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DATA ON CONTROL BY VACCINATION OF CONTAGIOUS ABORTION IN DAIRY CATTLE. By M. B. Ruddle, Wallaceville Animal Research Station.

Vaccine Supplied: 1943 = 23,000 doses.
 1944 = 43,000 "
 1945 = 94,000 "

M. = Mated. F.T.D. = Full Time Dead.
 A. = Aborted. N.C. = Normal Calving.

C A L V E S - 771 HERDS															
1943						1944									
Two-year-olds Non-vaccinated			Cows Non-vaccinated			Calves vaccinated, 1943.			two-year-olds Vaccinated			Cows Non-vaccinated			
M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.
10,624	2,285	300	7,479	40,342	3,070	1,048	34,341	11,804	10,045	184	9,007	39,868	2,430	1,056	34,134
%	21.5	2.8	70.3		7.6	2.6	85.1		3.08	1.8	89.6		6.1	2.6	85.6

Y E A R L I N G S - 20 HERDS															
1943						1944									
Two-year-olds Non-vaccinated			Cows Non-vaccinated			Yearlings Vaccinated, 1943.			two-year-olds Vaccinated			Cows Non-vaccinated			
M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.
384	151	-	229	1,708	136	5	1,562	451	332	7	5	1,236	79	40	1,056
%	39.0		59.6		7.9	0.3	91.4			2.1	1.5		6.3	3.2	85.3

continued on next page.

MR. BUDDLE'S TABLES (CONTINUED):

CALVES AND YEARLINGS SUMMARISED - 791 HERDS																
1943			1943				1944			1944						
Two-year-olds Non-vaccinated.			Cows non-vaccinated				Calves and Yearlings Vaccinated, 1943.			Two-year-olds Vaccinated			Cows Non-vaccinated.			
M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	
11,008	2,436	300	7,708	43,050	3,206	1,053	35,903	12,255	10,377	317	189	9,310	41,104	2,509	1,096	35,190
%	22.1	2.7	70.0		7.6	2.5	85.3			3.05	1.8	89.7	6.1	2.6	85.6	

17 HERDS														
1942			1943				1943			1944				
Heifers Non-vaccinated			Cows Non-vaccinated				Heifers Vaccinated			Cows Non-vaccinated				
M.	A.	F.T.D.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.	M.	A.	F.T.D.	N.C.
277	96		1,109	112			298	19			293	4		
%	38.2			10.1				6.3			8.0	1.36		4.7

DISCUSSION ON MR. BUDDLE'S TABLES:

MR. LESLIE asked if it would be possible to utilise strain 19 vaccine for animals in calf.

MR. BUDDLE: I do not think it would be safe. Why should you not use it before service? It would be much safer then. There does not seem to be any reason why you should leave it until later in the pregnancy.

MR. LESLIE: Would it be possible to use this vaccine on older cows?

MR. BUDDLE: We have used it ourselves in quite a few herds. Mr. Candy can give you his experience. They also used the vaccine on the Ruakura stock, both on the reactors and non-reactors it seemed quite safe. We have not adopted it as a general policy, because calfhood vaccinations seem to be considerably safer, and in the experimental stage the results are certainly very much easier to interpret when vaccination is confined to the heifer calves.

MR. CANDY: We have about 40 per cent. reactors in that herd and the balance are non-reactors, but I can say that I have had very little slipping indeed since that time, and the same applies to the other herd which was done the following season. We had about 20 per cent. reactors, and the percentage of abortion has been lower than at any other time in the history of my farming operations. I have the benefit of three years young stock coming in, and I have my 20 per cent. new stuff coming in, and I have very few left of the old reactors.

MR. BONNER: Will any harm come of vaccinating calves against blackleg and abortion at the same time?

MR. BUDDLE: With the blackleg vaccine you get a local reaction from its formalin content but you do not get a systemic reaction. The abortion vaccine gives a very severe systemic reaction. I should not think it would unduly upset the calf to use both vaccines simultaneously.

DR. HOPKIRK: Last year when I went to the Pacific I had t.a.b. and tetanus injections in four different places in a quarter of an hour. I may have been immune to everything but it did not affect me very much. Probably it would not affect a cow to give it a couple.

MR. CAMPBELL: If the animal is in milk, what is the effect on the milk immediately after vaccination, and is there any danger to human health?

MR. BUDDLE: Three or four years ago we investigated that possibility, and vaccinated mature cows before service, using 45/20, which is a rough attenuated strain developed by Dr. McEwen in Great Britain and strain 19. We found that a number of cows vaccinated with 45/20 subsequently secreted this strain of the organism in the milk, but we never had one case of the cow vaccinated before service with strain 19 passing the organism in the milk. It is not a desirable feature of a vaccine strain to be secreted in the milk.

MR. WEBSTER: Has any case of undulant fever been reported following the use of strain 19?

MR. BUDDLE: None of the Wallaceville Laboratory workers have been infected from using the strain, though there have certainly been quite a few cases reported from abroad. In one case,

when a syringe broke during vaccination a drop of vaccine went into the eye of one of the workers, and he became very seriously ill with undulant fever. The use of the vaccine in the field should be rigidly controlled. It should be used only under the supervision of a veterinary surgeon who is acquainted with its dangers.

MR. TAYLOR: Is there any information as to the period of immunity conferred by it? When it is vaccinated does a calf become immune from abortion for life?

MR. BUDDLE: We are collecting information to show how long the immunity does last. When a calf is vaccinated it is usually in an affected herd, and while it is protected by the vaccine it is coming in contact with natural exposure. This reinforces the immunity, but valuable information would accrue if we could follow up the vaccination of calves and see how they reacted if, after a few pregnancies in a clean herd, they were put in an infected herd. I think that quite a lot of work along that line is being done abroad. In Great Britain, calfhood vaccination might not be quite so successful as we find it here. It seems that the calves there are not run with the infected mature herd until they have completed their first pregnancy. Most of our trouble occurs in our younger animals when they get infected early in life. Consequently we have reason to be hopeful that calfhood vaccination will be effective in reducing these losses. It may be necessary in Britain and here, too, to revaccinate calves annually, but we have no figures on that aspect yet.

MR. WARD: In view of the spectacular results following the use of strain 19 in New Zealand, there is bound to be a strong demand for the use of the vaccine in older calves. What is the future development of this work? Seeing that the rate of contagious abortion is roughly two to three times as great in two-year-olds as in mature cows, will the supply of vaccine permit the vaccination of the maximum number of two-year-olds as well as a number of mature cows, or for the immediate future will the work have to be confined to the vaccination of calves?

DR. FILLER: Perhaps it is not fair to ask Mr. Buddle to take the responsibility of answering that question. Mr. Ward's own figures have shown that, by and large, contagious abortion is a problem of two-year-olds. The incidence in the test herd, if I remember rightly, is about 10 per cent in two-year-olds, and in four-year-olds and others, 3 per cent. If we can bring the incidence in two-year-olds down to that 3 per cent, it is as much as we can hope to do. The abortion that occurs in the older cows is not all due to contagious abortion, and it will never be possible to wipe that right out. In the herds in which calves were vaccinated in 1943 we now have breeding data for 10,000 heifers. In those herds which were badly infected, the abortion rate in two-year-olds has been reduced from over 20% to 30%. If we do that throughout the country, we will cover the problem as effectively as we can. Dr. Hopkirk gave figures for 200 calves done in 1942 which calved for the second time this year. Those indicate that, in those herds, at least, immunity has gone through to the three-year-old stage, and there was less abortion in them as three-year-olds than as two-year-olds. From a national point of view I feel that calf vaccination will probably cover the problem. In specific cases in which a man has been having serious trouble with his herd we have vaccinated the whole herd to give him the maximum chance of getting out of his trouble as soon as possible. Just how much of that we can do in the future is still somewhat problematical. Dr. Hopkirk said that 95,000 doses of vaccine have gone out this year, and there are 350,000 heifers kept in New Zealand each year. What we will be

expected to do in future years, I hesitate to think. It depends on the questions raised by Dr. Hopkirk on the advisability of manufacturing vaccine at a specially built institute. We cannot do it on that scale at Wallaceville, which is a research station. We cannot convert it into a vaccine factory and stop research, which is what it would mean if we had to continue at the rate we have been operating for the last few years. The question of building a special institution for making vaccines in New Zealand is a complex one. The same type of workers are needed for making vaccine as for research work in bacteriology. There is a great scarcity of them. In some cases, we can import satisfactory vaccines and until there are sufficient workers to cope with the research work in the country I do not propose to sponsor the making of vaccine on a big scale in New Zealand. Unfortunately, contagious abortion vaccine is a special one. It is a live vaccine, and so presents special problems. We hope to import it from Australia, too. That would be the best solution for the time being at least. If not, I am not quite sure what is the solution, but I am going to explore that one first.

MR. CANDY: I have been asked by a number of farmers who are buying heifers whether there is any trouble with double vaccination. Some of the heifers have been vaccinated, but others have not and they have been mixed together. Would a double vaccination be injurious?

MR. BUDDLE: It is quite safe to re-vaccinate stock.

DR. HOPKIRK: In years gone by those animals that had been vaccinated against blackleg were specially marked with an "S" on the neck. Would it not be a good plan if all calves vaccinated against abortion were fire-branded to show that they had been vaccinated?

DR. FILMER: I quite agree that it would be an excellent scheme, and it is one that has been discussed with the Live-Stock Division. The position at present is that it takes perhaps longer to brand a calf than it does to vaccinate one, and with the extreme shortage of staff, as well as motorcars and benzine, we certainly could not do it. If we had to brand calves as well as vaccinate them, we would probably do only half the number that we do today. We think it better to vaccinate as many as we can and to leave the branding out. The only trouble is that a man might try to sell calves as vaccinated when they had not been, but that can be checked up pretty quickly. We can always say whether we vaccinated calves on a certain place or not, and the man who bought calves as vaccinated when they had not been vaccinated can claim redress at law. We have sought to overcome the possibility of deceit to some extent, in that any person who wishes to dispose of calves and to claim that they are vaccinated can obtain from the vaccinating officer, at the time of vaccination, a certificate showing that the calves have been vaccinated, providing the farmer himself has identified the calves in some way - tattooed their ears or branded them in some way which definitely establishes their identity.
