19. *Probability-theoretic Investigations on Inheritance.* V_3. *Brethren Combinations*[1),2)]

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4. Illustration by several blood types

The general discussions developed in the preceding sections have exclusively concerned genotypes. However, as remarked at the end of § 1, the corresponding results on phenotypes which may contain recessive genes can be obtained by a routine procedure. For a later purpose, we shall supplement here some results on brethren combinations of the same family for several human blood types. Concerning the notations cf. the beginning part of § 6 in IV.

1st Child \ 2nd Child	M	N	MN
M	$\frac{1}{4}s^2(1+s)^2$	$\frac{1}{4}s^2t^2$	$\frac{1}{2}s^2t(1+s)$
N	$\frac{1}{4}s^2t^2$	$\frac{1}{4}t^2(1+t)^2$	$\frac{1}{2}st^2(1+t)$
MN	$\frac{1}{2}s^2t(1+s)$	$\frac{1}{2}st^2(1+t)$	$st(1+st)$

1st C. \ 2nd C.	O	A	B	AB
O	$\frac{1}{4}r^2(1+r)^2$	$\frac{1}{4}pr^2(2+p+2r)$	$\frac{1}{4}qr^2(2+q+2r)$	$\frac{1}{2}pqr^2$
A	$\frac{1}{4}pr^2(2+p+2r)$	$\frac{1}{4}p((p+r+p^2+3pr)\times(1+p+r)+(1+p)(1+r)r)$	$\frac{1}{4}pq(4r+2r^2+pq)$	$\frac{1}{2}pq(p+r+p^2+2pr)$
B	$\frac{1}{4}qr^2(2+q+2r)$	$\frac{1}{4}pq(4r+2r^2+pq)$	$\frac{1}{4}q((q+r+q^2+3qr)\times(1+q+r)+(1+q)(1+r)r)$	$\frac{1}{2}pq(q+r+q^2+2qr)$
AB	$\frac{1}{2}pqr^2$	$\frac{1}{2}pq(p+r+p^2+2pr)$	$\frac{1}{2}pq(q+r+q^2+2qr)$	$\frac{1}{2}pq(1+p+q+2pq)$

1) Continued from V_2. Proc. Japan Acad. **27** (1951), 694-699.

2) The general problems on consanguineous families, extending mother-child combinations and brethren combinations, will be discussed in another note in full detail, which will appear in Bull. Tokyo Inst. of Techn. in near future.