

are given in the next contribution by R. N. Salaman entitled "Notes on the Jewish problem."

There are two papers on the negro question by two of our most prominent writers on statistics, Professor W. F. Willeox and Dr. F. L. Hoffman. The first discusses the distribution of negroes in the United States, and the second deals with negro-white intermixture and is mainly concerned with the unhappy results of marriages between whites and blacks.

Then follows the opening address of the section on practical eugenics given by Major Leonard Darwin on "The field of eugenic reform." This address is general in scope and characteristically judicious and conservative. After advocating the curtailment of the propagation of the feeble-minded, neuropathic and habitually criminal elements of the community, and discussing the relative merits and feasibility of segregation and sterilization, the author turns his attention to the problem of increasing the amount of superior inheritance in the general population. This can not be so well accomplished, he thinks, by encouraging parenthood in a relatively few of the exceptionally well endowed, as by raising the general level of the whole people. Genius he regards (I believe rightly) as the fortunate product of a number of hereditary factors, and if the general level of native intellect could be raised, "the factors needed for the production of a man of genius would exist in greater numbers." In common with probably most eugenicists, Major Darwin recognizes that the present differential birth-rate is tending to breed out the brains of the race. As a counteractive, "there ought to be a great moral campaign against the selfish regard for personal comfort and social advancement, for these aims must, in a measure, be sacrificed on the altar of family life if racial progress is to be insured." He speaks of the encouragement of parenthood by "economic methods," but he offers no economic recipe for increasing parenthood of a desirable kind.

In dealing with the multiplication of inferior types, Major Darwin is inevitably led to consider that troublesome stratum of low-grade humanity lying just above the level of mental defectives, but which we can not deal with by the drastic methods which can be applied to the mentally and morally irresponsible. Major Darwin has no definite remedy for this situation. "I hardly know what to suggest," he says, "in the case of those who, in spite of this [financial] pressure persist in procreation in evil surroundings; and perhaps for the present we should concentrate our attention on the attempt to secure general approval of the desire to lessen the output of children under such circumstances."

I have wondered why Mr. Darwin has made no mention of birth control in relation to this difficulty, especially since he has elsewhere discussed it in con-

nection with this very topic. Perhaps, being a visitor in a somewhat puritanical country, and in the city of Anthony Comstock, he may have been restrained by his regard for the proprieties of the occasion from entering upon a subject surrounded by so much prejudice.

A short paper by Dr. Raymond Pearl on "Population growth" is followed by a more extended discussion by Professor E. M. East on the limits imposed by the productivity of the soil to population increase. Then follows a discussion by S. J. Holmes and J. C. Goff on the selective elimination of male infants as indicative of the action of natural selection during the period of infancy. Mr. O. E. Koegel points out the bad effects, both socially and eugenically, of common law marriages, and Dr. H. H. Laughlin describes the present status of eugenical sterilization in the United States. Dr. William McDougall summarizes the investigations on the relation of native ability and social status, and, in an earlier part of the volume, he contributes a short paper advocating a system of pecuniary rewards for superior types of parents. Dr. L. I. Dublin makes a plea for education for motherhood as a means of counteracting the present dysgenic influence of the higher learning.

Space forbids comment on or even mention of several other contributions to this volume, although some of them contain facts and discussions of real value. Both volumes of the *Proceedings* are issued in attractive form, and they are both indispensable to the students of eugenics.

S. J. HOLMES

SPECIAL ARTICLES

MULTIPLE SEEDED BURS OF XANTHIUM

FROM time to time observations are made which suggest that individual plants among the *Compositae* may possibly revert to remote ancestral floral conditions. Several methods of development of the composite type of inflorescence are conceivable, involving spicate or umbellate types in the ancestry. Through whatever source the present capitulum has been derived, it was undoubtedly originally many flowered, a condition persisting in the great majority of species to-day. In certain regions of this vast assemblage of plants there is a marked tendency to reduction in the number of florets in the head. This tendency reaches its highest expression in such genera as *Xanthium* and *Ambrosia*, in which the florets are reduced to two and one, respectively. A morphological study of the inflorescence of *Xanthium* shows that it is to be considered a reduced structure.¹

¹ Farr, C. H., "The origin of the inflorescences of *Xanthium*," *Bot. Gaz.*, 59:136-148, 1915.

About nine years ago the writer obtained from Mr. Crevecoeur, of Onaga, Kansas, some burs of *Xanthium* which contained many seeds to the bur. A brief description of these burs and an account of their origin have been given in another place,² under the name *Xanthium canadense*, var. *globuliforme* Crevecoeur, and the suggestion was made that they may represent a reversion to the ancestral type from which the evolution of the two-flowered condition of to-day proceeded. Recently Collins³ noted a case of floral modification in *Crepis capillaris* which he interpreted as a reversion to remote ancestral condition. In this particular case, the reversion of *Crepis* to a form having bract-like paleae subtending the achenes was preceded by hybridization of two strains originally from Sweden and Holland, respectively. In the F_1 generation one of the hybrid offspring had this presumably ancestral type of flower cluster, whereas in the normal flower head the receptacle is smooth.

Collins believes that the evolution of species in *Crepis* may have been brought about by separation of a large group of interacting factors into smaller groups no longer capable of producing the generalized ancestral condition. Hybridization then may simply bring back the full combination of factors necessary to somatic expression of the ancient character.

In the case of *Xanthium* recorded above, the burs were collected in immature condition, and had been stored in an herbarium for some years before they were placed in my hands for study. Viability had been lost, and the opportunity of studying the morphological, physiological and genetic problems connected with this reversion was lost for the time being.

During the last year burs of this same type, with somewhat fewer florets, have been found again in a habitat hundreds of miles from Onaga, and separated by a time interval of fourteen years. The burs were found by Mr. A. A. Hansen, weed expert and extension worker in the Purdue Experiment Station, near Richland, Rush County, Indiana, during the autumn of 1922, and sent to the Field Columbian Museum for identification. Recognizing their scientific interest, Dr. Sherff called my attention to them, and kindly gave me the burs for propagation. Fortunately the seeds were found to be viable, and a number of vigorous plants are now growing in the garden of the Hull Botanical Laboratory. An abundance of material for study is assured.

It is not yet known whether hybridization precedes the appearance of this reversion or not, nor even

² Shull, Charles A., "An interesting modification in *Xanthium*," *Amer. Jour. Bot.*, 3:40-43, 1917.

³ Collins, J. L., "Reversion in Composites," *Jour. Hered.*, 12: 129-133, 1921.

whether it is a case of reversion. The original information furnished by Crevecoeur indicated that the plants might be hybrids. The writer desires additional field data regarding the frequency with which this peculiar modification arises in nature. The infrequency with which it is reported may be due in part to lack of close observation in the field. Field botanists, ecologists, naturalists and students of local floras from all parts of the United States are requested to observe the *Xanthium* population in their respective localities, and to communicate to me the finding of burs which show a many flowered capitulum.

These modified burs may be recognized by the replacement of the two terminal beaks of the bur by a double circle of beaks surrounding a depression in the outer end of the bur. The photographs reproduced in the paper cited will assist in identification of burs. Any information regarding the occurrence of this type in nature will aid very materially in its interpretation.

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II

Botany

The flora of the Olympic peninsula, Washington: ALBERT B. REAGAN.

The Pyrenomycetes or Black Fungi of Iowa: JESSIE PARISH.

The leaching of calcium from soil: WINFIELD SCOTT.

The relation of moisture content to the viability of seed corn: WINFIELD SCOTT.

Notes on the flora of Pine Creek Hollow, Dubuque county: L. H. PAMMEL.

Notes on plants at Whitehall, Michigan: L. H. PAMMEL and R. I. CRATTY.

The Burdock rust (Bullaria Bardanae) in Iowa: GUY WEST WILSON.

Polygonum in Iowa: G. L. WITTRICK. Examination of material in the herbaria of Grinnell, Ames and Iowa City reveals the presence of twenty species in the state. The distribution of each species is given.

Cuscuta in Iowa: G. L. WITTRICK. Examination of material in the herbaria of Grinnell and Ames reveals the presence of eleven species in the state. The distribution of each species is given, and a key to the species.

Citation of authority for Latin names: HENRY S. CONARD. The writer insists that for all persons who are not specialists in systematic botany, citation of the author of a name is meaningless. It is much more significant to name the manual or monograph consulted in determining the names.

The importance of the aerial environment in the growing of wheat in nutrient solutions: A. L. BAKKE. Growing wheat at three different seasonal periods, it has been