101. *Probability-theoretic Investigations on Inheritance. XIV. Decision of Biovular Twins.*[1]

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1. Probability of deciding biovular twins.

Both members of a pair of *monovular twins* possess always a mutually coincident type of any inherited character. Hence, they cannot be distinguished by means of an inherited character. However, types of an inherited character of both members of a pair of *biovular twins* are, on the contrary, regarded to show only a correlation based on a relationship that they have been originated from their common parents. Consequently, the distribution of an inherited character in biovular twins may be expected as the same as in ordinary brethren. In particular, it is to be postulated that, if both members of twins possess different types, then they must surely be biovular. In the present chapter, we shall derive the *probability of an event that a given pair of biovular twins can be dicided to be surely biovular by means of an inherited character*, and make an application of the result.

The basic quantities required for solving the problem have already been obtained in a preceding chapter. In fact, we have derived in V the probabilities of brethren combinations belonging to the same family. In view of the postulate stated just above, all the pairs except those of coinciding types are decidable to be biovular. Hence, the desired probability of an event that the biovular twins given at random can be decided to be biovular is represented by

1) Y. Komatu, Probability-theoretic investigations on inheritance. I. Distribution of genes; II. Cross-breeding phenomena; III. Further discussions on cross-breeding; IV. Mother-child combinations; V. Brethern combinations; VI. Rate of danger in random blood transfusion; VII. Non-paternity problems; VIII. Further discussions on non-paternity; IX. Non-paternity problems concerning mother-children combinations; X. Non-paternity concerning mother-child-child combinations; XI. Absolute non-paternity; XII. Problem of paternity; XIII. Estimation of genotypes. Proc. Japan Acad., **27** (1951); I. 371-377; II. 378-383, 384-387; III. 459-465, 466-471, 472-477, 478-483; IV. 587-592, 593-597, 598-603, 605-610, 611-614, 615-620; V. 689-693, 694-699; **28** (1952), VI. 54-58; VII. 102-104, 105-108, 109-111, 112-115, 116-120, 121-125; VIII. 162-164, 165-168, 169-171; IX. 207-212, 213-217, 218-223, 224-229; X. 249-253, 254-258, 259-264; XI. 311-316, 317-322; XII. 359-364, 365-369; XIII. 432-437, 438-443.