

APPENDIX C.

DIPHtheria IMMUNIZATION IN SOUTH AUCLAND HEALTH DISTRICT, NEW ZEALAND, 1937 to 1938.

By HELEN DEEM, M.D., and H. B. TURBOTT, M.B., D.P.H.

During 1937 and 1938 immunization against diphtheria was offered to all children between ages one and sixteen years in the South Auckland Health District. Parents were invited to bring pre-school children to the schools, the chosen centres for the immunization work. Anatoxin was used throughout the campaign, at first two doses only $\frac{1}{2}$ c.c. and 1 c.c., but later three doses, $\frac{1}{2}$ c.c., 1 c.c., and 1 c.c. when the early schools Schick tested after immunization revealed the need for the third dose. Altogether 10,034 children attended for immunization. 7,538 children were Schick tested. Unfortunately, owing to the scattered and difficult rural nature of some of the health district, the Schick test could not always be employed from revisiting difficulties. The Moloney test was employed in 8,141 children. At times even this test became impossible from transport troubles in hilly back-country areas, and anatoxin was given direct to 1,893 children, subsequent dosage being judged by the reaction to the first injection.

The response at pre-school age was disappointing, 783 children under five years of age attending, 180 receiving one dose, 315 two doses, and 288 three doses of anatoxin. It proved difficult to persuade mothers of toddlers to continue for three injections, and throughout the whole health district parents preferred to have their school rather than their pre-school children protected. Only 14, or 1·7 per cent., pre-school children were upset by anatoxin, suffering a general reaction with some fever and *malaise*.

Of school-children, 17,531 were offered protection, and parents of 9,251 agreed. The school campaign was worth while, 52·7 per cent. of available school population being dealt with. The publicity earned for diphtheria immunization while these 9,251 children were being tested or immunized will ease the way for future work, and help popularize a process still sceptically regarded or neglected by parents of almost half the school-children and of the majority of pre-school children of this health district.

Primary Schick testing reduced the immunization work required, a valuable help in a mass campaign. Preliminary Moloney testing eliminated many sensitive to anatoxin. Anatoxin from the Commonwealth Serum Laboratories was given to 6,585 school children, 4,357 children received the full course of three injections at three-weekly intervals, 1,531 two doses, and 697 one dose only. The two and one dose group are accounted for by absences from school, the employment of two dose immunization for the first three months of the campaign, the change of heart and refusal of parents after first or second doses, and the deliberate dropping of those who have general reaction to first or second doses of anatoxin.

SCHICK TEST AND DIPHtheria SUSCEPTIBILITY.

Of the 7,538 children Schick tested, 5,372, or 71·2 per cent., proved positive. Readings were taken at seventy-two hours, at seven days, and sometimes at forty-eight hours where exigencies of rural travel made this necessary. The majority readings were at seventy-two hours, including all the secondary Schick testing, this latter being checked at the seventh day. Redness and infiltration of 1 cm. and more was regarded as positive. At present 28·8 per cent. of the children of this health district are naturally immune. By employing the Schick test, 2,166 courses of injections were avoided, and much work saved.

In pre-school ages a proportion were Schick tested. One hundred and forty-four toddlers and children under five years gave 133 positives, or 92·4 per cent. From ages five to fifteen years 7,394 tested gave 5,239 positives, or 70·8 per cent. Susceptibility rises from 55 per cent. at age one to 100 per cent. at age three, falls but remains high till age seven, and thereafter falls steadily to 54 per cent. at age fifteen. The accompanying graph portrays diphtheria susceptibility by ages. The table gives the figures :—

Diphtheria Susceptibility by Ages.

Age, in years.	Number Tested.	Schick Positive.	Percentage Positive.
1	9	5	55·5
2	32	30	93·7
3	34	34	100·0
4	69	64	92·7
5	536	453	84·5
6	754	616	81·6
7	814	668	82·0
8	882	658	74·6
9	862	615	71·3
10	881	584	66·2
11	802	519	64·7
12	809	507	62·6
13	633	382	60·3
14	313	172	54·9
15	72	39	54·0
16	36	24	66·6
	7,538	5,372	71·2