6. Cousin Problems for Ideals and the
Domain of Regularity. II.

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1. In the previous paper[1], we have considered the Cousin problems for ideals. The second Cousin problem *for ideals* is always solvable in a domain of regularity, but the "classical" or "functional" second Cousin problem remains still unperfectly solved. Mr. K. Stein[2] has set up a necessary and sufficient condition for the solvability of the latter, but, I think, his condition is the one not for the domain, but for the given Cousin distribution.

In the present note, we shall prove a necessary and sufficient condition for the solvability of the functional second Cousin problem in a domain of regularity. Although our condition seems to be over complicated when compared to the complicacy of the original Cousin problem, I believe it will be applicable to the theory of ideals or varieties in a domain of regularity in which the solvability of the second Cousin problem has already been established.

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2. First we will arrange the notions used later. The terminologies not defined here are all found in my previous note.[1]

We always consider the domains in the space of n complex variables z_1, ..., z_n which we denote by z only. When we use the word "domain of regularity", it is always supposed to be univalent and finite.

Definition 1. An ideal $\mathfrak{J}$ in a domain G is said to be *locally simple* if the punctual ideal $\mathfrak{J}_a$ generated by $\mathfrak{J}$ at any point a of G is always principal.

Definition 2. Two ideals $\mathfrak{J}$ and $\mathfrak{P}$ in a domain G are said to be *locally equivalent* if they generate quite the same punctual ideals at every point of G.

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1) S. Hitotumatu: Cousin problems for ideals and the domain of regularity. Kōdai Math. Sem. Reports, vol. **3**, Nos. 1/2 (1951), 26-32.

2) K. Stein: Topologische Bedingungen für die Existenz analytischer Funktionen komplexer Veränderlichen zu vorgegebene Nullstellenflächen. Math. Ann. **117** (1941), 727-757.   See also, Math. Ann. **123** (1951), 202-222.