the Department of Agriculture might also be expected to know something of the anesthetic properties of carbon dioxide, of the research on the subject from the year 1827 onwards, and particularly of the work on pigs at the Danish Meat Research Institute by Dr. S.M. Blomquist.* After explaining the conditions which make carbon dioxide an effective anesthetic, Dr. Blomquist writes:

"The reaction of pigs to CO₂ stunning was investigated during an experiment carried out by the Danish Research Institute. Seventy percent CO₂ in ordinary air was used. The pigs moved around rather freely during the experiment. During the first 15 seconds the animals were apparently unaffected by the stunning gas. They went around calmly sniffing manure from other pigs and showed no sign of cramps in the pharynx, larynx or bronchi. Nor did they seem to have smarting in the mucous membranes. Fifteen seconds

after the pigs were led into the stunning chamber there appeared a state of excitement where they bent their head backwards and fell over on their side. It was impossible at that point to make any investigation of the corneal reflex (blink reflex when the cornea is touched), but 5 seconds after the beginning of the reaction the sense of pain seemed to have been lost, or, at any rate, greatly reduced, since the pigs did not react when their hooves were stepped on with wooden shoes. At this point all eye movements had ceased. The pigs did not follow a hand drawn before their head. The skin was still sensitive to a slight touch. Fifteen seconds after the beginning of the fit, the corneal reflex disappeared. The time periods mentioned were approximately the same for five experimental animals. From the knowledge of the cause of narcoses in general (Moller, 1952) it can be concluded that the pigs rather suddenly lose consciousness about 15 seconds after they were put into the CO₂ atmosphere. A few seconds later there is no longer any sense of pain and after a few seconds more the animal is generally anesthetized, that is, feeling of pain, consciousness, and voluntary and involuntary muscular movements disappear, without essentially affecting circulation or any other vital function. The animals wake up calmly during the course of 1½ to 2 minutes if they are allowed to lie. 10 to 15 minutes later they have completely recovered."

The record built by the testimony at the hearings and the inspection of packing plants by the members of the Committee points unerringly to the need for effective legislation for humane slaughter. Even the packers know it now. As the Executive Secretary of the National Independent Meat Packers Association told the members at their recent convention: "I tell you, frankly, we are on the spot. I tell you, honestly, if one of those bills hits the floor, I have no doubt that it will pass. Who is going to vote against sin?"

INTERNATIONAL EXHIBITION OF ANIMAL PROTECTIVE WORK PLANNED

A large exhibition showing the progress of humane work throughout the world will be presented in Zurich, Switzerland, May 17-22, 1958 in association with the World Congress sponsored every four years by the World Federation for the Protection of Animals. Humanitarians are most cordially invited to submit suitable photographs and literature and other materials for display there.

The exhibition will consist of three sections exemplifying the three basic ways of advancing animal welfare: 1) Legislation, 2) Education, and 3) Direct animal rescue and relief of suffering. The Congress Committee has indicated that it will be much pleased to receive material in any or all of these categories, for example: outstanding pictures demonstrating kindness or cruelty to animals, copies of laws protecting animals, pictures of animal shelters, animal clinics, and those showing the rescue or protection of animals, pictures of animals in international transport, sample copies of all humane educational materials published by societies and pictures showing the work of societies.

Each Society or individual providing material for the exhibition will be given credit in the publications of the Federation. The Committee will, of course, have to select from the material sent in order to make the most effective exhibit for the advancement of animal protection. In general, the items sent will become the property of the Federation. However, humanitarians are urged to call the Committee's attention to any display they believe would be of value but which must be returned. Special arrangements for the showing of such exhibits will be made. Any unusually large or heavy exhibits should also

(Continued on page 4)

**Slagteriernes Forskingsinstitut*, December 15, 1956

HUMANE TECHNIQUE IN THE LABORATORY "Replacement, Reduction, Refinements"

An effective barrage of scientific thinking directed against unnecessary animal suffering in laboratories has long been needed. Individual research workers have made important contributions to this worthwhile objective, but until the Universities Federation of Animal Welfare arranged a symposium on the subject, it had received little formal recognition.

The Lancet, one of the most distinguished medical journals in the world, published an excellent review, which is reproduced below with the kind permission of the editors.

The Lancet

May 18, 1957

If we decide that experiments should be performed on living animals, it is our duty to ensure that their suffering is the least possible. At a symposium held in London on May 8 by the Universities Federation for Animal Welfare (UFAW) with Prof. P.B. MEDAWAR, F.R.S., in the chair, the theme was that suffering could be reduced, and the value of experiments simultaneously increased, by replacement of animals by other systems, by reduction in the numbers used, and by refinements in technique.

Major C.W. HUME, the secretary-general, opened the proceedings with a comparison of the warm-blooded and cold-blooded aspects of war and of experiment. Thus the general might consider his soldiers, and the scientist his animals, as units or as individuals. To neglect the warm-blooded aspects was not only callous but incompetent; he pointed out that the soldier who is not cared for may fight less well, and he quoted Starling as saying that many experimental results were vitiated because the physiological effects of pain had not been eliminated.

Dr. W. LANE-PETTER said that now about 2½ million laboratory animals were used in this country each year, and the number was increasing by nearly 8% annually; we must plan for future needs. He thought that bad husbandry was responsible for many losses—an interpretation which was criticised in the discussion. Miss PHYLLIS CROFT, PH.D., said that a humane technique involved asking such questions as: "Is the experiment necessary? Has similar work been done before? Is the technique appropriate? Are the numbers and method such that most knowledge will be gained from the fewest animals? Can animals be replaced?" She drew attention to the importance of properly trained technicians, and to unnecessary suffering caused by, for example, delayed euthanasia and inappropriate housing conditions (e.g., case and mice in cages in the same room). The pulse-rate and electrical resistance of the skin could be used as a measure of pain suffered by animals. Answering a question, Dr. CROFT said that the definition of a necessary experiment must be left to the integrity of the experimenter. The chairman suggested that an experiment prefaced by "I wonder what would happen if . . . ?" is usually not necessary. Mr. W.M.S. RUSSELL, D. PHIL., pointed out that the experimental animal was usually a model for the human. It was irrational to suppose that the animal nearest to the human was therefore the most appropriate, for certain other (e.g., electronic or bacterial) models might eliminate variables. A general theory was needed to decide where and how replacement of animals, especially mammals, was indicated.

The next three speakers described ways of replacing animals. Mr. G. SYKES said that, for assay of B vitamins and amino-acids, microbes were often more sensitive and convenient than mammals. He spoke at length on these techniques. Mr. F.K. SANDERS, D. PHIL., spoke as a virologist. Animal tissues (egg and tissue cultures) could be used for growing viruses; they had not the disadvantages of antibody formation or the presence of latent viruses. In tissue-cultures, moreover, cytopathogenic effects were sometimes specific. Contamination could be satisfactorily suppressed by addition of penicillin, streptomycin, and nystatin, and tissue-cultures could now be bought commercially. He described an ingenious method of counting viruses using a tissue-culture in a plate and vital staining, so that dead groups of cells (i.e., those infected by virus) showed up as pale spots. He pointed out that one animal, painlessly killed, could provide 20 plates of cells, and 4000 units of information of greater

precision than would be possible using 4000 animals. Mr. W. GREY WALTER, SC.D., spoke of the "artificial zoology" thriving in many centres in Europe and America. He gave a brief, stimulating, and lively account of his models of segments of nerve, of "*Machina speculatrix*," with its two reflexes, and of Cora, the conditioned-reflex analogue, which can behave neurotically. His electronic "animals" and preparations were useful for investigation and especially for teaching. When they broke, he said, they did so with a loud clear bang.

The conference then turned to means of reducing the number of animals used. Major HUME explained the fallacy of assuming that using a large number of animals always gave a truer picture: it might introduce error by including a more heterogeneous population. Statistical methods would give more reliable results and allow the use of fewer animals. He said that wide difference in the responses of patients would swamp small inaccuracies in the assay. Dr. LANE-PETTER discussed the genetic foundations for producing animals as nearly uniform as possible, and Mr. M.R.A. CHANCE, PH.D., described the profound effects on the physiology of rats of minor environmental changes, such as altering the number in a cage. The conditions making for uniformity were those in which the rats were happiest. In the discussion, it was pointed out that the law required high accuracy in bio-assay, even though variations in clinical response often made such accuracy unimportant in practice.

The final section of the conference was devoted to humane refinements in technique. Dr. CHANCE insisted that the environmental conditions, the response, and the units in which they are mentioned must all be specified, or the work could not be repeated. He pointed out that rats normally slept by day and ran a lot, and that their metabolism was adjusted accordingly; this must be allowed for. Dr. CROFT gave an account of methods of anaesthesia, emphasising technical points to reduce fear (such as full preparation to eliminate delay at the start, and the avoidance of regional anaesthesia where possible). She warned against dangers peculiar to modern techniques—e.g., species difference in synergism where several drugs were used, and the possibility of an animal waking up while paralysed by a relaxant. Activity too early after a relaxant might lead to muscular pain. Dr. RUSSELL discussed ingenious means of refinement where this might seem impossible—i.e., in experiments on stress itself. For instance, certain birds would not approach another of the same species except to mate, and then the male approached the female with a pivoting action, of which the turning-away component was an avoiding reaction and a sign of stress. Such birds could be used to test the effects of a drug designed to combat fear.

In the discussion, Mr. A.L. BACHARACH said that, in view of species differences, tests of toxicity might appropriately be confined to one species, for the effect in man might still be different even if many species were used. Other speakers mentioned the unfortunate impression that would have been gained from tests of histamine confined to rats or, conversely, of penicillin confined to guinea pigs; and emphasized the need for good animal technicians. An excellent 16 mm. sound film* (which may be borrowed free from UFAW, 7A, Lamb's Conduit Passage, London, W.C.1) was then shown, demonstrating methods of handling the common laboratory animals.

*"Handling Laboratory Animals". This film is available from the Animal Welfare Institute. For rental \$3 per week. For sale \$65 per print.

(Continued from page 2)

first be described by letter and accepted by the Committee before they are sent.

All material should be received not later than January 1, 1958. It will be gladly accepted now. (Collection center for North and South America, the Animal Welfare Institute, 22 East 17th Street, New York 3, New York.)

The purpose of this exhibition is to show the progress made so far in the prevention of cruelty to animals and the great need for active work throughout the world to bring an end to the vast amount of cruelty and suffering still being unjustly inflicted on animals. Everyone interested in animal welfare is invited to contribute material for display and to visit the exhibition.

HUMANE SOCIETIES ATTACKED

A great blow to the humane cause was the enactment of animal seizure legislation in Massachusetts and Ohio in the past two months. Both bills were bitterly contested by humanitarians, and the signing of the bills by the Governors of the two States has not put an end to the matter.

In Massachusetts, court action to determine the new law's constitutionality has been brought by the Massachusetts Society for the Prevention of Cruelty to Animals. All animal protective societies in Massachusetts have stood by their principles and the wishes of their supporters, both living and dead, and have refused absolutely to act as procurement agents for laboratories. These societies were founded to protect the animals they take into their shelters against any further suffering, and they cannot in conscience and honor surrender them for experiments over which they have no control and which may inflict unlimited suffering.

The Animal Rescue League, which has done a humane and efficient job of controlling stray dogs in Boston for many years, has saved hundreds of thousands of dollars of taxpayers' money by asking only a nominal fee to help pay the expenses incurred by the Society in this work. To date, the question of how and by whom a pound would be built and operated in the event the bill should be considered constitutional by the Massachusetts Supreme Court, remains unanswered. The local medical research group has publicly asserted that it will do so, but since it costs much more in money, effort, and public relations to run a pound than to breed dogs for experimental use, well-informed observers have expressed doubts of this. No funds for pound building or operation were provided in the law.

The enactment of animal seizure legislation is a part of the long-term plan of the National Society for Medical Research and its affiliates which have, since its founding in 1946, obtained similar laws in Minnesota, Wisconsin, South Dakota, Oklahoma and New York. These campaigns have been won by shifting the debate away from

the real issue (shall animal protective societies be forced to procure animals for laboratories?) to simpler and more easily grasped questions, such as: Do you like children or dogs better? Are you for science or anti-vivisection? (with a note that the Nazis were anti-vivisectionists) or, most effectively, Would you rather live or die? These slick evasions have provided remarkably effective emotional weapons, and the odd day-dreams they inspire are exemplified by the Ohio man who wrote for publication a letter in which he passionately proclaimed that he would gladly eat the family dog raw if it were necessary to save his child.

The NSMR has, at last, following a direct request for substantiation, admitted the falsity of the story it has been spreading for nearly ten years to the effect that Hitler passed an anti-vivisection law. On June 3, 1957 replying to a letter from the Animal Welfare Institute, an NSMR official admitted: "We have looked up the German law, have found that it is still in effect, and have found that it does not prohibit or even seriously encumber animal experimentation." A few days later, on June 7th, a letter from this same official was published by the Akron (Ohio) Beacon Journal stating that the Society had been misled by the anti-vivisectionists into thinking there was a Nazi anti-vivisection law.

Before its retraction, the Nazi story was effectively used in propaganda for the passage of the Massachusetts and Ohio animal seizure laws. The truth of the matter is that the Nazis used both people and animals in large numbers for cruel experiments.

Some American research workers are anxious to increase very greatly the number of dogs they use, as indicated by the recently published letters and news reports in which doctors called for "a steady flow" of dogs, (or "material", as the dogs are sometimes called) into laboratories. But the main objective of animal seizure legislation appears to be to secure animals from humane society shelters. In both Massachusetts and Ohio, amendments offering to exempt humane shelters from the provision of the law met with a storm of protest from the sponsors who claimed the bills would be ruined by such an amendment. Since experimental dogs are available from other sources (dog wardens and ordinary pounds, breeders and dealers and pet shops) it can only be concluded that this legislation is an attempt to destroy humane societies.

The Saturday Evening Post, in a recent editorial, said, "If a man may not dispose of his estate as he sees fit, a pretty wide breach has been made in our private-property system." The animal seizure bills seek to widen this breach by violating the wishes of the founders and supporters of humane societies. It is a curious paradox to find the ultra-conservative forces of organized medicine marshalled against private charity and private property as they have been whenever one of these bills is proposed.

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SEPTEMBER-OCTOBER, 1957

Vol. 6, No. 4

EXPERT ON LABORATORY ANIMAL CARE ON SPEAKING AND CONSULTING TOUR

As announced in Vol. 6 No. 2 of the Information Report, Mr. George Porter of the Laboratory Animals Bureau (Medical Research Council of Great Britain), arrived in this country in mid-September for a three months' visit under the auspices of the Animal Welfare Institute. During his stay, Mr. Porter, who has worked closely with the Animal Technicians Association in England, will visit scientific institutions in various parts of the country and conduct seminars on laboratory animal care and related subjects. He is scheduled to speak at the annual meeting of the Animal Panel at San Francisco, November 7-9.

Institutions which would like to have Mr. Porter visit them are invited to write to the Animal Welfare Institute to arrange a date. There is no fee or other charge involved. Notes on some of his work during his first three weeks in this country appear below.

NOTES BY GEORGE PORTER

Plum Island Animal Disease Laboratory

Thanks are due to Dr. J. J. Callis for extending an invitation to visit the laboratories and talk to the staff on animal husbandry and technician training. The Director and staff of this unique laboratory where the safety precautions and rigid discipline are second to none have proved that it is possible to convert existing installations into comfortable animal quarters. Since the laboratories were opened, they have trained a team of competent animal technicians who are highly conscious of animal welfare, alert to the dangers of disease and cross infection, well versed in nutrition and reproduction. These men are a credit to the highly skilled veterinarian employed on the Island. It is regrettable that because of the contagious nature of the diseases under study, the doors of this laboratory cannot be opened to animal house personnel throughout the country, for it is a model establishment of its kind.

Medical School, University of Florida

Dean Harrell of the School of Medicine, University of Florida, Gainesville, was instrumental in calling a technical seminar on laboratory animal care and technicians' training. This fine new School has great potentialities if full use is made of the available information on the care of laboratory animals and on animal house

(Continued on page 4)

HUMANE TRAPPING BILL AND NEW INSTANT KILLING TRAP PROMISE ABOLITION OF TRAPPING CRUELTY

Just as legislative activity and inventive genius have joined to bring us to the verge of nation-wide abolition of long-standing slaughterhouse cruelty, so an encouraging combination of parallel circumstances in the field of trapping promises relief from the extreme torture inflicted on fur-bearing animals for the past 300 years.

On July 8th, Senator Neuberger with Senator Humphrey and Senator Kefauver introduced S. 2489, a bill to require the use of humane methods of trapping animals and birds on lands and waterways under the jurisdiction of the United States.

Two months later, the announcement of a new instant-killing humane trap invented by Frank Conibear was carried by newspapers throughout the country and was featured in "Outdoor Life", a magazine of wide circulation among hunters and trappers, which announced on its September cover "SENSATIONAL NEW TRAP ENDS 300 YEAR SEARCH." Mr. Conibear's efforts to invent a first-rate humane trap covered a 28-year period during a considerable part of which he earned his living by trapping. The fully documented account by Eric Collier, President of the British Columbia Registered Trappers Association, demonstrates the revolutionary nature of the Conibear invention. Mr. Collier makes clear his belief that professional trappers will welcome practical humane equipment and says:

"Three centuries of winter snows have run into the lakes and rivers since the Hudson's Bay Company was granted its charter. Since then Watt invented the steam engine, Marconi gave wireless to the world, and Edison's incandescent globe has lighted almost every home in the land. Scarcely a year went by without the creative brain of man producing some new device to contribute to the prosperity, health, and comfort of his fellow man.

"Only the fur trade marked time, shackled to its past. The gin trap has not been substantially changed in three centuries.

(Continued on page 4)

FOR THE FIRST TIME . . .

a national magazine has had the courage to print facts about cruelty to experimental animals and give serious attention to their urgent need for help.

Every biologist, every friend of animals, every thoughtful person should read "The Case for Humane Vivisection" by Paul W. Kearney in the November issue of CORONET magazine, on sale at all newsstands now. DON'T MISS IT!

PROGRESS IN ANIMAL TECHNICIAN TRAINING

Comprehensive courses on the principles of sound animal care in the laboratory have recently been instituted in two major scientific institutions in New York, the Roswell Park Memorial Institute at Buffalo and the Berg Institute of New York University-Bellevue Medical Center at New York City. This represents a very important forward step in improving the care, handling and management of laboratory animals.

In New York City, Dr. L. R. Christensen, Director of the Berg Institute, arranged the course, which was designed for supervisory personnel from numerous scientific institutions and commercial breeders. It was felt that such men were in the best position to institute training in their own establishments. The syllabus covered all aspects of animal husbandry and was divided into the following headings dealing with practical application of theoretical knowledge: *Anatomy and Physiology*; *Metabolism*, including discussion of balanced rations for various species; *Infectious Diseases*, with special emphasis on practical prevention of disease in an animal colony including the prompt removal of a sick animal in order to prevent contact between parasite and host; *Sanitation*, with recommended procedures for handling contaminated articles, sterilization of such articles and the technique necessary to ensure the destruction of bacteria; *Caging and Housing*, with special emphasis laid on the importance of providing adequate and comfortable quarters for the various species; and *Special Topics*, which dealt with genetics and the operation of a breeding colony. The proper handling and training of laboratory animals was illustrated by the film "Handling Laboratory Animals."*

At the end of the course, a written and oral examination was held, and each student was presented with a complete set of lectures and other useful literature invaluable in the dissemination of information on the proper care of laboratory animals.

In Buffalo, at the Roswell Park Memorial Institute, Dr. Albert R. Shadle is responsible for a similar course which is open to staff members and required of animal caretakers and handlers. At the request of the Animal Welfare Institute, Dr. Shadle very kindly consented to write the following article which describes the course.

CARE AND MAINTENANCE OF LABORATORY ANIMALS

By DR. ALBERT R. SHADLE, Lecturer,
Roswell Park Memorial Institute.

Roswell Park Memorial Institute of Buffalo, New York, is the investigative and educational center for the general problem of malignancy in New York State. Besides the investigation of the cause, prevention, treatment, mortality

*Available for rental (\$3.00 per week) or purchase (\$65) from Animal Welfare Institute.

rate, and cure of cancer, it also provides extraordinary surgical, radiologic, and chemotherapeutic treatment of unusual cases of malignancy.

To carry out its large and varied program of research and education, approximately 250,000 animals of various species are now being used each year. The completion of the new Research Laboratories and the new Animal Quarters will provide greater research facilities and additional room for the breeding, care, and maintenance of thousands of additional animals that will be needed. The care and maintenance of the present stock now require a staff of approximately 100 animal caretakers and handlers. It is a well-known truism that the effects of the care and handling of laboratory animals are reflected in the results of the research in which the animals are used.

With the growth of our research program and the concomitant need for greater numbers of laboratory animals it has become necessary to augment materially our corps of animal caretakers and handlers. To this end, the Division of Experimental Biology at Roswell Park Memorial Institute has initiated a course in "The Care and Maintenance of Laboratory Animals" for the purpose of training and indoctrinating its personnel. The course is open to any interested staff member and is required of animal caretakers and handlers.

The age of the students in the course varies from 17 to 70 and their backgrounds range from those with high school education to those with college degrees. The language problem is an important factor in the course, for many of the trainees are of foreign birth who have a certain degree of language handicap. It is therefore necessary to make explanations clear and simple, and to illustrate them with slides and with copies of diagrams, charts, illustrations, and with complete summaries of the lectures.

The course develops first a background of living cells, tissues, organs, and systems of organs, as illustrated in the evolution of the invertebrates and the vertebrates. Because our research animals are mainly mammals, special attention is paid to that group. Detailed information is given on the housing, caging, feeding, care and breeding, life history, diseases and treatment of each species, as well as methods in experimentation. Since this is an institute concerned with the problem of malignancy, single orientation lectures on the origin, nature and identification of various cancers are presented. Stress is placed on various types of breeding, particularly that of mouse cancer strains.

Under the title of general techniques in animal experimentation are included the discussion of the proper handling of animals, various methods of marking and identification, and the recording of them. Giving injections, pre-operation preparation, anaesthetization, operation techniques, post-operation care, euthanasia, and autopsy are discussed. Techniques for the collection and preparation

of specimens of blood, urine, feces, blood and vaginal smears, and histological specimens are discussed and demonstrated.

The discussion on procurement includes sources (in the U.S.A.), the different strains of animals, preparation for shipping, care en route, care and handling on arrival, isolation, quarantine rooms for animals, and admission to the colony. The handling of infective and radioactive animals is also included.

The food constituents, balanced rations, food requirements of various animals, methods of feeding and watering, food quality, food contamination and food infestation are dealt with at length.

In sanitation, the techniques of cleaning, sterilizing, disinfecting of animal equipment and animal quarters, disposal of wastes and animal remains are treated. The control and elimination of pests of the animal quarters are discussed.

Parasitism and the common internal and external parasites of laboratory animals are demonstrated and discussed as to points of recognition, effects on the animal, treatment of the host animals, and the control or eradication of the parasites. The common diseases, their causative factors, treatment or prevention are considered.

The work on Administration includes discussions of the physical organization of laboratory animal colonies, how to run an animal laboratory, the laws and regulations governing animal care, the keeping of records, bookkeeping, costs, and prevention of wastes.

Every effort is made to keep the course practical, thus familiarizing the student with the many phases of laboratory methods and procedures, broadening his experiences, increasing his skills, and improving his grasp of the whole subject of animal care, so that he will bring to his work a generous measure of interest, sympathetic handling, and kind and humane administration for the animals under his charge.

THE STATUS OF ANIMALS IN THE CHRISTIAN RELIGION. By C. W. HUME, *Director-General of the Universities Federation for Animal Welfare with 99 drawings by Fougasse of animals of the Bible. Published by UFAW. Distributed in the U.S. by Animal Welfare Institute. (\$1.25).*

Two of the reviews which appeared in American publications demonstrate strikingly the breadth of interest inspired by this remarkable book. With the kind permission of the editors of "The Churchman" and of "Veterinary Medicine", the reviews are reprinted below.

From The Churchman, June 1957

"This is an unusual book written for theologians, minis-

ters, missionaries - - and animal lovers. It is a call to the church to preach 'the gospel to every living creature.' We preach the gospel to animals by our deeds which animals as well as people understand. Christian behavior here is being the good neighbor to God's creatures. The first step towards this end is for all churches to place a reference to kindness or neighborliness to all animals in catechisms or statements of faith. The scholarship brought to bear on the subject from the fields of the Bible, theology, philosophy, science and psychology is both sound and extensive. The approach is not opposed to the killing of animals but advocates humane means in so doing. Perhaps my sincerest appreciation may be expressed by saying 'I am a better man because of this little book on animals.'"

From Veterinary Medicine, August, 1957

"Man's treatment of animals, whether intended for the laboratory or the dinner table, has always provided the veterinary profession with a perplexing problem. The wanton cruelty that attended the early history of the veterinary profession has been cited by Smithcors,* and some authors have found Christianity inimical to the humane treatment of animals. Although it is usually freely admitted that there is nothing in Christianity *per se* that is hostile to the humane treatment of animals, the teachings implanted on the shores of the Mediterranean were subject, from time to time, to interpretation. Why cruelty was rampant under the aegis of Christianity provides the content of this book with a revealing lesson in history.

"In The Status of Animals, the author argues that it was Greek pride and deductive philosophy that enabled men to rationalize barbarism to animals. The author correctly points out the fact that man's inhumanity to man and animals alike reached the nadir of disgrace during the post-renaissance period, when the writings of the Ionian philosophers regained their dominance. He also notes that although St. Thomas Aquinas was unfavorable to the status of animals, there existed at the same time Franciscan monks whose keen observation and passion for investigational habits in reality paved the way for the scientific movement.

Readers well grounded in the ramifications of ontology, philosophy will find this to be deliberate reading, albeit rewarding. Veterinarians interested in the history of their profession can not afford the luxury of ignoring this book. Readers well grounded in the ramifications of ontology, theodicy and the like will find The Status of Animals dazzling in its simplicity, lucid, concise, deliberate.

"Although erudite and compact, The Status of Animals can be recommended to everyone in the profession."

*Smithcors, J. F., *Evolution of the Veterinary Art*, Veterinary Medical Pub. Co., 1957.

EXPERT ON LABORATORY ANIMALS

(Continued)

technique. The wide publicity given by the Jacksonville Humane Society to the seminar resulted in the attendance of directors and veterinarians from the following university and State departments: Department of Veterinary Medicine of the University of Florida, Florida Livestock Board, Duval Medical Center of Jacksonville, State Department of Health, City Health Department and the Department of Pet Control of Jacksonville. Discussion which followed dealt with methods of obtaining dogs in relation to the law in the United Kingdom, control of accredited breeders, animal house administration and the status of the trained technician in the United Kingdom, feeding, control of disease and other aspects of animal husbandry.

Yerkes Laboratory

A visit was then made to Yerkes Laboratory, Orange Park, to view the colony of chimpanzees and discuss the techniques of housing and feeding. The director and staff of this establishment is to be complimented on the standard of housing, feeding and care of their animals.

Institute of Laboratory Animal Resources

On September 23, I was invited to address the Board of Directors of the Institute of Laboratory Animal Resources, National Research Council, on "The Work of the Laboratory Animals Bureau and the Universities Federation for Animal Welfare." I explained that whilst these two organizations were complementary to each other, their status was entirely different: the Laboratory Animals Bureau is a unit of the British Medical Research Council whose function is the collection and dissemination of information on the supply, care and management of laboratory animals, the publication of literature on animal husbandry, the organization of an annual congress and symposium, the management of an accreditation scheme for laboratory animals and many other such services to the laboratory. UFAW is an animal welfare organization which recognizes the necessity for the practice of humane techniques in the laboratory, whose scientific staff are endeavoring to find new methods of reducing the number of animals necessary for experimentation and whose UFAW handbook (the second edition of which is due to be published shortly)† is a valuable contribution to the proper care and management of laboratory animals. A discussion took place on the training of animal technicians in Britain.

†The UFAW Handbook on the Care and Management of Laboratory Animals is available for purchase from Animal Welfare Institute. \$9.80.

HUMANE TRAPPING BILL (Continued)

It still has steel springs crouched to snap steel jaws shut on the foot of the animal that steps on the treadle. There's a screech at the hush of nightfall, a foreleg locked in the vice. After a moment or two of frantic struggle, an animal born of freedom cringes down in the snow till death sets it free."

A clear idea of what animals caught in steel traps endure was given in a broadcast by Donald Baillie over the Canadian Broadcasting Corporation when he remarked:

"If you want a rough idea of the leghold trap, just imagine that the door of your car has been slammed across the fingers of your bare hand. Imagine that the door is jammed shut—and imagine that you are then left with your hand so caught until you either starve to death, or freeze to death—or tear your hand apart. . . ."

"Some trappers have estimated that they lose as many as 20% of their catch by these wring-offs. . . ."

This figure of 20% is a conservative one, as was proved by the statistical study conducted on the Wheeler National Wildlife Refuge in Alabama from 1949-1955. An article* in the Journal of Wildlife Management, July, 1956, states:

"The steel trap, second only to the gun, is man's favorite tool for taking small mammals. Where certain species of fur bearers are concerned, even more are taken by steel traps than by guns. Considerable attention has been given gun crippling, but little to the corresponding crippling by traps."

Following are some of the figures given in the article:

209 mink trapped	79 mink crippled	(27.6%)
429 raccoons trapped	137 raccoons crippled	(24%)
196 foxes trapped	69 foxes crippled	(26%)

These figures which give a concise report on the suffering being inflicted on wildlife in one of our Wildlife "Refuges" show very conclusively the need for immediate enactment of S. 2489.

The extent of the trapping problem in different parts of the world appears in figures compiled by the Universities Federation for Animal Welfare for a forthcoming publication, "Facts About Fur" by Dr. F. Jean Vinter. Estimated numbers of animals trapped in areas where the cruel leg-hold trap (also known as the steel trap or the gin trap) is in extensive use are as follows:

Australia	23,000,000 per annum
Britain	1,000,000 to 2,000,000 per annum
Canada	9,000,000 per annum
U.S.A.	8,250,000 per annum
U.S.S.R.	11,750,000 per annum (exported)

The leghold trap becomes illegal in Britain next year. It has already been outlawed in Norway and Austria, according to "Facts About Fur." Persons who would like a copy of this booklet may write to the Animal Welfare Institute.

*Incidence of Crippling Loss in Steel Trapping, by Thomas Z. Atkeson.

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PAUL W. KEARNEY RECEIVES SCHWEITZER AWARD

The third Albert Schweitzer Medal of the Animal Welfare Institute was awarded to Paul W. Kearney in recognition of his powerful contribution to the advancement of laboratory animal welfare as author of "The Case for Humane Vivisection" published in *Coronet Magazine* for November. His article was the first on this subject ever to appear in a national magazine. In it Mr. Kearney made clear the urgent need for the reform, as distinct from the abolition, of animal experimentation as currently practiced. He cited many examples of unnecessary animal suffering in laboratories. While giving due credit to the results obtained from some animal experiments, he wrote, "One is entitled to question the necessity for a Boston laboratory, while studying the causes of human deaths by fire—to burn live pigs to death in gasoline flames. And to wonder if the researchers would have learned any less if the animals had been anesthetized."

A series of descriptions of laboratories in leading scientific institutions, where animals were confined to cramped, wet, filthy quarters, suffering from disease and lack of care, was included in the article, as were reports on painful experiments carried out for purely commercial purposes and on some of the cruel animal experiments which many children have recently been encouraged to carry out in school or at home. "Such outlandish practices," Mr. Kearney commented, "simply emphasize the extent to which we Americans have blindly turned 'scientific research' into a fetish, with the result that there is today virtually no limitation on what any Tom, Dick or Harry with a kitchen knife can do to an animal so long as he wraps it in the protective cloak of 'scientific research'."

After giving a brief outline of the Cruelty to Animals Act, which for the past eighty years has regulated animal experimentation in Great Britain to prevent abuse of the privilege of using animals, the author cited the failure of voluntary policing in this country. In concluding, he stated that he offered no ready-made solution but wished both scientists and the public at large to recognize "the very real and urgent issue of Humanity versus Inhumanity in the use of animals for experimental purposes. Such recognition," he continued, "must come before any rational corrective measures can be considered. And in the absence of that recognition, no such measures have been proposed by either the numerous Anti-Vivisection Societies, or by their opposite number, the National Society for Medical Research."

MANUALS AVAILABLE FREE OF CHARGE TO SCIENTIFIC INSTITUTIONS

The new, revised edition of "Basic Care of Experimental Animals" will be ready in January, and those who work with such animals are invited to write to the Animal Welfare Institute for free copies. The Institute is continuing its policy, begun with the first edition which is now entirely exhausted, of sending copies on request to all scientific institutions which use laboratory animals. The

manuals will be provided without charge in any quantity that will be of practical use—for example, an individual copy for each staff member and for each man or woman employed in the animal quarters, or, where medical, veterinary or agriculture students are being instructed in the care and management of animals in laboratories, a copy for each member of the class.

The new edition was undertaken after making a survey of users of the first edition, and their suggestions have been incorporated wherever possible. The survey indicated a widespread desire to retain the simplicity and brevity of the original manual while incorporating some additional material. Accordingly, an appendix on nutrition and one on the transportation of laboratory animals have been added, and the information on breeding in the body of the text has been made much more complete. Also, there are a number of reference tables, including one at the end of each section on individual species, giving the normal temperature, respiration rate, oestrus cycle, gestation period, weaning age, mating age and optimum room temperature and humidity.

The literature published on laboratory animal care and management since the printing of the first edition of "Basic Care of Experimental Animals" has been checked, and personal communications from scientists and technicians in many different institutions have been of great assistance in bringing the best material together for the new edition. The Institute wishes to take this opportunity to acknowledge with thanks the assistance of all those who have contributed information and advice based on their experience with laboratory animals. It is hoped that the new edition will carry forward existing interest and stimulate the much more active effort needed to provide comfortable housing, good care, and skillful and humane handling and treatment for the millions of animals now living in scientific institutions.

THE ANIMAL LOVERS

Professions of love for animals are being issued right and left as a result of the travels of the small dog in Sputnik II, but, strangely enough, it is not the people who protested but those who upheld the Russians' "right" to shoot dogs into the sky who claim to be the animal lovers.

Dr. Clifford Barger, President of the Massachusetts Society for Medical Research, is one of those who hurried to assure us that the dog was having a delightful time and that nothing could be more absurd than to worry about the animal. "He's probably just going his merry way," Dr. Barger told the *Boston Herald* (November 5, 1957). He further expressed his belief that "the Russians will make every attempt to bring Laika to earth alive."

Dr. Barger's interview, urging the public to imagine Laika safe and happy in outer space, is typical not only of his own much publicized statements on laboratory animals here in the United States, but of the statements of men like him throughout the country who, whenever the subject of animal experimentation comes up, reach for the white-wash and apply it vigorously. In Massachu-

(Continued on page 4)

CARE OF THE LABORATORY DOG

Mr. Porter of the Laboratory Animals Bureau has just completed a tour of the United States, the Medical Research Council of Great Britain having very kindly given him a leave of absence so that he might fulfill speaking engagements and visit laboratories here. Institutions and organizations by which he was invited to speak include the following: Institute of Laboratory Animal Resources, Plum Island Animal Disease Laboratory, Medical School of the University of Florida, University of Miami Medical School, New York Branch of the Animal Care Panel, Medical College of South Carolina, Emory University Medical School, Georgetown University Medical College, University of Michigan Medical School, Michigan State University College of Veterinary Medicine, Animal Care Panel (annual meeting at San Francisco), Animal Welfare Institute (annual meeting), University of California Medical School at Los Angeles, University of Nebraska College of Medicine, Texas State Health Department, Schering Corporation Laboratories, Brown University, and Jackson Memorial Laboratory. Mr. Porter also visited the following establishments: Washington, D. C.: George Washington University Medical School, Walter Reed Army Medical Center; Maryland: National Institutes of Health, U.S. Naval Research Institute, Johns Hopkins University Medical School; New York: New York University-Bellevue Medical Center, Sloan-Kettering Institute, Columbia University College of Physicians & Surgeons, Roswell Park Memorial Institute of the University of Buffalo, Lederle Laboratories, Carworth Farms; S & E Farms; Florida: Yerkes Laboratories, Orange Park; South Carolina: Okatie Farms; Tennessee: Cumberland View Farms, Oak Ridge Institute of Nuclear Studies; Georgia: Communicable Disease Center; Pennsylvania: Smith, Kline and French Laboratories, Wistar Institute, Philadelphia Zoological Garden; Michigan: Wayne State University College of Medicine, Parke, Davis and Co.; California: Diablo Animal Laboratories, Simonsen Laboratories, Hooper Foundation of University of California; Illinois: University of Chicago Medical School, Argonne National Laboratory; Massachusetts: Harvard Medical School, Massachusetts General Hospital, Charles River Breeding Laboratories.

Near the end of his stay, the Animal Welfare Institute asked Mr. Porter to write an article on whatever aspect of laboratory animal care and housing he believed to be the most urgently and widely in need of improvement. The following article is the result of this request.

By GEORGE PORTER

It has long been realized that accurate and efficient biological research and standardization demands the use of clean, healthy animals. Far too often unclean, unhealthy dogs arrive in the laboratory; therefore every effort must be made to transfer them from the latter to the former category. The demand for dogs is met largely by commercial dealers and pounds, and even if these dogs are reasonably clean and healthy, they have not been accustomed to the confined and unfamiliar surroundings of the laboratory; they may refuse to eat, lose condition and eventually become sick. Conditioning of such animals is therefore of major importance.

HANDLING: An effort should be made to put the animal at its ease immediately on arrival. Each dog should be handled and spoken to in a friendly way and given as much individual attention as possible throughout his stay

in the laboratory. Wherever possible, dogs should be housed in compatible pairs.

HOUSING: The building must be vermin-proof, the interior walls and the floors to be finished with a smooth, durable surface without cracks or crevices. The floor should have an adequate slope to facilitate cleaning and all corners should be rounded. The rooms must be warm and well ventilated. Air conditioning providing at least ten changes of air per hour is recommended. Thermo-heated floors are now installed in all modern indoor dog pens. Natural daylight should be provided; additional artificial lighting must be installed in such a manner as to prevent glare. The building should be fitted with thermostatic controls and time switches.

It is not sufficient to say that an individual dog cage should be large enough to permit him to lie, turn or stand freely and naturally. Such cages are only resting boxes and no dog should be confined in one for longer than a matter of hours. Tiers of individual dog cages are a source of embarrassment and trouble; they cannot be properly cleaned and sterilization is an impossibility. No dog appreciates a jet of water being directed at him, especially if he cannot get out of the way; therefore, the animals must be removed for the daily hosing down. The removal of the dogs for daily cleaning and for exercise, and their replacement, is time-consuming. Due to the inefficiency of this form of caging, modern laboratories are now installing indoor pens or stalls with access to exercise runs. These pens have either thermo-heated floors or are furnished with removable resting-boards, built so that there are no cracks or crevices. The floors and walls of pens and runs can be easily hosed down, the animals being transferred from pen to run and vice versa during cleaning operations. Water is piped into each pen and the drinking fountains are placed at a height to prevent fouling. Not only do such pens provide good animal accommodation, but the labor and cost of maintenance is reduced to a minimum.

Dogs should never be forced to sleep on wire mesh, bare metal or on bare cement floors unless they are thermo-heated. A clean wooden bunk or resting board should be provided; an alternative is a thick layer of sawdust, wood shavings or shredded paper. Clean shredded paper can be obtained from printers at throw-away prices. A dog will keep his bed clean and dry, and foul in an opposite corner if he is given adequate space to do so.

Quarantine and treatment: The importance of good care and handling of dogs cannot be over-emphasized, but this is even more important when the animals arrive in the laboratory. Diseases of dogs are spread not only by contact with another dog but by human beings having contact with sick and healthy dogs. Animal house personnel, therefore, must be instructed on the importance of strict quarantine for all new arrivals, personal hygiene and above all the necessity of washing hands, and changing clothing and footwear, before again making contact with the established colony. It is advisable, although not always possible, to have separate caretakers.

On arrival, the animals must be inspected by a veterinarian or some qualified person to determine whether or not there are any sick dogs in the group, after which the animals are admitted to the isolation room for a period of up to four weeks. At the earliest opportunity, they should be washed with soap and warm water, and carefully examined for skin lesions and ectoparasites. Public Health Reports (1949) Supplement No. 211 recommends the following treatment: "After the dog is dry, he is dusted with 5 per cent DDT in talcum on the back, neck and behind the ears. Since he does not lick these parts, the DDT will be harmless. For ticks 1 per cent benzene hexachloride powder commercially obtainable is highly effective. The powder does not appear to be detrimental to the health of the dog. . . . Animals need not be treated for tapeworms unless there is evidence of such worms in the stools. An effective agent is nemural which may be given dogs over 3 months old in doses of 1 tablet (18 mg.) per 8 lb. body weight. Inoculation against distemper is mandatory. The effectiveness of distemper inoculation is no longer controversial. A healthy colony of dogs cannot be maintained unless this inoculation is routine. Any proved method of active immunization may be used. . . . Distemper inoculations may be given during the period of isolation."

For round worms, one of the piperazine compounds is recommended. For hook worms, methyl benzene may be used.

During this period, the cages or pens must be kept scrupulously clean, being washed daily with warm water, detergent and a bactericidal agent. While dogs are in isolation, careful handling and sympathetic treatment is of the utmost importance; therefore the caretaker must not only be well trained but he or she should be selected on the basis of a natural aptitude for work with dogs.

Feeding: It is agreed that the condition of the dog and the standard of nutrition may influence scientific results. The undernourished animal arriving in the laboratory must, therefore, be well fed during his weeks in quarantine. Undoubtedly these few weeks cannot turn an undernourished animal into a well nourished one, but if the high standard of feeding is maintained throughout his laboratory life, the scientist may expect better results than would otherwise be obtained. Palatability is most important. As reported by Dr. Slanetz, dogs would sooner starve than eat food which is unpalatable. McCay reports: "It was found that the average dry feed sold in New York today has a utilization value of between 70 and 80 per cent. In other words the dog excretes in its feces 20 to 30 per cent of the dry matter of the feed. In occasional instances, this may even increase to as much as 40 per cent."*

Meat is the dog's favorite food and should form part of his diet. Scraps from a hospital kitchen may be used to advantage for the meat, fish, vegetable, egg, and dairy products which they contain. Commercial preparations of

a good quality may be used, and horsemeat, beef heart or kidney and other inexpensive cuts of beef or lamb added. Fresh water should be available at all times.

Feeding and water containers should be in duplicate, a clean sterilized set being supplied daily to each animal. This prevents any danger of cross infection and facilitates feeding and watering.

Extraneous factors influencing scientific results, as reported in "The Dog in Medical Research," (U.S. Dept. of Health, Education and Welfare), are "factors over and above the actual operation or scientific experiment that can influence the result obtained from the experiment. The age of the animal is a factor. . . . The presence of disease and especially pulmonary infections to which dogs are susceptible may influence the result. . . . Latent distemper which flares up following inhalation anesthesia can destroy the scientific value of an experiment. . . . Unfortunately these factors may not be recognized by the investigator and the misleading results may be published. Emphasis should be placed on the quality of each experiment rather than on the number of experiments done. Each experiment should be a model of perfection. Every consideration concerning conditions before operation, during operation and after operation should receive careful attention."

Care of Animals subjected to Surgery: Since the dog is not fed before the operation, he should be placed in a room apart from where other dogs are being fed. Water is not normally withheld. The same general principles and the same high standards should be followed as in human surgery. The animals must at all times be given the correct anesthesia, properly administered by a qualified person. Curare is a paralyzant and is not to be regarded as an anesthetic. Post-operative care can never be overstressed. The animal should be placed on a resting board in a clean pen in a warm room. If the heating is not adequate, additional heating must be provided to bring the temperature of the pen up to 72 degrees F. Never place the animal on cold concrete, tiles or metal. In out-of-date animal rooms, where this type of accommodation exists, the animal should be given a comfortable bed of clean shredded paper. The investigator and the person in charge of the animal quarters must be held jointly responsible for post-operative care of all animals. Operations should be done in the morning so that staff members are present to supervise post-operative care.

Dogs which have to be confined to cages or pens which do not have access to exercise runs must be given exercise twice daily in open yards, animal rooms or wherever facilities are available.

Personnel: Direction of a dog colony may be by remote control, but the success of a dog colony depends on the man on the spot, the investigator, the technician or the caretaker. The latter is the man or woman responsible for day to day care and must be chosen for his aptitude for work with dogs. He must also be conscientious, well trained and adequately rewarded for the important contribution he is making to scientific research.

*For further information on feeding, see Nutrition of the Dog by Clive M. McCay, Comstock Publishing Co., Inc.

THE ANIMAL LOVERS

(Continued from page 1)

setts, during the recent animal seizure bill fight, Dr. Barger, who is a professor at Harvard, was widely—and quite naturally—believed when he assured the public that all was well with dogs in Massachusetts laboratories. When he issued the same tranquilizing verbiage on behalf of Russian scientists, readers may have asked themselves whether Dr. Barger was so remarkably well-informed that he could speak authoritatively of the humanness of scientists 6,000 miles away and of their intent to rescue their dog. Those who wondered were not left in suspense for long. On November 14th a special report from Moscow to the New York Times indicated that "Soviet scientists never had any intention to try to retrieve the dog's container or the satellite and that the animal 'had to perish'."

As noted in previous Information Reports, the medical research societies have seldom been deterred by a mere lack of factual substantiation from making statements that suit their purpose. However, up till this time, these societies have told the public that it is to prevent human suffering and death that animals in ever increasing numbers must be used for experimentation. The National Society for Medical Research and its affiliates all stress the altruistic purpose at which they claim to aim. "Study Life to Preserve Life" is the motto the NSMR prints on its letterhead.

Laika, on the other hand, was catapulted into the sky to announce the increasing power of Russia. Her sacrifice is not intended to cure or alleviate the ravages of disease or other suffering. Far from it. Dr. Barger's confused thinking on the subject is best expressed in his own words. "I am an animal lover," he asserted in the interview already referred to, "but the interesting philosophical point here is that since we feel it is perfectly proper to ask millions of men to sacrifice their lives to preserve our way of life, is it too much to ask of an animal to contribute in such a fashion—especially if he will be brought back unharmed as the Russians have intimated?"

Since the Russians haven't been sending us, to date, the results of their rocket experiments, it is hard to understand just how Laika could help to "preserve our way of life" regardless of her own fate. Barger's statements are so inextricably tangled because of his determination, at all costs, to justify *any* experiment involving an animal.

It is this overwhelming concentration on the justification of experimentation regardless of the nature of an experiment or its purpose, regardless of whether it is humanely or inhumanely carried out, regardless of whether it is done by friend or enemy, regardless of whether it is more likely to create vast human suffering and death than to prevent it, regardless, in short, of any ethical or moral value whatsoever, that has led the Animal Welfare Institute to oppose the fanatics of the societies for medical research, so called.

VOTE ON HUMANE SLAUGHTER

BILL DUE

H.R. 8308, the humane slaughter bill which was overwhelmingly approved last year by both the Committee on Agriculture and the Rules Committee of the United States House of Representatives, is due to be voted on by the full membership of the House soon after Congress returns to Washington in January. Humanitarians are anxiously awaiting passage of this legislation which was first proposed in 1955 but delayed on a series of pretexts by those who have a vested interest in the continuance of the present cruel methods of slaughter.

Eight humane slaughter bills were introduced in the House of Representatives last year, and the Committee bill, H.R. 8308, introduced by the Vice-Chairman of the Committee of Agriculture, the Hon. W. R. Poage of Texas, was drafted after careful study of all the proposals, testimony at the hearings and visits to slaughterhouses by the Sub-Committee on Livestock and Feed Grains. It provides that any packer who wishes to sell meat to an agency of the Federal Government must use humane methods of slaughter in all his plants. It should be passed without delay.

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The Sixth Annual Report of the Animal Welfare Institute is now available, free upon request, to readers of the Information Report.

CORRECTION

The review of "The Status of Animals in the Christian Religion," reprinted from "Veterinary Medicine" in Information Report Vol. 6, No. 4, was from the September, 1957 issue, not the August issue as stated. The review was written by Mr. Charles Walters, Jr.

A Christmas contribution to the Animal Welfare Institute will help our work to reduce animal suffering in laboratories, slaughterhouses and traplines. Any gift, whether large or small, will be most gratefully received, and such contributions are deductible in computation of income tax. If you would like to become a member, you are welcome. (For individual non-voting membership, the cost is \$2.00). Readers of the Information Report are cordially invited to enroll.

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