

TABLE I.—GLENHOPE BUSH SICKNESS : DRENCH EXPERIMENT (1935-36).
(Average live-weights in pounds.)

Date.			Control Group.	Nickel Group.	Cobalt Group.
14th September	..	..	69.4	64.6	66.0
22nd September	..	..	65.8	63.4	67.0
7th October	..	..	64.8	62.4	69.4
24th October	..	..	56.2	63.5	75.8
13th November	..	..	53.0	63.2	78.6
11th December	..	..	50.7	59.0	85.6
12th January	..	..	65.0	74.0	97.2
14th February	..	..	66.5	75.5	99.5
13th March	..	..	66.5	77.5	103.0
15th April	..	..	59.0	73.5	104.2

NOTE.—Dose of cobalt and nickel = 8 mg. per week of cobalt or nickel respectively.

In the control group, three sheep died during the season and the weights of the remaining sheep fell off, the sheep becoming badly affected with bush sickness. In the nickel group one sheep died, the remainder making slow gains in weight. At the conclusion of the season some sheep in the nickel group were definitely affected with ailment. In the cobalt group a marked improvement was quickly apparent as a result of the cobalt drenching, and rapid gains in weight were made. Two sheep in this group, which at the commencement of the test were badly affected with bush sickness, improved wonderfully in appearance, although in one case the final weight was considerably below that of the other sheep in the group. The sheep drenched with cobalt made an average gain of 38 lb. during the season, compared with a gain of 9 lb. per head with the nickel drench, and a loss of over 10 lb. per head in the case of the surviving sheep in the control group.

COBALT CONTENT OF DRENCH MATERIALS.

The wonderful result secured with cobalt chloride in the Glenhope experiment suggested that this element was the potent one in connection with the successful use, in former years, of other drench materials such as Nelson soil and Whangarei limonite (Reyburn's). An examination of the cobalt contents of drench materials showed that this was the case. In Table II the cobalt content of different drench materials is shown.

TABLE II.—COBALT CONTENT OF DRENCH MATERIALS USED AT GLENHOPE.

Classification.	Substance.			Cobalt Content (Co.).
Group I (completely successful)	{	Parts per Million.		
		43		
		17.5		
		55		
Group II (beneficial but not effective in prevention of ailment)	{	24		
		24.5		
		7.5		
Group III (not satisfactory)	{	8.0		
		12.5		
		2.0		

The data presented in Table II show quite definitely that those materials which have proved effective, such as Nelson soil and Reyburn's limonite, contained 43 and 55 parts of cobalt per million. Materials such as Parapara, Onekaka, and Crawford's limonites contained comparatively small amounts of cobalt, and these materials were found unsatisfactory in the experiments of previous years. It is interesting to note that certain drenches which proved beneficial, but not effective in preventing the incidence of ailment, contained moderate amounts of cobalt.

The analytical data shown in Table III confirm the results obtained with cobalt drenches during the present season, and definitely indicate that cobalt is the potent element in overcoming bush sickness at Glenhope.

MORTON MAINS EXPERIMENTS.

In a previous report mention has been made of the beneficial properties of both Nelson and Bluff soils in overcoming lamb ailment in Southland. With a view to ascertaining the potent element contained in these soils, a hydrochloric-acid extract was made of the Bluff soil, and this extract was then separated into groups of elements as is customary in qualitative analyses. Drenches of Bluff soil and of acid extracts representing different groups of elements were used in the experiments of the past season at Morton Mains. In addition, it was thought desirable to include a straight-out test of cobalt chloride by itself. A flock of 100 lambs was employed in the main experiments. Ten groups, each containing ten lambs, were arranged so that the average live-weight was approximately the same for each group. Drench treatments were given twice a week, the lambs being weighed every fortnight.