# SCIENCE



FRIDAY, JUNE 15, 1900.

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

## *THE APPROPRIATIONS FOR THE DEPARTMENT OF AGRICULTURE FOR 1901.*

THE Congressional Act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1901, shows an increase of more than $280,000 over the appropriations for the preceding year. The total amount is $4,023,500 of which $720,000 is for the experiment stations in the 48 States and Territories, $12,000 for the stations in Alaska, $10,000 for a new station in Hawaii, 'including the erection of buildings, the printing (in the Hawaiian Islands), illustration and distribution of reports and bulletins, and all other expenses essential to the maintenance of said station,' and $5000 for an investigation and report to Congress on the Agricultural resources and capabilities of Porto Rico, "with special reference to the selection of locations for agricultural experiment stations and the determination of the character and extent of agricultural experiments immediately demanded by the conditions of agriculture in that Island; to prepare, print publish and distribute in Porto Rico, circulars of inquiry and bulletins of information in the English and Spanish languages."

The sum of $10,000 was appropriated for the purpose of commencing the necessary improvements for the establishment and maintenance of a general experimental farm and agricultural station on the Arlington Estate, on the Virginia shore of the Potomac.

The appropriation for the Office of Experiment Stations is $33,000, and the special investigations in charge of this Office are provided for as follows: Nutrition of man $17,500, an increase of $2500; and Irrigation $50,000, an increase of $15,000.

The largest increases in the appropriations are for the Bureau of Animal Industry, Divisions of Forestry and Seeds, and the Weather Bureau. The appropriation for the Bureau of Animal Industry is $1,078,830, an increase of $46,800. The appropriation for Animal Quarantine Stations is increased from $12,000 to $50,000. The Division of Forestry receives an increase of $40,000, $5000 of which may be used to investigate the forest conditions of the southern Appalachian Mountain regions of western North Carolina and adjacent States. The appropriation for the Division of Seeds is increased from $130,000 to $170,000. The increased appropriation for the purchase of seed was due in a large measure to a petition of some 225 members of the House of Representatives. The total appropriation for the Weather Bureau is $1,058,320, an increase of $35,838. The work of the Bureau is to be extended to the Hawaiian Islands. The salary of the Chief of the Bureau is increased to $5000.

In addition to the lines of work previously undertaken the Division of Chemistry is charged with new duties, as follows:

"To investigate the cause of the deterioration in the gluten content of wheat on the Pacific Coast and in other parts of the country. To study the methods for increasing the content of valuable food constituents in wheat and other cereals. * * *

"To investigate the character of proposed food preservatives and coloring matters. To determine their relations to digestion and to health and to establish the principles which should guide their use.

"To investigate the character of the chemical and physical tests which are applied to American food products in foreign countries, and to inspect, before shipment, when desired by the shippers or owners of these food products, American food products intended for countries where chemical and physical tests are required before said food products are allowed to be sold in the countries mentioned." The appropriation for this Division is $35,600.

The appropriation for the Division of Agrostology was increased $5000 making its total appropriation $25,100. The work of the Division is enlarged to include investigations as to the best methods for exterminating Johnson and other noxious and destructive grasses and co-operative experiments to be carried on in connection with the agricultural experiment stations "in establishing and maintaining experimental grass stations for determining the best methods of caring for and improving meadows and grazing lands, the use of different grasses and forage plants and their adaptability to various soils and climates, the best native and foreign species for reclaiming overstocked ranges and pastures, for renovating worn out lands, for binding drifting sands and washed lands, and for turfing lawns and pleasure grounds."

The Division of Entomology receives $33,200, an increase of $2500. A special investigation is ordered as to 'the ravages of the codling moth with a view to ascertaining the best method of its extermination.'

The sum of $34,500 is appropriated for the Division of Vegetable Physiology and Pathology. The policy of Secretary Wilson in employing the graduates of agricultural colleges as scientific aids has received the endorsement of Congress by an express provision for the employment of such aids in this Division.

Of the $31,300 appropriated for the Division of Soils, $10,000 may be used 'for the purpose of demonstrating the practical

value of underdrainage and other methods of reclaiming alkali lands.' The appropriation for this Division is $5000 greater than last year.

The fund used in making investigations as to the adaptability of the South for profitable tea culture was increased from $1000 to $5000.

The fund provided for the Division of Publications is $130,020, an increase of $28,360. The amount set aside for the printing of Farmers' Bulletins is $22,500 greater than last year. Four-fifths of the Farmers' Bulletins are to be sent out by members of Congress instead of two-thirds as formerly.

Other items of the appropriation act are as follows: Biological Survey $30,300, an increase of $2740; Division of Botany $43,080, an increase of $14,280; Division of Pomology $18,400; Public Road Inquiry $14,000, an increase of $6000; Division of Statistics $146,160; Library $14,000; and Museum $2260.

The item of $200,000 for a new laboratory which was taken out of the Agricultural Bill and put with those for other public buildings in the Sundry Civil Bill failed to pass.

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## *VARIATION AND SOME PHENOMENA CONNECTED WITH REPRODUCTION AND SEX.*

### II.

### EFFECT OF CHANGED CONDITIONS IN ASEXUAL REPRODUCTION.

THIS brings us to the consideration of the question reserved: Are genetic variations ever found in asexual reproduction?

If the views expressed in the earlier part of this address are correct it would seem to follow that genetic variations are variations in the actual constitution, and are inseparably connected with the act of conjugation. The act of conjugation gives us a new constitution, a new individuality, and it is the characters of this new individual in so far as they differ from the characters of the parents which constitute what we have called genetic variations. According to this the answer to our question would be that genetic variations cannot occur in asexual reproduction, and that if any indefinite variability recalling genetic variability makes its appearance* it must be part of the genetic variability and directly traceable to the zygote from which the asexual generations started.

But if genetic variability is not found in asexual reproduction the question still remains, can the other kinds of variations—namely, those due to the direct action of external forces upon the organism—be transmitted in asexual reproduction? Now we have already seen that the effect of external agencies acting upon the organism must be regarded under two heads, according as to whether the reproductive organs are or are not affected. If the reproductive organs are not affected, then variations caused by the impact of external forces will

* Weismann, *On Heredity*, vol. ii, English edition, p. 161. Warren, E. 'Observation on Heredity in Parthenogenesis,' *Proc. Roy. Soc.* 65, 1899, p. 154. These are the only observations I know of on this subject. They tend to show the presence of a slight variability, but they are not entirely satisfactory. In connection with this matter I may refer to Weismann's view that *Cypris reptans*, the species upon which his observations were made, reproduces entirely by parthenogenesis, and has lost the power of sexual reproduction. This view is based on the fact that he has bred forty consecutive parthenogenetic generations and has never seen a male. As Weismann bases some important conclusions on this view, with regard to the importance of conjugation in rejuvenescence of organisms, I may point out that the fact that he has bred forty successive generations and has never seen a male cannot be regarded as conclusive evidence that males never appear. We know of many cases in which reproduction can continue for more than forty generations without the intervention of conjugation, *e. g.*, ciliated infusoria, many plants, and of other species of crustacea in which the male is very rare and only appears after long intervals.