sheep losses from predation has been distorted by inattention to other causes of death. When dead lambs are found mutilated, it is impossible to determine without a postmortem examination whether the animal was actually killed by a predator or wounded after death by scavengers. Dr. Dennis notes that in many alleged instances of lamb predation, systematic postmortems either were not performed or were too limited to be dependable. Even when postmortem examinations are conducted, it is possible to misinterpret the findings. For example, the presence of subcutaneous hemorrhage is usually taken as evidence of a predator kill, based on the fact that the heart must have been functional at the time of wound infliction. However, as Dr. Dennis states: “Unfortunately, biologists ignore the possibility that the lamb was ill or dying (nonviable) and look no further for other lesions that could cause or predispose to death.”

Although predation of healthy lambs by coyotes and other mammalian and avian predators does occur, failure to differentiate between this and predator/scavenger mutilation of nonviable lambs and lamb carcasses can perpetuate the problem of high mortality: the true causes (mismothering, starvation, stillbirth, etc.), which may have their source in the type and quality of flock management, remain masked while money and energy are poured into programs to ‘control’ the perceived enemy—local wildlife.

**Pasteur and Vivisection**

“Ordinarily an experiment once conceived and talked over was put under way without delay,” says Dr. Roux. “This one, on which we were counting so much, was not begun immediately. Pasteur, who had been obliged to sacrifice so many animals in the course of his beneficent studies, felt a veritable repugnance toward vivisection. He was present without too much squeamishness at simple operations, such as a subcutaneous inoculation, and yet, if the animal cried a little, Pasteur immediately felt pity and lavished on the victim consolation and encouragement which would have been comical if it had not been touching. The thought that the skull of a dog was to be perforated was disagreeable to him; he desired intensely that the experiment should be made, but he dreaded to see it undertaken. I performed it one day in his absence; the next day, when I told him that the intracranial inoculation presented no difficulty, he was moved with pity for the dog: ‘Poor beast! His brain is without doubt wounded. He must be paralyzed.’ Without replying, I went below to look for the animal and had him brought into the laboratory. Pasteur did not love dogs, but when he saw this one full of life, ferreting curiously about everywhere, he showed the greatest satisfaction and straightway lavished upon him the kindest words. He felt an infinite liking for this dog which had so well endured trepanning, and thus had put to flight for the future all his scruples against it.” — M. le Dr. Roux, quoted in _Pasteur, The History of a Mind_, by Emile Duclaux, 1920. (Submitted by Franklin M. Loew, Editorial Advisory Board)
animals. These arguments were backed by good logic, but they overlooked the fact that real animals were mistreated in real life. All the logic in the world cannot defeat the conclusion that a dog is being mishandled if you see it sticking an injured head out of a broken lettuce crate left on the sizzling tarmac at an airport in the heat of August. Industry defensiveness served to protect the worst abuse and the most insensitive behavior in its midst.

Instead of ignoring the problem, the airlines could have refused to accept dogs shipped in lettuce crates. They also could have corrected the careless practice of letting animal cargo stand in the heat before or after transportation. If they had made such basic corrections voluntarily, there would have been no need for the government to regulate animal transportation. Defensiveness can keep back regulations temporarily, but if it continues, the effort is wasted. For example, suppliers and users of laboratory animals secured a compromise during Congressional hearings that led to the first legislation in 1966. Within the legal limitations, industry practices were kept as close as possible to business as usual. Offending research laboratories and inhumane laboratory animal dealers were sheltered by their more humane peers until additional restrictions were imposed after a second confrontation in Congress occurred in 1970.

The defensive response has been used to a greater or lesser extent by pet breeders, wild animal dealers, wild animal trainers, animal exhibitors, and horse owners, trainers, and exhibitors, all of whom are now regulated. There were responsible people in each of these industries who supported more humane treatment of animals, and Veterinary Services officials benefited from their help in writing appropriate regulations and standards. However, before federal legislation was passed, these individuals were not effective in securing needed changes in the way the industry handled animals.

**Organization**

The Animal Welfare Act and the Horse Protection Act are enforced by Veterinary Services (VS), a unit in the Animal and Plant Health Inspection Service of the U.S. Department of Agriculture (USDA). VS has a staff organization to set and coordinate program objectives and a field force to carry out these objectives. VS conducts 17 animal health programs at the present time. They range from quality control of vaccines to eradication of major cattle diseases such as brucellosis. Staff and field managers develop a work plan under which the efforts of the field force are apportioned and priorities set.

Modern management systems have come into full play in work planning, including management by objectives and zero-base budgeting. Animal welfare and horse protection had a combined 1980 budget of just over $4 1/2 million, out of a total VS budget of $158 million.

Program policy is made by the VS Deputy Administrator, the Administrator of the Animal and Plant Health Inspection Service, the USDA Assistant Secretary for Marketing, and the Secretary of Agriculture. All of these officials and their staff, therefore, at times become involved in administering animal welfare laws.

The animal care staff includes specialists on laboratory animals, exhibition animals, pet animals, animal transportation, horse protection, and compliance procedures. They evaluate program operations, prepare and publish rules, regulations, and progress reports, and coordinate investigation of apparent violations. In addition, they answer correspondence and set up training courses in animal care.

Animal care used 111 man-years out of a total of 2,460 available in VS during fiscal year 1979. This share of the available manpower included the approximate equivalent of 33 full- and part-time veterinarians, 23 compliance officers, and 55 animal health technicians.

Some VS field officials specialize in animal welfare enforcement. At present, there are 11 animal care specialists and 19 animal welfare compliance officers. The specialists advise VS regional and area directors on animal welfare programs and conduct special inspections. The compliance officers investigate apparent violations for possible prosecution. In addition, VS employs practicing veterinarians on a fee basis to check on the care and treatment of laboratory animals and exhibit animals—species that require special expertise. VS also uses about 85 part-time lay inspectors with special training to inspect animal dealers, exhibitors, carriers, and intermediate handlers.

For the rest, animal welfare compliance work is handled by inspectors with broad assignments. A veterinary medical officer may inspect a cattle herd for brucellosis in the morning and after lunch drive to a dog breeding facility for an animal welfare inspection. VS managers thus face a challenge to promote uniformity in interpretation of the regulations and to familiarize inspectors, who have long worked only with large farm animals, with the needs of hamsters, dogs, and a three-toed sloth.

**Enforcement**

Most persons subject to the Animal Welfare Act are regulated through a system of licensing and registration. Conducting animal fighting ventures is absolutely prohibited. The Horse Protection Act is enforced by requiring managers of horse shows and sales to keep out sore horses. Animal dealers and most exhibitors regulated by the Animal Welfare Act are licensed and pay an annual fee. Licenses remain valid until terminated voluntarily by the licensee, revoked or suspended by VS, or cancelled automatically if not renewed by the annual due date of the license fee.

Research facilities, certain exhibitors, and all carriers and intermediate handlers who transport animals are required to register but pay no fee. Registrations continue in effect until terminated, or—in the case of research facilities—inactivated when no regulated laboratory animals are being used. Research facilities are required to submit an annual report giving the number and type of animals used in tests and experiments. The report must note the use of appropriate pain killers when pain or discomfort is involved in testing or experimentation.

At the close of fiscal year 1979, VS had 3,982 licensed dealers, 978 licensed animal exhibitors, 219 registered animal exhibitors, 139 registered carriers and intermediate handlers, and 1,051 registered research facilities. During the year, VS conducted 42,559 inspections and investigations, mostly routine, at the premises of licensees and registrants. In addition, VS conducted 735 investigations of possible violations and prepared 168 cases for possible legal action.

Apparent violations do not necessarily result in legal action if better solu-

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**Comment**

P.A. Chaloux and M.B. Heppne
also enforces the law by sending warning letters citing a specific violation and desist orders. In 1979, VS began 31 new administrative prosecutions. It ended 18 non-dispositive cases, most of which were initiated in 1978. Horsemen were assessed a total of $22,850 in fines, which ranged from $50 to $3,000 per person.

Inspections in 1979 documented 59 violations for prosecution of the owners, trainers, and riders involved. Three horsemen were convicted of violations in federal court. Criminal penalties imposed were a $5,000 fine and a 2-year suspended sentence, $2,000 and a 2-year suspended sentence; and $1,500 and a 1-year suspended sentence. In addition, decisions were handed down in 28 administrative cases, most of which were initiated in 1978. Horsemen were assessed a total of $22,850 in fines, which ranged from $50 to $3,000 per person.

Under a new provision of law, serious and repeat violators can be disqualified from showing, selling, or exhibiting horses and from judging or managing horse shows, exhibitions, sales, and auctions. In 1979, VS obtained the first three disqualifications through administrative proceedings.

To strengthen horse protection, VS launched an experimental program based on industry cooperation. This approach developed from wording in the Act making show management responsible for excluding sore horses and encouraging management to make use of qualified people to identify sore horses. Five industry groups have agreed to train and license so-called "designated qualified persons" to function as show officials. At the end of the 1979 show season, the program worked effectively at shows inspected by VS. Inspectors are continuing to monitor the effectiveness of the program in 1980 to see if the horse show industry can stop sorring through self-regulation.

Animal welfare violations have consistently drawn public interest, and VS gives public notice each time it makes a formal charge of a violation and each time such a charge is resolved. Mention is made of the specific violation that occurred and of the penalties imposed. Officials find that the publicity brings about considerable community pressure for improvements.

Policy

A number of outside constraints limit regulatory officials in making decisions to safeguard animal welfare. The most important of these restraints are imposed by Congress. For example, the Animal Welfare Act covers animal auctions handling dogs and cats, but not those handling rabbits—even though rabbits are among the animals specifically designated as protected under the Act. "Trade day sales," where animals change hands in much the same way as at auctions, are also not covered by the Act. Each year, VS officials receive dozens of complaints about auctions and trade day sales outside their jurisdiction, and they regretfully have to decline action.

A second basic policy restriction on animal welfare enforcement comes through appropriations of funds. Congress has repeatedly passed animal welfare legislation without providing funds to enforce the new provisions. Budgetary restraints within the executive branch of government have sometimes kept officials from even requesting needed funds. For example, the ban on animal fighting ventures, enacted in 1976, still has no funds for enforcement.

Loosening and tightening the purse strings for enforcement has as great an effect on enforcement as passage and repeal of humane laws. For example, horse protection was funded at $100,000 per year for the first 6 years of the Act. This provided scarcely more money than was needed for administrative expenses, and surplus funds from other VS programs were used to provide minimum enforcement. In 1979, the appropriation was for $300,000 and an extra $186,000 was provided from other programs. This amount still permitted only a 2% inspection level.

Almost as influential as legal and fiscal limits are administrative restrictions. For example, the recent limit on travel by civil servants kept VS from authorizing travel to places where enforcement activity was required, even though travel funds were available.

Within these constraints, however, administrative officials have considerable responsibility to set policy under the federal rulemaking process. Before drafting animal care rules, VS arranges to hear the views and wants of both the humane interests which requested the legislation and the industries affected by the legislation. Public comment is also invited. Views are secured by holding informal public meetings and issuing official requests for written comments. To the maximum extent possible, issues involving the actual care of animals are decided on the basis of the best scientific information available. If necessary, VS officials can request original research to get impartial information.

Proposed rulemaking is drafted by subject-matter specialists and legal experts who assure that regulations provide what the law requires. Then the propos-
al is published in the Federal Register for public comment. If these comments raise important new questions, the proposals are redrafted, rechecked by lawyers, and republished for further review.

Relatively straightforward changes can be made fairly rapidly, despite the need for public input. For example, when VS found existing administrative procedures too cumbersome to handle animal dealers who did not pay their annual license fee, a solution was proposed in August 1979 and was ready for implementation in November of the same year.

Other policy issues are more complex, such as, for example, the issue of humane care and treatment of marine mammals. This issue arose in 1970, when Congress gave USDA authority to write standards for all warmblooded exhibit animals. Marine mammals clearly required provisions quite different from land-based mammals, so VS officials postponed writing standards for marine mammals until those for land-based mammals were completed.

Intensive fact-finding began in 1975 with active involvement by the National Marine Fisheries Service, the Fish and Wildlife Service, and the Marine Mammal Commission. VS used a public call for data plus the services of specialists in the field to come up with proposed rulemaking, which was published in August 1977. The comments received were so numerous and varied that the proposed rules had to be revised. The revision was published in September 1978.

Once again, the revision generated major interest. To resolve the remaining controversial issues, VS officials held formal public hearings in Los Angeles, CA, Miami Springs, FL, and College Park, MD. The testimony was read, weighed, analyzed, and discussed until final rules were published in June, 1979. Under these rules, marine mammal exhibitors had until September 1979 to make needed changes to allow time for public input. For example, tanks, pools, and other structures that would need modification could not be rebuilt by the deadline, VS decided to accept variances from the standard for up to 3 years. As a result, some marine mammals will have to wait until November 1982 before they benefit from the required structural changes.

The rule-making process for animal care regulation has faced strong, countering pressures. Humane representatives tend to push for maximum enforcement immediately, citing evidence that animals are in extreme need. Industry representatives tend to plead for time to achieve needed changes, or else to garner evidence that new rules are not needed at all.

An example of what happens when these countering pressures reach their extreme is the issue of whether caged laboratory dogs get enough exercise. The issue was first raised during rule-making procedures in 1967 for what was then the Laboratory Animal Welfare Act. Some 3,000 people with humane interests pointed out that dogs like to run and jump and urged VS to institute a requirement to provide caged dogs with an opportunity to exercise. At the same time, experienced laboratory animal specialists stated that a caged dog's body systems functioned just like those in an unrestrained pet dog. They spoke in terms of muscle tone, blood circulation, nervous responses, food intake, and body wastes.

The problem VS officials faced was that no scientific information was available on how lack of exercise outside the cage affects a dog's psychological life. They actively solicited further public comments and scored the scientific litera-

Accomplishments

Animal welfare regulations basically attempt to solve a human problem. Thus, accomplishments of animal welfare enforcement are harder to measure than those of other VS animal health programs.

We believe that animal welfare laws have changed human behavior qualitatively in that they have supplied a conscience to the regulated industries. The new conscience is reposed in the industry organizations that were formed or remolded in response to federal regulation. Established groups, such as American Association for Laboratory Animal Science have set up committees specifically to deal with humane concerns. New groups, such as the Midwest Professional Pet Distributors Association, which split off from the Pet Industry Joint Advisory Council, have formed as alternatives to existing organizations.

As we said earlier, these groups initially tended to oppose regulation and defend their respective industries. We believe that the main accomplishment in VS was our success in explaining the rationale for improved animal welfare to these groups, which almost invariably led to a commitment for specific improvements. Nothing has produced immediate benefits for animals as quickly as a positive commitment by industry leaders. A good example of this was the creation of an industry-sponsored corps of “designated qualified persons” to exclude sore horses from horse shows and sales. This industry contribution is the best hope for ending the use of soring in win shows.

Another important, but hard to quantify, accomplishment is the upgrading of animal care that results from on-site inspections by VS inspectors. After each inspection, the VS official and the licensee or registrant sit down with the inspection sheet before them. They discuss each area in which conditions are substandard and plan for improvements by a specific date. In this way, regulated persons are nudged toward full compliance and they begin to look upon the VS inspector as a helpful resource for running a better business.

The best quantitative measure of improvements brought by animal welfare legislation is the number of enterprises that cease operation once new rules go into effect. This was true from the beginning of federal regulation when laboratory animal dealers first had to become licensed. Rather than complying with licensing requirements, more than 500 businesses ceased operating. This same reaction was noted when roadside zoos became regulated in the early 1970's, and about 100 such businesses ceased operating.

Quantitative data, of course, are available on the number of prosecutions and convictions for violations of the animal welfare regulations. These, however,
I tell only a small part of what is being accomplished. For every hour spent on investigating violations, VS officials spend at least 7 hours securing compliance through ongoing on-site inspections.

Since VS began enforcing the Animal Welfare Act in 1967, a total of 124 animal welfare violations were resolved in court or through administrative proceedings. These cases resulted in 19 license revocations, 34 license suspensions, and 32 cease-and-desist orders. Civil penalties came into play for the first time in 1979 and amounted to a total of $2,950, the largest of which was $1,400. Since 1972, the start of horse protection enforcement, 142 actions were completed, resulting in imposition of $93,470 in monetary penalties, the largest of which was $6,000. The principal benefit of these penalties lies in alerting the regulated industries that violations can have serious consequences.

Future Developments

Future developments in animal welfare regulation depend fundamentally on how much our society is willing to pay for—or sacrifice for—animal rights. There is a greater overall consciousness of these rights, and people are more willing than before to use the Congress, the courts, and the news media to secure improvements for animals. Yet our society is equally concerned about the limitations of resources. How much taxpayers are willing to pay for animal welfare enforcement still remains to be seen.

Society does have options for securing animal rights without resorting to expensive government programs—namely by using the marketplace to promote change. Animal welfare basically is a consumer concern, and it can be solved much like concern over the composition of chicken soup. Some time ago, consumer activists secured legislation requiring soup manufacturers to disclose how much chicken meat they put in chicken soup. As awareness of the problem grew among the general public, soup manufacturers responded by voluntarily putting more chicken in the soup. Similarly, humane activists are focusing on (among other issues) the lack of care given to puppies sold as pets. Eventually, the industries involved will feel consumer pressure to make the improvements that the public desires.

We believe that the biggest contribution that government will continue to make to animal welfare is in giving people a chance to express their concerns and seek cooperation from the rest of society. We expect to see increased legal rights for animals, limited financing for enforcement of these rights by agencies like VS, and increasing pressure on industry groups to bring about needed changes from within.

Progress so far has been hard and slow, mainly because animal welfare laws are at the beginning of their development. Future generations will deem what we have accomplished so far as crude and limited. That happens with everything new. However, we can’t be complacent. The expansion of the number of animals covered by the law and the benefits they will receive depends on how well we use the relatively limited regulations that we are beginning to enforce.

We think that the developing social desire for improved animal care will be reflected in career choices of thinking and socially motivated young people.

They will express their love of animals by choosing careers in animal protection and will find increasing moral and monetary support from the rest of society. As a result, institutions to support the social desire will be expanded. At present at least 12 universities offer animal rights courses, and Kansas State University is teaching a short course in humane and effective management of dog breeding farms. We think the day will come when most people will accept animal rights as part of the natural order.