

These tables show: (1) that in both boys and girls alike, the elbow and shoulder movements have reached a larger per cent. of their mature power than the finger and wrist movements; of the two classes the finger is doubtless more of an accessory movement and of later evolutionary development; (2) that the finger movement acquires a large per cent. of its ability after nine or ten years of age—28 % in the boys and 17.5 % in the girls. Dr. Bryan, by a different series of calculations, reaches the same conclusions and says: "These results show that the shoulder grows most slowly and the elbow slightly faster, the wrist and finger very much more rapidly." A table stating the number of taps, the elbow, wrist and finger exceeds that of the shoulder, at each age, shows that while this surplus in the case of the elbow is only slight throughout the period from 6 to 16; in the case of the wrist, this surplus doubles and increases from six to sixteen fold. The wrist and finger do not gain materially upon the shoulder until the 11th year and then the finger rates, relatively, spring forward at a greatly accelerated rate. The explanation suggests itself that the shoulder as a central movement has passed the period of extreme nascency very early, the elbow follows, the wrist makes its gains still later and the period of nascency for the finger is certainly not till after 10 years of age and probably does not reach its real culmination in power until sixteen years. Such nascencies have important significance in the management of manual school work.

Development of Strength. Peron early in this century showed by experiments with the dynamometer that Malays and the natives of New Holland are distinctly inferior, in strength of the hand and arm, to French marines. That the civilized races are distinctly superior in hand and arm strength to the lower races of man has many times since been confirmed by Manouvrier¹ and others. M. Féré goes further and contends that among individuals of the same race, the more intelligent have the greater strength of hand. He says² that the same dynamometer test, taken upon individuals belonging to different classes of society, have shown that the pressure produced by the effort of flexing the fingers is less with workmen whose profession is exclusively manual than with those whose work requires less muscular force, but whose intelligence comes more into play; and further, that the muscular power is still greater with those of the liberal profession of the same age. The close intimacy of mentality and hand force is demonstrated by M. Féré's well known

¹ Rev. Philos., 1884, Vol. I, p. 645.

² Rev. Philos., Vol. XLI, p. 623.

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