MINOR-BRACHYDACTYLY. No. 2.

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In September 1911, at a Meeting of the International Conference of Genetics, held in Paris, I gave an account of a family showing an inherited abnormality, which I termed *Minor-Brachydactyly*, to distinguish it from a more marked defect of the same kind, termed *Brachydactyly*, described previously[1]. The account of the Minor-Brachydactyly family was also published in the *Journal of Genetics*, Vol. II. Part I. February 1912. More recently, owing to the courtesy of my friend Dr F. Drinkwater of Llangollen, I have been able to study another family showing the Minor-Brachydactylous condition. So closely do the two families resemble one another, as regards this abnormality, that one cannot help thinking they must have arisen from a common stock, though the connection cannot now be traced, and as far as the records go back there is no blood-relationship between them.

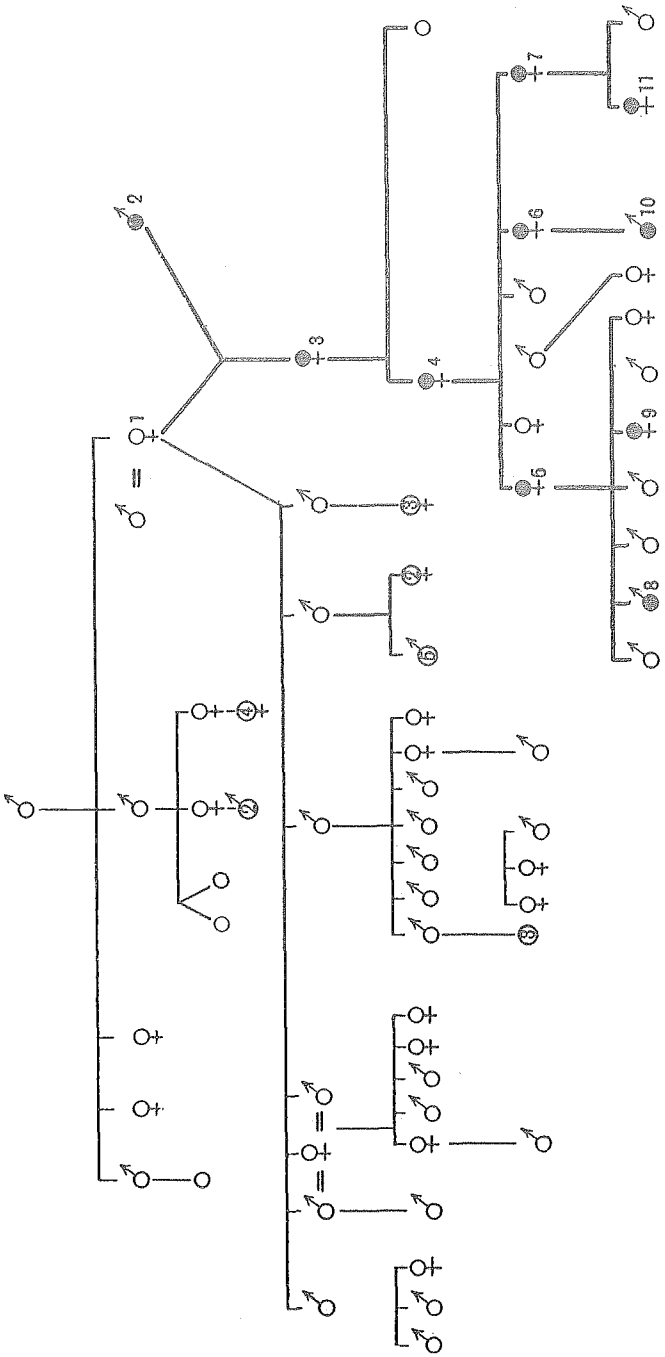
The most marked peculiarities in each family are the shortness of the digits (fingers and toes), and the shortness of stature.

As a full description was given in the accounts already referred to, it will only be necessary in this paper, to draw attention to the main features.

In the Brachydactyly family, the abnormality in the fingers was shown to consist in a marked shortening of the middle phalanx, which in the adult was found to be united to the terminal one: so that the finger has two bones instead of the normal three. The length of the finger was found to be about half the normal length.

In the Minor-Brachydactyly family there is also a shortening of the digits, but to a smaller extent and due to the same abortive condition

[1] Account of a Brachydactylous Family, *Proc. Roy. Soc. of Edin.* Vol. XXVIII. Part 1.



Pedigree of Family showing Minor Brachydactyly.

of the middle bone, the second phalanx, which however always remains in the adult separate from the terminal bone.

This second family of Minor-Brachydactyly can be traced through five generations, and there are eight abnormal individuals alive at the present time. These are numbered in the chart, 4 to 11 inclusive. I am able to present radiographs of each case, and photographs of the right hand of four of them.

Radiographs of the hand.

(1) Adults. These show the shortened middle phalanx in every case. It remains a separate bone. (Pl. XIV, fig. 1.)

(2) Children. The epiphysis is seen to be absent as a rule. (Pl. XV, fig. 1.)

Radiographs of feet.

(1) Adults. Ankylosis has occurred between the second and terminal phalanges in every case. The feet are therefore more degenerate than the hands. (Pl. XIV, fig. 2.)

(2) Children. The epiphysis is absent from the base of the second phalanx in every toe (except the big toe). (Pl. XV, fig. 2.)

Photographs of hands.

A comparison with the normal hand will show the peculiarities. (Pl. XVI, figs. 1 and 2.)

Mendelism.

The abnormality behaves as a Mendelian dominant; only being reproduced by an affected individual. The children of normals are all free from the abnormality and have fingers and toes of the ordinary type. The expected ratio is approached as nearly as possible, for of 19 descendants of abnormals 9 are abnormals.

It is necessary to explain one part of the pedigree chart.

No. 1, a normal woman, and the female ancestor of all the abnormals, was married to a normal man. All *their* descendants, as well as *her* brothers and sisters, are seen to have been normal. In the village in which this couple lived was a short-fingered man (No. 2) who was occasionally employed by them to perform a certain surgical operation on their young pigs. Eventually the woman gave birth to a daughter (No. 3) who was Brachydactylous.

Measurements in Inches.

Number	Age	Middle finger	Hand width	Height
4	—	$2\frac{1}{4}$	$5\frac{3}{4}$	57
5	39	$2\frac{1}{2}$	$6\frac{1}{2}$	60
6	32	2	$5\frac{3}{4}$	59
7	28	$2\frac{1}{4}$	$6\frac{1}{8}$	59
9	7	2	$4\frac{1}{3}$	43
10	$9\frac{10}{12}$	$1\frac{5}{8}$	$4\frac{5}{8}$	$46\frac{3}{8}$
11	6	$1\frac{5}{8}$	$4\frac{1}{2}$	$42\frac{1}{3}$

The average length of the middle finger in the adults is $2\frac{1}{4}$ inches: about 1 inch shorter than the normal.

The average height of the adults is $58\frac{3}{4}$ inches: about $4\frac{1}{2}$ inches below the normal average.

EXPLANATION OF PLATES.

PLATE XIV.

Fig. 1. Right hand of woman showing minor-brachydactyly. No. 7 in pedigree.

Fig. 2. Right foot ,, ,, ,, ,,

PLATE XV.

Fig. 1. Right hand of girl showing minor-brachydactyly. No. 11 in pedigree.

Fig. 2. Right foot ,, ,, ,, ,,

PLATE XVI.

Figs. 1 and 2. Hands of mother and daughter. Nos. 4 and 6.

Fig. 3. Boy (No. 8 in pedigree, *aetat.* 14) on left, and younger normal brother, *aetat.* 12, on right.

Fig. 1.

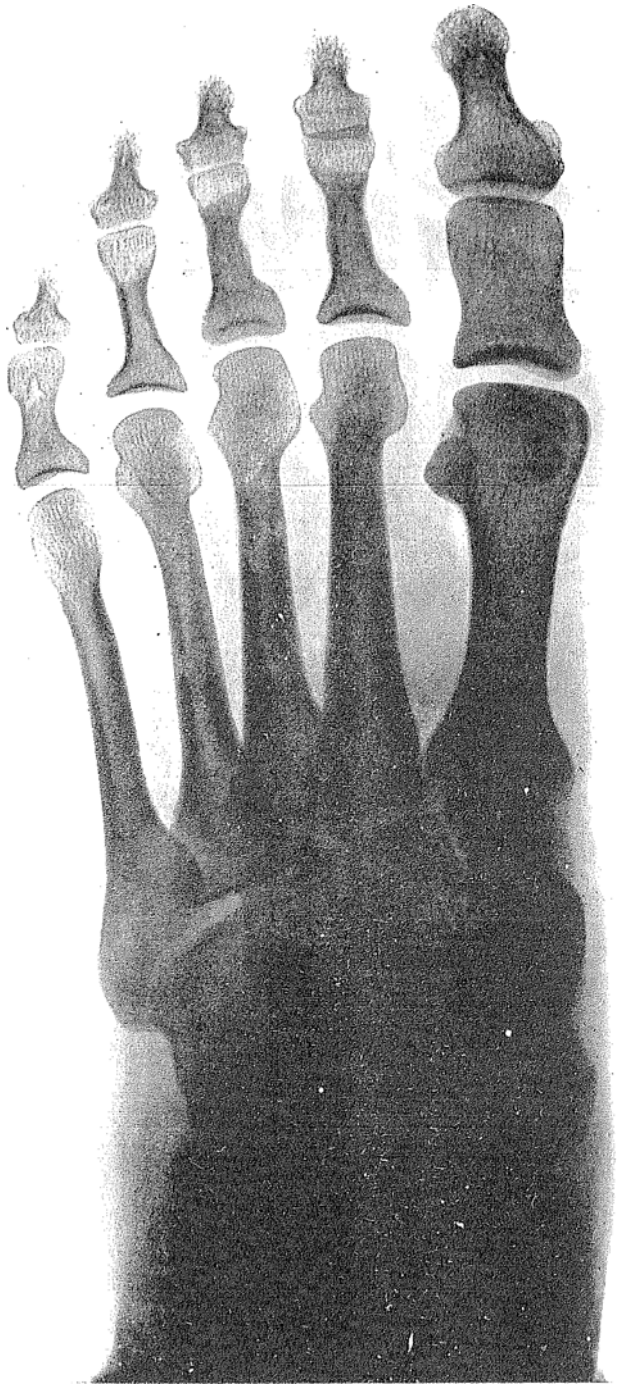


Fig. 2.

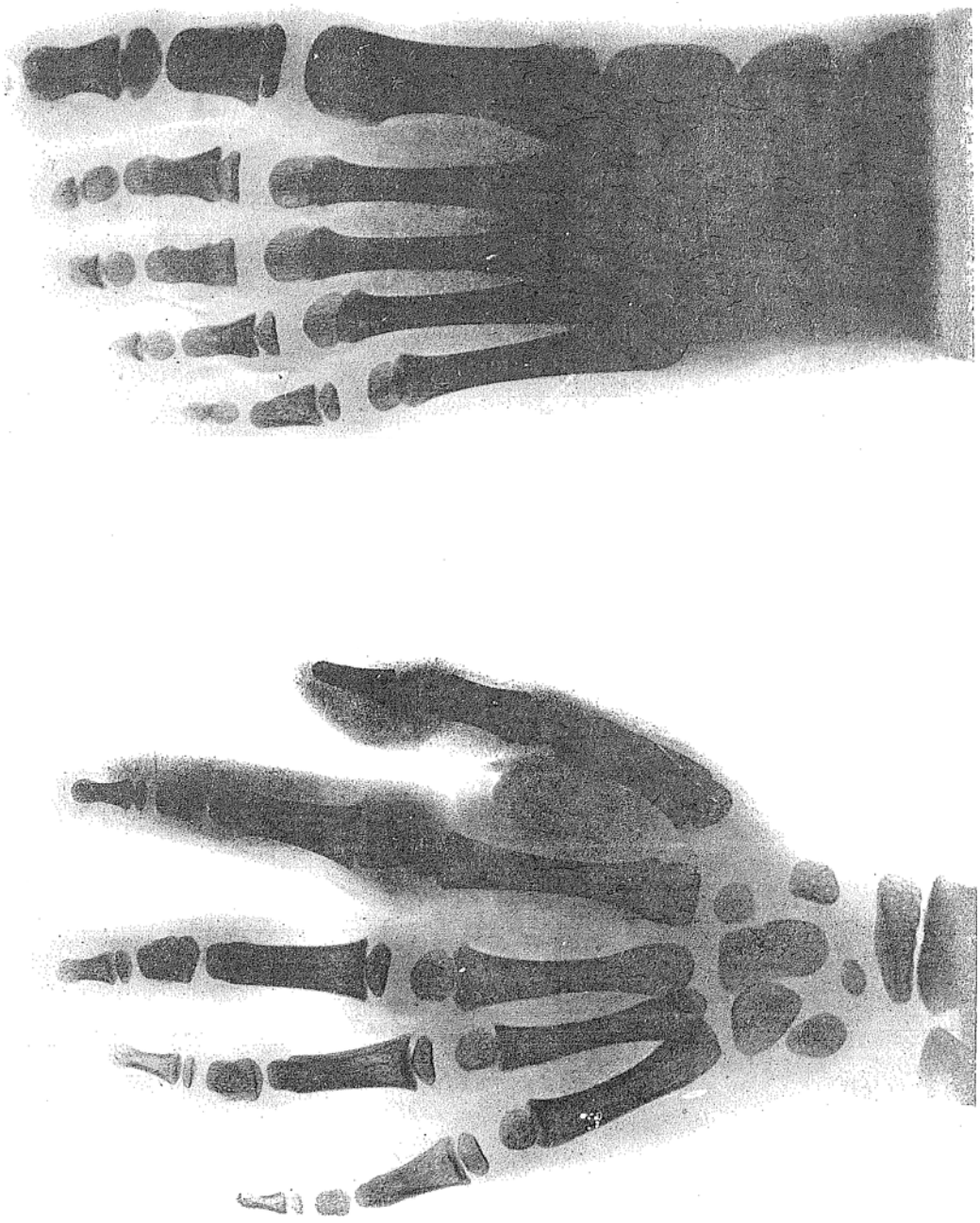


Fig. 1.

Fig. 2.

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Fig. 2.

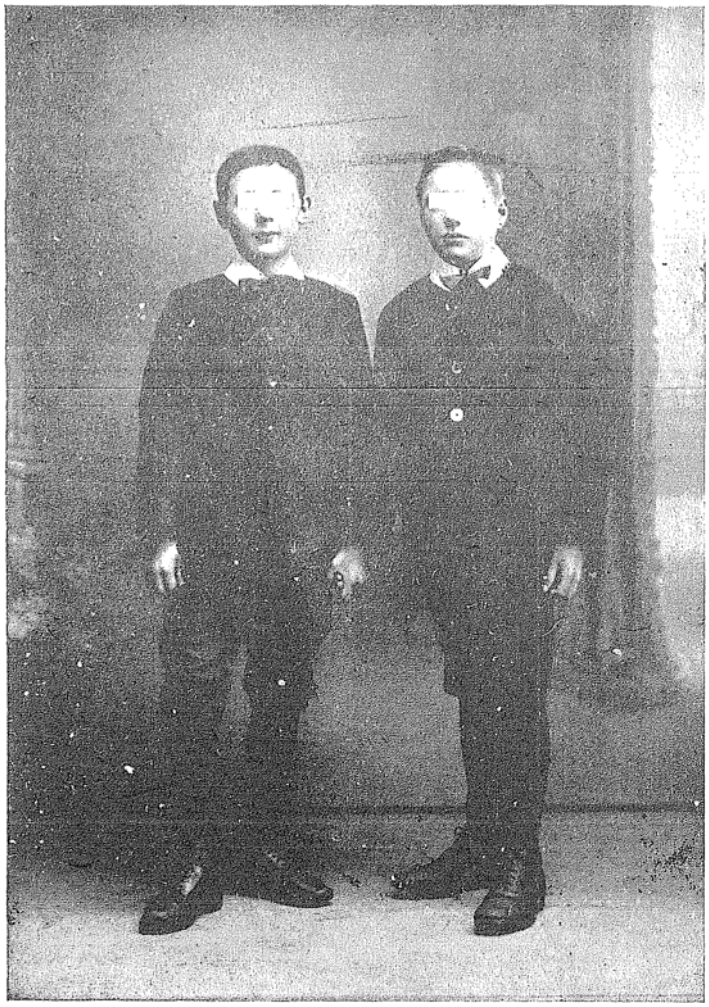

Fig. 3.