

## 40. Probability-theoretic Investigations on Inheritance. VIII<sub>1</sub>. Further Discussions on Non-Paternity Problems.

By Yûsaku KOMATU.

Department of Mathematics, Tokyo Institute of Technology and  
Department of Legal Medicine, Tokyo University.

(Comm. by T. FURUHATA, M.J.A., March 12, 1952.)

### 1. Problems to be discussed.

In the last chapter of preceding Note<sup>1)</sup>, we have discussed various problems on proving non-paternity, with the aid of probabilities on mother-child combinations with respect to one child family. The problems treated there have concerned, however, exclusively those in which the paternity for a child is deniable by a third person against its parents or its mother. More precisely spoken, a typical problem has been to determine at how many rate a person can assert his non-paternity based upon an inheritance character under consideration, if he falls under suspicion to be a father of a child produced from a couple.

Besides the problems of this sort, there may occur those of another sort, which will be discussed in the present chapter; namely, *non-paternity problems amongst a couple*. To speak more precisely, a typical problem is as follows: If a wife has become intimate with a man and given birth to a child, at how many rate can her husband assert his non-paternity, based upon an inherited character, against the child? Hence, while the previous problem has concerned the non-paternity of a *defendant* in case of adultery, the present problems concerns that of a *plaintiff*.

From a view-point of the whole probability of proving non-paternity, both problems lead, of course, to quite an identical result. Indeed, in either of the problems, given a pair of a woman and her child, it is to be determined, at how many rate a man being not a father of the child—a third man in the previous problem or a husband of the woman in the present problem—can be proved as really not to be a true father. Consequently, every sub-pro-

---

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. Brethren-combinations; VI. Rate of danger in random blood transfusion; VII. Non-paternity problems. Proc. Jap. Acad. **27** (1951), I. 371-377; II. 378-383, 384-387; III. 459-464, 466-471, 472-477, 478-483; IV. 587-592, 593-597, 598-603, 605-610, 611-614, 615-620; V.; **28** (1952), VI. 54-58; VII. 102-104, 105-108, 109-111, 112-115, 116-120, 121-125. These will be referred to as I; II; III; IV; V; VI; VII.