

I raised plants from hybrid seeds *N. rustica* × *tabacum* as well as from the pure parental species under equal environmental conditions and the plants were measured at the end of their florescence period (October 8th). It was found that from exceedingly small embryos, very vigorous F<sub>1</sub> hybrids have developed.

I also included in the experiment the amphidiploid *N. rustica* – *tabacum* plants (2n = 96). They also were much larger in size than the parental forms, but smaller than the F<sub>1</sub> hybrids (Table II). It should

TABLE II.

The Size of the Parental Plants and the Hybrids in cm.

No.	Species and hybrids	Somatic chromosomes	n	M	σ
1	<i>Nicotiana rustica</i> ..	48	30	82.8	2.9
2	<i>Nicotiana tabacum</i> ..	48	30	96.2	3.0
3	F <sub>1</sub> hybrid <i>N. rustica</i> × <i>tabacum</i> ..	48	9	148.5	2.9
4	Amphidiploid <i>N. rustica</i> – <i>tabacum</i>	96	20	128.9	3.7

be mentioned here that amphidiploid *N. rustica* – *tabacum* is not constant (Kostoff, 1937) because it forms quadrivalents, trivalents and univalents during the meiosis which accounts for its greater variability (σ = 3.7) no matter that for the experiment uniform seedlings were selected, which were morphologically like F<sub>1</sub> hybrids.

Hybrid embryos in our case are smaller than those of either parents, because their

physiology in general and the physiology of development in particular, is different from that of the maternal plant. The hybrid embryos *N. rustica* × *tabacum* are somewhat foreign for the maternal plant *N. rustica* having 50 per cent. of its genetic nature from *N. tabacum*. If the hybrid embryos were not grown on maternal plant they probably would not be as small as they really were. The reactivity of the maternal organism might also suppress somewhat the hybrid embryos in some respects, the latter being somewhat foreign for the mother (cf. Kostoff, 1930).

These ideas were inferred on the basis of the relative size of the normal embryos, hybrid embryos grown in *N. rustica* organism, and the hybrid embryos that develop in the amphidiploids, the latter being considerably larger than those grown in *N. rustica* organism, no matter that they have about the same genetic constitution. It seems that the differences in size of amphidiploid embryos and F<sub>1</sub> embryos are not exclusively due to the polyploid nature of the former.

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## The Hayes Radiometer as a Fog Signal.

FOG, shipping's deadliest enemy, appears one step nearer defeat with the announcement of successful heavy weather signalling by means of the Hayes Radiometer, originally invented as an extremely sensitive device for measuring heat radiation. Its inventor, Hammond V. Hayes of Boston, reports in the September, 1937, *Review of Scientific Instruments*. The instrument makes practical the long hoped-for means of signalling by use of heat radiation

instead of light. Heat rays penetrate foggy and thick atmosphere much more strongly than does light. Boston harbour during the last winter was the trial ground for the radiometer, which is being improved as a result of the first experiments. Signals were sent successfully a distance of more than a mile and a half on days when visibility was so poor that objects situated much nearer than the heat source could not be picked out.

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