Tubeuf has stood well to the forefront among plant pathologists in the world and his publications on the mistletoe are classic.

The present quarto volume (xii+ 832 pages, 181 text-figures, 35 plates and five distribution maps) will form the starting point for all future studies of this interesting autotrophic plant which nevertheless is parasitic and even divisible into biologic strains in its host selection.

From the day of Theophrastus, the Greek founder of botanical science, the rôle of the mistletoe in saga, folklore and practical horticulture is sketched, and its present-day significance is shown. Special chapters deal with geographic distribution, morphology in its various branches, ecologic relations with other plants and animals, and its many-sided significance as a harmful parasite or an attractive adjunct to a landscape.

Every American University library should possess the book, and no surer indication can be given of America's wish to help the countries of Europe in the heroic struggle of their scholars to hold fast to what they have of culture, than by the prompt purchase of such sterling works as Tubeuf's monograph now that the Mid-European scholar is so hard pressed to keep body and mind and soul together.

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SPECIAL ARTICLES

FURTHER NOTES ON THE "WINTER CYCLE" IN THE DOMESTIC FOWL

IN an earlier note[1] we pointed out that the maximum value of the inter-annual correlation between the egg production of the various "cycles" of laying activity in the first and second year in the White Leghorn fowl does not fall on the winter "cycle" as might be expected from current genetic theory, as developed for the Barred Rock breed, but on the autumn "cycle."

We have since shown[2] that the relationship between the first year production of the mother and the first year production of the daughter is $r = 0.128 \pm .033$ while that between the

TABLE 1. DAUGHTER'S FIRST YEAR.

		Winter	Spring	Summer	Autumn	Annual
Mother's First Year	Winter	+.1387 ± .0330 4.20	+.0593 ± .0335 1.77	—.0011 ± .0336 0.03	+.0596 ± .0335 1.77	+.0976 ± .0333 2.93
	Spring	—.0064 ± .0336 0.19	+.0246 ± .0336 0.73	+.0174 ± .0336 0.51	+.0876 ± .0334 2.62	+.0365 ± .0336 1.08
	Summer	—.0084 ± .0336 0.25	+.0074 ± .0336 0.22	+.1173 ± .0332 3.53	+.0429 ± .0336 1.27	+.0564 ± .0335 1.68
	Autumn	+.0727 ± .0335 2.17	+.0377 ± .0336 1.12	+.0750 ± .0335 2.23	+.1991 ± .0323 6.16	+.1320 ± .0331 3.98
	Annual	+.0959 ± .0333 2.87	+.0536 ± .0336 1.59	+.0721 ± .0335 2.15	+.1380 ± .0330 4.18	+.1279 ± .0331 3.86

TABLE 2. DAUGHTER'S FIRST YEAR.

		Winter	Spring	Summer	Autumn	Annual
Mother's Second Year	Winter	+.0578 ± .0335 1.72	+.1057 ± .0333 3.17	+.1025 ± .0333 3.07	+.1630 ± .0327 4.98	+.1440 ± .0329 4.37
	Spring	+.0743 ± .0335 2.21	+.1496 ± .0329 4.54	+.1311 ± .0331 3.96	+.0971 ± .0333 2.91	+.1555 ± .0328 4.74
	Summer	+.0727 ± .0335 2.17	+.0607 ± .0335 1.81	+.0625 ± .0335 1.86	+.1042 ± .0333 3.12	+.1054 ± .0333 3.16
	Autumn	+.1064 ± .0333 3.19	+.0762 ± .0334 2.28	+.1043 ± .0333 3.13	+.2207 ± .0320 6.89	+.1759 ± .0326 5.39
	Annual	+.1078 ± .0332 3.24	+.1265 ± .0331 3.82	+.1315 ± .0331 3.97	+.2039 ± .0322 6.33	+.1962 ± .0323 6.07

1 Harris, J. Arthur, and Lewis, H. R., "The 'winter cycle' in the fowl," SCIENCE, N. S., 56: 230-231, 1922.

2 Harris, J. Arthur, and Lewis, H. R., "Biometric considerations on the inheritance of fecundity in the White Leghorn fowl, *Poultry Science* (in press).

second year production of the mother and the first year record of the daughter is $r = 0.196 \pm .032$. While numerically small, these values are both positive and may reasonably be considered statistically significant.

The fact that there seems to be a significant correlation between the annual record of mothers and daughters at once raises the question as to whether the correlation is higher for the period of winter production, with respect to which the birds have heretofore been assumed to be differentiated in genetic constitution, than for the other "cycles."

We are now able to present the thirty-two coefficients measuring the relationship between the four individual "cycles" of the mother's first year and the daughter's first year, table 1, and between the mother's second year and the daughter's first year, table 2.

These coefficients are small throughout, and individually would not be considered significant in comparison with their probable errors. They are, however, preponderantly positive in sign and thus lend support to the conclusion that there is a sensible correlation between the records of mothers and daughters in the type of birds exhibited in contest flocks.

The most interesting feature of this series of results is the fact that the highest correlation is not that between the winter "cycle" of the mother and the winter "cycle" of the daughter, but between the autumn "cycle" of the mother and the autumn "cycle" of the daughter. Thus for the winter "cycle" of the mother's first year and that of the daughter's first year the correlation is $+ .139$ as compared with $+ .199$ for the autumn "cycles." The relationship between the winter "cycles" of the mother's second and the daughter's first year is measured by a coefficient of $r = + .058$ as compared with $r = + .221$ for the autumn "cycles."

This result for inheritance substantiates the conclusions drawn from our earlier studies of inter-annual correlation for the first and second laying year of the same individual.

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THE UTILIZATION OF ATMOSPHERIC NITROGEN BY SACCHAROMYCES CEREVISIAE

A NOTE on some of the results obtained in this laboratory in the course of studies on the nutrition of yeast may be of interest especially in view of the recent communication to this journal by Lipman and Taylor.[1] These authors claim to have proved the utilization of atmospheric nitrogen by the wheat plant. We have been working for a considerable time in this laboratory on the development of the simplest possible medium that will support the continued growth of yeast, and some of the data have a direct bearing on the utilization of atmospheric nitrogen by the organism.

Zikes[2] and DeKruijff[3] claimed that certain Torula can fix nitrogen. Kossowicz[4] stated that certain yeasts could fix nitrogen but later[5] reversed his opinion. Linder and Newman[6] could observe no nitrogen fixation by yeast. Mulvania[7] concludes that some yeasts can use atmospheric nitrogen. His data are qualitative in nature and he made no attempt to dilute out by subculture any nitrogenous compounds originally present in the yeast.

The yeast used in our work was plated out from a Fleischmann yeast cake and is known as *Saccharomyces Cerevisiæ* Race F. The cultures used in the experiments hereinafter described had been subcultured for three years at 30° C. in Medium E developed by Fulmer, Nelson and Sherwood.[8] The medium contained the following per 100 cc.: 10 grams of cane sugar, 0.188 grams of ammonium chloride, 0.100 grams of dipotassium phosphate, 0.100 grams of calcium chloride. The yeast had then been subcultured for six months in Medium C (2) which contained per 100 cc. the following: 10 grams of cane sugar, 0.188 grams of ammonium chloride, 0.100 grams of dipotassium phosphate. Yeast so grown furnished an

1 SCIENCE, lvi, 605 (1922).

2 *Sitzungsber, K. Akad. Wiss (Vienna) Math. Naturw. K.*, 118, 1091, (1909).

3 *Ann. Jard. Bot. Butten. Zorg. Sup.*, 3, Pt. 1, 93, (1910).

4 *Z. Garungsphysiol.*, 1, 253, 5, 26.

5 *Biochem. Zeit.*, 64, 82.

6 *Wehnschr. Proc.*, 30, No. 47, 589, (1913).

7 *Bulletin* 122, Ag. Exp. Station, Univ. of Tennessee.

Chem. Abt., Vol. 15, 2291, (1921).

8 *Journ. Amer. Chem. Soc.*, xliii, 191, (1921).