On the Ohio project the rainfall maps are being used as in Oklahoma for the study of rainstorm morphology, but in addition they will be used to determine the amount of rainfall and the time of its occurrence on the minor watersheds above stream-gaging stations. These data will be related to the runoff as measured at the gaging stations in the expectation that it will be possible to forecast discharge and stage from the records of selected rain gages.

Rainstorm morphology is seen to have implications in a number of related fields. It reveals the limitations in existing determinations of rainfall intensity-frequency and indicates ways in which such determinations may be improved; it suggests a new approach to the problem of flood hazards and forecasting; has a definite bearing on the statistical study of the relation between climate and crop yields, and suggests important refinements in soil erosion experiments. In addition, it raises the suspicion that variations in annual rainfall may be due to the random distribution of individual rainstorms, in which case forecasting of rainfall through extrapolation would be quite impossible. The maps of wind velocity and direction have revealed facts regarding the characteristics of surface fronts, of basic importance to air mass studies in meteorology, which could not have been obtained in any other way. The value of these microclimatic studies lies not so much in continued observations over a long period of years as in the obtaining of simultaneous observations at sufficiently short intervals to permit the study of many individual rainstorms. In a few years enough could be learned about the characteristics of storms in these two areas to make it possible to approach the climatic problems relating to soil and moisture conservation, land use and flood control on a more intelligent basis.

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CHROMOSOME ALTERATIONS BY CENTRIFUGING

IN my previous publications[1] I showed that in centrifuging of germinated seed of *Vicia Faba, Nicotiana Langsdorffii,* wheat, etc., various alterations were induced in the somatic chromosome sets. Monosomic, trisomic, tetrasomic and polysomic cells and cell regions were found as well as such with tetraploid and hypertetraploid chromosome number. Occasionally cells with chromosome fragments were also observed. A student of mine (I. Rajably) induced the same chromosome alterations by centrifuging in barley, *Vicia sativa* and in *Matthiola.* He even produced a tetraploid *Matthiola* plant.

[1] D. Kostoff, *Archivio Botanico,* 11: 91–96, 1935; *Compt. Rend. Acad. Sci. USSR,* 2: 71–76, 1935; *Zeitschr. Induct. Abstamm. Vererbungslehre,* 69: 301–302, 1935.

The results of my more recent experiments are:

(1) *Nicotiana Langsdorffii.* Besides the chromosome alterations, I obtained in F_2 generation a variegated plant (leaves and flowers), which gave in F_3 green: variegated : white, in various ratios, depending on the capsule from which the seed was collected. I grew during the last twelve years each year thousands of seedlings of *N. Langsdorffii,* from which only 30 to 100 were usually transplanted for raising adult plants; nevertheless, I never have found variegated seedlings among those I grew. It should be mentioned here that variegated plants develop only from variegated seedlings.

(2) *Crepis capillaris.* Professor Dr. G. Lewitzky, of Leningrad, sent me kindly seed from *Crepis capillaris,* for which I wish to express here my gratitude. Centrifuging germinating seeds, collected last year, chromosome alterations were induced as those mentioned above, involving A, B and D chromosome.

(3) *Hybrid. Nicotiana rustica* × *N. tabacum.* A large number of seed was produced by crossing *N. rustica* with *N. tabacum.* Germinated seed were centrifuged and then transplanted. Many of them died. One plant out of 81 adult hybrids came out to be a chromosome chimera, forming a branch with doubled chromosome number ($2 \times 48 = 96$). This branch was self-fertile, giving rise further to amphidiploid *N. rustica* × *tabacum,* while all F_1 hybrids and the other branches of the chromosome chimera were self-sterile.

A more detailed description of the experiments will be given later.

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A SIX-CHROMOSOME ASCARIS IN CHINESE HORSES

A BRIEF note with the above title was published in Volume 9 of the *Peking Natural History Bulletin* in December, 1934. As that scientific journal does not have a wide circulation in America, and the chromosomes of *Ascaris megalocephala bivalens* and *univalens* have had so much historical and practical value for biologists, I am asking for the privilege of announcing this discovery in SCIENCE. The first material came from six worms brought to this laboratory by a man who had been asked to collect Ascaris from Chinese horses because we wanted to make our own slides to illustrate mitosis and maturation phenomena for classwork. In 1935 he brought six more, but these were all dead, and now this year he has brought twenty-two new ones in very good condition, and we have plenty of material to work out oogenesis, spermatogenesis and cleavage.

The behavior of the chromosomes is just the same as in the classical Ascaris material, except that there

are three pairs in the oogonium, spermatogonium and fertilized egg, and three tetrads or dyads in the maturation divisions of the egg and sperm. In the 1934 note it was suggested that this form might be called *Ascaris megalocephala trivalens,* and might be a case of polyploidy; or perhaps should be considered more primitive than *bivalens* or *univalens,* as the Mongolian pony (the common horse in China) is a primitive animal. From this new and abundant material I have noticed certain morphological differences in size and shape which make me wonder whether its relationship to *megalocephala* may not be quite so close. Diminution takes place in the somatic cells, as in the classical Ascaris, but it looks as though the somatic chromosome number may be less.

All these points will be worked out carefully and published with drawings in a later number of the *Peking Natural History Bulletin* within this year.

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IN RE HYPOTHECATE

THE erroneous use of "hypothecate" is justly condemned in your issue of June 25 by Professor A. V. Hill. The error is an instance of the common confusion of two words somewhat similar in sound but differing in meaning. The sentence criticized read, "Each hypothecated element in the nerve," etc. "Hypothetical" was evidently what the writer intended. It is a useful word, somewhat more specific than "assumed," which Dr. Hill recommends, since it implies an assumption made in accordance with a previously stated hypothesis. So in banishing "hypothecated" in its erroneous sense, let us not dismiss with it the useful words "hypothetical" and "hypothesized."

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THE interest constantly shown by SCIENCE in matters of diction prompts this note. In regard to the misuse of the word "hypothecate" in the sense of "assume," to which A. V. Hill takes justifiable exception in your issue of June 25, I would call attention to the word "hypothesize," which has exactly the sense and sound desired by many authors in certain cases and which is in good standing in the dictionaries. Perhaps, though, the more common verb *postulate* would serve in such cases equally well.

In your next *index expurgatorius* please put a lasting curse on the following atrocities: "Spacial" (for spatial); "Causal" (in the sense of *causative*); "Humans" (for human beings); "Do an experiment on. . . ."

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SOCIETIES AND MEETINGS

THE AMERICAN GEOPHYSICAL UNION

THE eighteenth annual general assembly of the American Geophysical Union and the meetings of its seven sections were held from April 28 to 30, 1937, at Washington, D. C., in the buildings of the National Academy of Sciences and the National Research Council, the Smithsonian Institution and the U. S. Geological Survey.

The scientific session of the general assembly was devoted to a symposium on theoretical and observational considerations of importance to further studies of the depths of the earth. Five formal papers presented were: "On the Estimation of Temperatures at Moderate Depths in the Crust of the Earth," by C. E. Van Orstrand; "The External Gravity-Field and the Interior of the Earth," by W. D. Lambert; "Deep-Focus Earthquakes and Their Implications," by J. B. Macelwane; "The Earth's Interior as Inferred from Terrestrial Magnetism," by A. G. McNish; "The Behavior of Matter under Extreme Conditions," by P. W. Bridgman. After an extended discussion, the symposium was summarized by L. H. Adams. Detailed reports were received from two special committees, namely, (1) on geophysical and geological study of oceanic basins and (2) on geophysical and geological study of continents.

Ten resolutions were adopted. Two of these expressed thanks for privileges extended by the Smithsonian Institution and by the U. S. Geological Survey. The importance of the United States time-signals for the economical and efficient continuation of many scientific projects of a geophysical nature was emphasized, with expressions of appreciation for that service to the Naval Observatory and the Bureau of Navigation of the United States Navy. Another resolution called attention to the splendid cooperation of the Bell Telephone Laboratories in lending its improved crystal-chronometer for the recent gravity-at-sea expedition; this crystal-chronometer greatly increased the precision obtained.

The results of the third expedition for gravity-work at sea by the United States Navy during September, 1936, to January, 1937, in cooperation with the union and other organizations, form an invaluable contribution to the investigation of oceanic areas; the union expressed the hope that the United States Navy would continue to promote such important work whenever