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FOOT AND MOUTH DISEASE

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IN recent months great interest has been shown concerning Foot and Mouth disease. Almost daily the newspapers have contained references to the trouble and its repercussions. They describe the fumigation of overseas aeroplanes and how immigrants from places like Holland are thoroughly "vetted" on arrival and made to land with only one set of footwear. They mention also the catastrophic number of animals affected in the countries of Western Europe.

Why is everyone so anxious to keep this disease away from New Zealand? Since it is not a killing disease, why should we worry? It may not kill, but we would certainly be more worried if it arrived here. It is so very infectious and spreads so rapidly that in a short time, if left unchecked, it would travel far. Both wild and domestic animals in New Zealand would help spread Foot and Mouth disease and probably human beings would help just as much.

In Holland last year four outbreaks were recorded in June, 29 in July, 27 in August, 279 in September, 3,318 in October and over 11,000 in November. In England, where the drastic slaughter-method of control is practised, 120 outbreaks have led to the slaughter of over 12,000 head of livestock since November of last year. Typical of what can happen in a small area is shown by the outbreak which occurred near Bath, England, in 1943. From July 11 to

September 28, 4,047 cattle, 1,003 sheep, 1,574 pigs and 11 goats were slaughtered in the effort to control the outbreak. These figures show how infective and easily spread this disease can be. It is obvious that if no preventive measures are taken, a nation's cattle population is in peril of being affected.

An infected cow goes completely off her milk and may never come back into milk fully again.

You can well imagine the blow it would be to New Zealand's £60,000,000 a year dairy industry if we had the disease. To make matters worse, infected cows frequently abort or give birth to dead calves. How would we replace these losses? Some cows recover from the disease but remain chronic invalids. If Foot and Mouth disease reached New Zealand and we resorted to a slaughter policy, we would have to destroy great numbers of our animals before we gained control.

Foot and Mouth has been recognised as a specific disease for a long time and there are records of it occurring in Germany and France in the middle of the 18th century. In Britain it was first described in 1839 and it has occurred there spasmodically from that year to this. Few countries have escaped. Australia and New Zealand are fortunate in that they have remained free. The United States and Canada have been comparatively free in the past, but now Canada is experiencing an outbreak. In this case it is alleged that a Dutch immigrant was the

carrier. The United States of America also is threatened with the disease from across the borders of Mexico. There the disease broke out in 1946 and was allegedly caused by the importation of Zebu cattle from Brazil. It soon spread until vast numbers of animals were affected. The United States, realising the danger to herself, offered the Mexican Government the aid of her laboratories and livestock officers. The two countries combined in a campaign to stop the spread and during the first six months of 1949 some 18,000,000 vaccinations had been completed. At that time no outbreaks had occurred amongst vaccinated animals. Europe, Asia and Africa all have Foot and Mouth disease and until something is done on an international level they will keep on experiencing recurrent epizootics. South America has had the disease for years.

The disease is caused by one of the smallest viruses known to man. There are three known types and in each type there are a number of variations. This complicates the work of making a vaccine to cope with the trouble. Clovenhoofed animals are usually the victims and in countries where the disease is always present, "carrier" animals cause recurrent outbreaks. Human beings can carry the virus very successfully, for it can remain alive on leather and gumboots for as long as 80 days. Man can also be affected with the disease. Common farmyard creatures such as cats, dogs, hedgehogs and birds all have at one time or another been blamed for the spread.

In England and other places where the disease occurs sporadically, there are several ways in which the virus is thought to be spread. Some years ago it was popular to blame starlings resting during their migratory flight from Western Europe. This was suspected because of the number of outbreaks occurring in cattle while out at grass. The importation of diseased animals is a constant danger and was the main source of

infection in England during the last half of the 19th century. When importations from infected areas were prohibited the number of attacks was reduced. During the last war most of the outbreaks in Great Britain resulted from the importation of meat from South America and the subsequent feeding of scraps and bones to pigs. There are several reasons for believing this. At the Pirbright Research Institute (Animal Virus Diseases) in England it was shown that the virus can live in frozen bone marrow for 76 days. In a series of 93 outbreaks in Britain during 1944, 78 cases commenced among pigs. The virus type found in these outbreaks was similar to that in South America. Finally it was noticed that in areas where no imported meat was received there were no outbreaks of the disease.

Animals coming in contact with the virus develop the disease in two or three days. Its presence is shown by the animals suddenly going off their feed and running high temperatures. Soon blisters appear on the tongue and lining of the mouth and on the soft areas between the hooves. This causes the animals to salivate profusely and to become lame, thus giving rise to the name Foot and Mouth disease. Milk secretion ceases and mastitis may follow. Some cows abort and lose condition. Affected calves usually die. In pigs the blisters appear on the snout and feet and in some cases the hooves may be shed. If left alone 99 per cent of affected animals would probably recover in 10 to 14 days. Complete recovery would not be the rule for many would later suffer from pneumonia or from affected joints. Others would become carriers and remain as a source of infection for future outbreaks.

So great are the losses resulting from Foot and Mouth disease that some attempt at dealing with it must be made. Firstly there is the drastic slaughter policy as is carried out in Great Britain, the United States and Canada. When the disease is confirmed on a farm, it is com-

pletely isolated. Policemen prevent unauthorised entry to the property and all cloven-hoofed animals within a 15-mile radius on the farm are "confined to barracks." No movement in or out of the area is allowed. All affected cloven-hoofed animals and those which have been in contact with them are valued for compensation purposes and then slaughtered. The carcasses are either burnt or buried in lime. Sometimes the contacts are salvaged for human consumption. Following the slaughter, the farm buildings are disinfected as thoroughly as possible. All loose hay is burnt. Manure is sprayed with disinfectant and put in heaps so that the generated heat kills the virus. The whole farm is then left clear of livestock for six weeks.

Many people do not agree with the slaughter policy and would like to use other ways of controlling the disease. Dr. Ian Galloway, Director of the Pirbright Research Institute, writes in support of the slaughter policy in the *Farmers' Weekly*. He states that from November 14 to December 31, 1951, the number of outbreaks in England was 87, the slaughter policy having been carried out; with no slaughtering, the number of confirmed cases in Western Germany from November 1 to November 14 reached 54,000. Also, in the years 1922 to 1926 there were 4,973 outbreaks in Great Britain and 101,852 outbreaks in France. This suggests that the slaughter policy is a quicker method of control and that the total loss entailed is less than with other methods of combating the disease. In fairness to the continental countries it must be pointed out that Great Britain is in a favoured geographical position to carry out the slaughter policy. Other countries

finding the slaughter policy too costly or difficult to carry out, have reverted to other means of control. They first of all tried treatment with both convalescent and hyper-immune serum and later used vaccines. The vaccines seemed to give an immunity against the particular virus for about six months. It was soon found that an animal vaccinated with one type of the virus was not protected against the other types, and so vaccination was not of great value. Owing to technical difficulties it has not been found possible to manufacture a combined vaccine which would protect against all strains.

What then of the future? It would appear that Foot and Mouth disease will continue to menace many lands until it can be combated at an international level. Steps in this direction have already been taken. The United States and Mexico are working together to eliminate the disease in Mexico. In May, 1950, the Food and Agricultural Organisation of the United Nations recommended that an international centre be established for the examination of the types of virus and maintenance of strains. It was decided, that this centre should be located at Pirbright, England, and that funds should be made available from international sources.

New Zealand has an efficient quarantine scheme in operation and every care is taken to guard against the disease entering this country with imported livestock. With fast air travel there is of course the possibility of the virus coming in from affected countries. From all accounts, however, the authorities are wide awake to the possibility and are taking active steps to prevent such a catastrophe.

Copies of this Bulletin may be obtained from the Secretary, Canterbury Chamber of Commerce, P.O. Box 187, Christchurch.