however not in the isolated preparations. Plasma vasopressor activity of arterial blood was measured by the blood pressure rise of the sensitized rats with pentolinium. Vasopressor activity was increased early in the acute stage of renal hypertension, corresponding to the initiation of the increased reactivity to noradrenaline.

Therefore, hyperreactivity in acute renal hypertension, shown in the systemic blood pressure responses to noradrenaline, seemed to be related to the renal factor. While, increased reactivity to noradrenaline in the chronic renal hypertension was found both in the systemic blood pressure responses and the isolated preparations. Similar tendency was also found in angiotensin-injection group.

Thus, it seems that the mechanism of the hyperreactivity to noradrenaline in the chronic renal hypertension is located in the sympathetic nerve endings or vascular smooth muscles. Small amounts of angiotensin secreted from the affected kidney might affect the hyperreactivity to the sympathetic neurohumoral agent through the effect on the noradrenaline store in the sympathetic nerve endings, local metabolism of noradrenaline or the receptors in vascular smooth muscles.

8. On the Necessity of Epidemiological Study

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For many continuous years we have observed blood pressure in the many populated groups in the north-eastern region and have published the results obtained in the Hirosaki Medical Journal. According to our observation, the level and distribution type of blood pressure measurements differ according to the various population groups; these changes were continuous, and not in a state of distribution that could be divided by a boundary line. The pattern of distribution of blood pressure frequency in a certain populated group is expressed by a balanced state of individual causes and social causes. A certain individual's blood pressure measurement has a certain place for him in that group, a certain tendency to be always occupying a high or always at a low level. Furthermore, we found that there is a change in the individual's blood pressure value and the change depends in each case and with individual difference. So, when a blood pressure value is to be evaluated, first, a group to which the individual belongs, then

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an individual evaluation must be made with an assumption that there are changed in individual blood pressure values within that group. It is necessary that the study on hypertension must be planned on a basis of an exact theory of errors.

We have proceeded in our study mainly from the standpoint of cause analysis concerning the difference in blood pressure level of various groups, and the difference in individual blood pressure. We have examined the relationship to blood pressure of various living conditions in the north-eastern region, such as the use of stoves as a condition that controls the temperature condition, the dietary habits of apple eating and high sodium intake. From the nationwide scale of investigation conducted by the Welfare Ministry we can see the rise of blood pressure and a broken-up pattern of distribution from the group which hardly take "miso" soup to the group which takes many bowls of "miso" soup, which seems to have a deep relationship to the intake of salt in Japanese dietary life. From these results the various blood pressures of one population group can be separated according to many living conditions—many such groups constitute an assembly of blood pressure value, and among the various living conditions, there is a possibility of finding causes that raise the blood pressure.

In order to investigate the genetic factor in the etiology of hypertension we calculated the co-efficients of resemblance between blood pressure of parent and child, husband and wife in a farm village. The co-efficients of resemblance between blood pressure of parent and child by age and sex for systolic and diastolic blood pressure were almost positive and on the whole the resemblance was expressed by a co-efficient of a little under 0.2. And the co-efficients of resemblance between blood pressure of husband and wife by age for systolic and diastolic blood pressure were not significant except the co-efficient between blood pressure of couple of thirty. From these results we considered that the blood pressure level in the middle aged or over would be influenced by the genetic factor in some portions and by the environmental factors at a certain stage of one's life, especially in early life before the age of marriage.

9. On the Humoral Factors in Arterial Hypertension

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It seems likely that abnormalities in water and electrolytes metabolism and an increase in aldosterone secretion are concerned in the pathogenesis of hypertension. Recently a new finding focused attention on the relationship of the renin-angiotensin system to aldosterone secretion. Namely, synthetic angiotensin II was found to stimulate aldosterone secretion in man15). This new finding led to the merging of two major fields of medical research, namely, the control of aldosterone secretion and the pathogenesis of arterial hypertension. This article is intended to help provide new information fundamental to the understanding of the significance of renin-angiotensin-aldosterone in hypertensive disease.

First, the plasma renin activity was estimated by the modification of HELMER's method7), and the aldosterone secretion rate by the double isotope derivative method reported by PETERSON9). Plasma renin activity was found to be increased in patients with malignant hypertension and with renovascular hypertension, while it showed normal values in patients with benign hypertension, primary aldosteronism and chronic glomerulonephritis without edema. Aldo-