DEVELOPMENT OF THE NERVOUS SYSTEM.

52

CO BILLER LO ALSAL

lifts of Roberts and Dr. Gilbert test fingers, wrist, elbow, and shoulder. They are therefore not safely comparable one with the other. I have arranged them, however, in parallel columns to show whatever parallelism there may be in additions of strength taken in a general sense.

It is clear from this table that strength varies from year to year in rhythms as we have observed in all other tests. The chief accelerations begin in boys from 13 to 14, and continue probably almost until 18 years. In girls the period of acceleration begins a year or so earlier, and, as a rule, begins to decline from 15 to 16; there seems to be a new acceleration after 18 years. From 6 to 10 or 11 years occur periods of gradual increase with very marked fluctuations. In order to determine the relative proportions of increase that occur in different periods I have calculated the following tables. The strength at 16 years has been taken as a base or 100 per cent. By subtraction the other columns are obtained.

The second s				
	Per cent. of 16-yr. strength acquired by 6 yrs.	Per cent of 16-yr. strength acquired by 11 yrs.	Per cent of 16-yr. strength acquired be- tween 6 and 11 yrs.	Per cent of 16-yr. strengt acquired be- tween 11 and 16 yrs.
Boys. Squeeze (Porter) Wrist (Gilbert) Arm (Gilbert) Arm (Roberts)	20 21 24	46 46 64	27 26 22	54 54 44 36
Girls. Squeeze (Porter) Wrist (Gilbert) Arm (Gilbert)	23 32 32	54 65 67	31 32 23	46 36 45

TABLE F.

From these calculations it would appear that in the case of boys only about a fifth of their 16-year-old strength is acquired before 6 years, a quarter from 6 to 11, and over one-half from 11 to 16, during the pubertal changes; in the case of the test upon the whole arm maturity is somewhat in advance. In the case of girls a greater share is acquired before 6 years, their strength acquirement is more rapid than with boys from 6 to 11 years, although the largest increment is added also during the pubertal flux.

These tests shed little light upon the question of the order of fundamental and accessory, since each of the tests largely involves fundamental movements exclusively. But in so far as the lift of the entire arm may perhaps be more exclusively fundamental than the combined movements of the wrist and hand alone, we see from the table that the arm movement seem to mature earlier than the wrist and hand. finds icall He 1 he n mad trua of cl the neve

class

that

with

the nerv pare:

12 13 14

Dr

and ' Whil show dren, show figure Th creas espec chang

in bo

this 1

weigl

cance

that t

relati Greel

M find: