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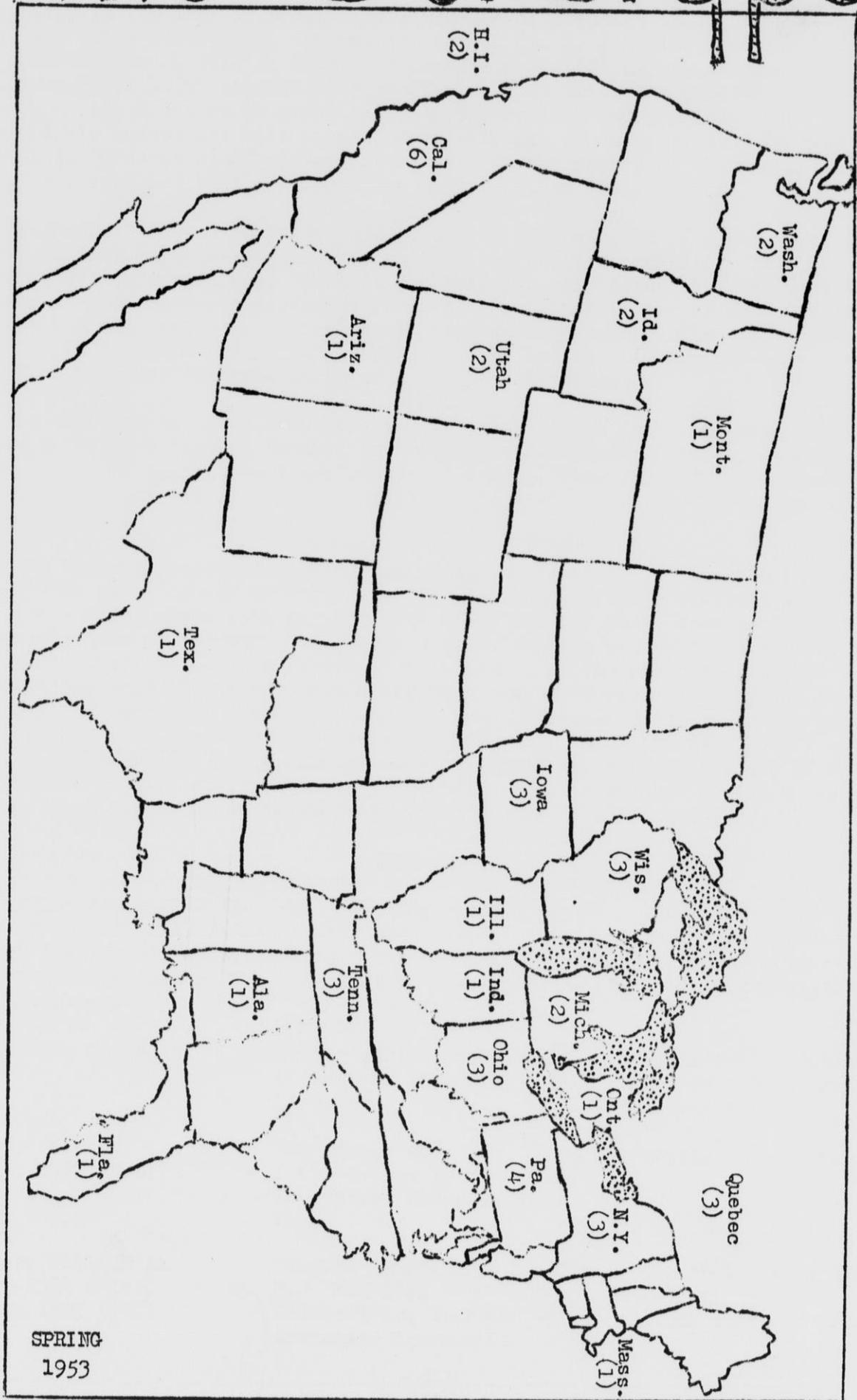
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The Genotype



LOCATIONS OF WISCONSIN GENETICS DEPARTMENT GRADS

SPRING
1953

EDITORIAL

One of the most notable features about the University of Wisconsin Genetics Department is the many branches of the science of genetics in which investigations are being carried on. It was the aim of Dr. L. J. Cole, from the time of his arrival here in 1910 to found the department, until he relinquished the chairmanship in 1939, to have as a staff member at least one outstanding man in each of the branches of genetics, both theoretical and applied. That Dr. Cole and his successors have succeeded in this aim is amply evident from a look at the present staff of the department, at the record of the accomplishments made here and by the persons who have received their training here.

Workers in this department have pioneered in the field of genetics of blood groups of farm animals and more recently in the rapidly expanding field of genetics of microorganisms. This is probably the only genetics department in existence which conducts extensive research in the physiology of reproduction of farm animals, which is so intimately tied up with research in animal genetics. Research in the genetics of fur-bearing animals and in forestry are also projects not often found as integral parts of a genetics department.

In addition to these branches in which much of the work has been and continues to be of a pioneer nature, important contributions have been made by workers here in animal breeding, genetics of corn, alfalfa, and other field crops, in cytogenetics, in potato breeding, in studies of population genetics using *Drosophila*, and so forth.

The training received by students at the University of Wisconsin in these many fields is of course reflected in the work done by these students after they leave here. From 1911 to 1952, 117 M.Sc. and 121 Ph.D. degrees have been granted by this department. Last year a questionnaire was sent out with copies of the Genotype, requesting information on alumni of the department. Some four dozen people sent in answers, and among this sample of approximately one sixth of the total number of graduates, one can readily list a dozen or so different fields, mostly in genetics or closely allied to it, in which these people are working. The present staff and graduate students have a high standard of achievement to live up to in order to maintain this department as the nucleus of important research and research training in the field of genetics.

GRAD NEWS

Below are listed the name, address, present position of, and a brief item or two of interest about, the graduates of this department who replied to our last year's questionnaire. The names are listed in order of graduation from this department. The locations of these persons, by states, are given on our cover map.

Wentworth, Edward N.	Armour's Livestock Bureau Chicago 9, Illinois Director	administrative duties and research in agricultural history
Jones, Sarah V. H. Ph.D., 1921 (Wis.)	Van Hoosen Farm Route 2, Box 36 Rochester, Michigan Owner	business and farming
Carver, William A. M.S., 1922 (Wis.) Ph.D., 1925 (ISC)	Florida Agric. Exp. Station P.O. Box 2671 Gainesville, Florida Associate Agronomist	research in field crop breeding: peanuts, cotton, corn and grass

Lush, Jay L. Ph.D., 1922 (Wis.)	Iowa State College Ames, Iowa Prof. Animal Husbandry	research in population genetics; grandpa since Feb. 1952
Henke, Louis A. M.S., 1923 (Wis.)	University of Hawaii Hawaii Agric. Exp. Station Associate Director	research in animal nutrition
Raymond, Lee C. M.S., 1924 (Wis.)	Macdonald College Prov. of Quebec Prof. and Chairman Department of Agronomy	administrative duties; retirement in two years
Gildow, Elton M. M.S., 1925 (Wis.)	Carnation Milk Farms Carnation, Washington Research Director of Albers Research St.	still interested in genetics but most of work is in animal nutrition
MacGillivray, John H. Ph.D., 1925 (Wis.)	University of California Dept. of Vegetable Crops Professor	
Hutt, Frederick B. M.S., 1925 (Wis.) M.A., 1927 (U. of Man.) Ph.D., 1929 (U. of Edin.) D.Sc., 1939 (U. of Edin.)	N.Y.S. College of Agric. Cornell University Prof. of Animal Genetics	research in the genetics of the fowl; resistance to leucosis
Forrest, Vern O. Ph.D., 1926 (Wis.)	U.S. Dept. Agriculture Salt Lake City, Utah Principal Geneticist	research in genetics and breeding of sugar beets
Stringfield, G. H. Ph.D., 1927 (Wis.)	Ohio Agric. Exp. Station Wooster, Ohio Agronomist	experiments in corn breeding and production studies
Martin, J. Holmes Ph.D., 1929 (Wis.)	Purdue University Poultry Department Chairman	administrative duties-- three grandchildren
Renard, Earl J. Ph.D., 1929 (Wis.)	Canner's Seed Corp. Rigby, Idaho Production Manager	research in practical pea breeding
Asmundson, V. S. Ph.D., 1930 (Wis.)	University of California Davis, California Prof. Poultry Husbandry	research in genetics and breeding improve- ment of turkeys & chickens
Taylor, Lewis W. Ph.D., 1931 (Wis.)	University of California Berkeley 4, California Prof. Poultry Husbandry	investigation of embryonic lethals in poultry; gaseous requirements in incubation; hatchability
Huffman, Carl F. Ph.D., 1933 (Wis.)	Michigan State College East Lansing, Michigan Dairy Cattle Nutrition Research	study of unidentified dietary factors for milk production

Jaap, R. George Ph.D., 1933 (Wis.)	Ohio State University Institute of Genetics Dept. of Poultry Husbandry Prof. of Poultry Husbandry	research in poultry genetics
Parker, Melbourne C. Ph.D., 1933 (Wis.)	Gallatin Valley Seed Co. Bozeman, Montana Geneticist, Vice President	research in pea and bean breeding; canning and freezing types; son is a Korean war veteran
Maw, A. J. G. Ph.D., 1935 (Wis.)	Pennsylvania State College Prof. Poultry Husbandry	poultry inbreeding and fertility studies
Neal, Norman P. Ph.D., 1935 (Wis.)	University of Wisconsin Prof. of Agronomy and Genetics	research in hybrid corn breeding; technical mission to France, Morocco, Algeria in 1952
Woolley, George W. Ph.D., 1935 (Wis.)	Sloan-Kettering Institute New York 21, N. Y. Professor of Biology Head of Division of Steroid Biology	studies in genetics, cancer & endocrinology; member of Board of Directors of Amer. Assn. for Cancer Research, member of Advisory Comm. for Amer. Genet. Assn., Fellow of New York Acad. of Science
McAlister, Dean F. Ph.D., 1936 (Wis.)	University of Arizona Tucson, Arizona Agronomy Department Chairman	alfalfa production studies; proud father of twin girls
Atwood, Sanford S. Ph.D., 1937 (Wis.)	Cornell University Ithaca, New York Dept. of Plant Breeding Professor and Chairman	research in cytogenetics and breeding of forage crops
Henning, William L. Ph.D., 1937 (Wis.)	Pennsylvania State College American Southdown Breeders Association Secretary	investigations of wool quality and fine wool breeding
Hollander, Willard F. Ph.D., 1937 (Wis.)	Iowa State College Genetics Department Ames, Iowa	studies on plumage color in pigeons; father of three sons
Hollander, Mildred Willoughby M.S., 1934 (Wis.)	same as above	mother of above three sons
Pennebaker, Gordon B. Ph.D., 1938 (Wis.)	Tennessee Polytechnic Inst. Cookeville, Tennessee School of Arts & Science Director	interested in methods of science teaching
Laidlaw, Harry H. Ph.D., 1939 (Wis.)	University of California Davis, California Dept. of Entomol. & Parasit. Asst. Prof. of Entomology	research in bee breeding, bee genetics & queen rear- ing; vacationing in Sierra Nevadas

Ferguson, Lloyd C. Ph.D., 1940 (Wis.)	Ohio State University Columbus, Ohio Department of Bacteriology Assoc. Prof. of Bacteriology	interests lie in immuno- genetics and Leptospirosis
Owen, Ray D. Ph.D., 1941 (Wis.)	California Inst. of Technol. Pasadena, California Assoc. Prof. of Biology	yeast genetics, cattle blood groups
Washko, John B. Ph.D., 1941 (Wis.)	Pennsylvania State College Department of Agronomy Prof. of Agronomy	present research in forage crops and pastures
McGibbon, W. H. Ph.D., 1942 (Wis.)	University of Wisconsin Madison, Wisconsin Dept. of Poultry Husbandry Prof. of Poultry Husbandry	inbreeding & hybridiza- tion of ducks; inheri- tance of blood cell antigens in ducks
Warwick, Everett J. Ph.D., 1943 (Wis.)	University of Tennessee Knoxville, Tennessee Dept. of Animal Husbandry Regional Coordinator	research in beef cattle breeding
Frisch, Rose Ph.D., 1943 (Wis.)	Harvard University Cambridge, Massachusetts Research Fellow in Biology	principal interest is physiological genetics of Drosophila
McFarlane, John S. Ph.D., 1943 (Wis.)	Div. Sugar Plant Invest. U.S.D.A., Alisal Branch P.O. Box 98, Salinas, Cal. Geneticist	breeding for non-bolting and mildew resistance in sugar beets
Heggstad, Howard E. Ph.D., 1944 (Wis.)	Tobacco Experiment Station U.S.D.A. Greeneville, Tennessee Agronomist	interested in burley tobacco breeding and disease investigations
Kerr, Ernest A. Ph.D., 1944 (Wis.)	Horticultural Exp. Station Vineland Station Ontario, Canada Research Associate	breeding work with green- house & cannery tomatoes, sweetcorn & several minor crops; effect of extra foliage on greenhouse tomato production
Dessureaux, Lionel Ph.D., 1947 (Wis.)	Experimental Station Ste. Anne de la Pocatiere Prov. Quebec, Canada Senior Geneticist	research in alfalfa breeding, also white clover
Beaudry, Jean R. Ph.D., 1948 (Wis.)	Institut de Biologie Université de Montreal Box 6128, Montreal Asst. Professor	interested in caryology of orthoptera; seed development in intergeneric crosses of grasses
Tanabe, Tsuneo Y. Ph.D., 1948 (Wis.)	Pennsylvania State College State College, Pennsylvania Dept. of Dairy Husbandry Asst. Professor	sterility studies in dairy heifers

Kottman, Roy M. M.S., 1948 (Wis.) Ph.D., 1952 (ISC)	Iowa State College Ames, Iowa Asst. Dean of Agriculture	inheritance of nipple number, pattern and abnormality in swine
Rosenberg, Morton M. Ph.D., 1948 (Wis.)	University of Hawaii Honolulu, Hawaii Poultry Husbandman & Professor of Agriculture	engaged in genetic, nutrition & management studies publications en masse!
Adams, John L. Ph.D., 1950 (Wis.)	University of Wisconsin Madison, Wisconsin Poultry Department Assistant Professor	research in endocrinology of the fowl
Gibson, Pryce B. Ph.D., 1950 (Wis.)	Alabama Agric. Exp. Station Auburn, Alabama Dept. of Agronomy & Soils Assoc. Plant Breeder	breeding experiments with <u>Trifolium repens</u>
Rush, George E. Ph.D., 1950 (Wis.)	Amalgamated Sugar Company Ogden, Utah Plant Breeder	investigations on sugar beet breeding
Wiggins, Earl L. Ph.D., 1950 (Wis.)	U.S. Sheep Experiment Sta. Dubois, Idaho Animal Geneticist	physiology of reproduc- tion studies in sheep doesn't like new Genotype headings!
Robertson, George L. Ph.D., 1951 (Wis.)	Texas A & M College College Station, Texas Associate Professor	physiology of repro- duction studies in swine
Nilan, Robert A. Ph.D., 1951 (Wis.)	State College of Washington Pullman, Washington Asst. Prof. and Asst. Agronomist	cytogenetic & radio- biological studies on cereals

DEPARTMENTAL NEWS

The chairman of the department, Dr. M. R. Irwin, was honored this past year by an honorary appointment to the Swedish Academy of Agricultural Sciences.

Alfalfa Variety Released:

A new variety of alfalfa, named Vernal, has been developed by Dr. R. A. Brink. This variety combines yield with hardiness and wilt resistance not found in other varieties. It was released this past winter in cooperation with Utah State College where some of the seed increase has been made.

Speakers:

Speakers at the department during the past year have been Dr. H. J. Muller of the University of Indiana; Dr. F. M. Burnet of the Walter & Eliza Hall Institute, Melbourne, Australia; Dr. A. Novick of the University of Chicago; Dr. S. E. Luria and Dr. J. R. Laughnan of the University of Illinois.

Christmas Party:

The annual Linkage Group dinner and party was held in December at Kennedy Manor on Langdon Street. Featured on the entertainment program for the evening were a crossword puzzle made up by Wilmer Miller and his wife; a history of the department from 1910 to 1952, complete with a graph and statistics, given by

Dr. Chapman; and colored slides of Scandinavia shown by Bob Hitt, and others of Europe and Northern Africa which Dr. Neal obtained on his trip there last year.

Picnic:

Despite a downpour that would have disheartened a less hardy group, the genetics picnic was held as scheduled on June 9. Nearly a hundred persons turned out at Hoyt Park almost as soon as the rain had stopped, to take full advantage of the contrastingly fine weather which followed. Included in the group was, as usual, a sufficient number of children to indicate that geneticists like to observe segregation and independent assortment at first hand.

A volleyball that would have been more appropriate at a water polo game and a softball that created a shower each time it was hit didn't prevent a couple of good games in these sports. Dr. Irwin, pitching for the winning softball team, managed to draw a blood sample in his usual inimitable style.

The food was good and the conversations lengthy. The general feeling afterwards seemed to be one of regret that the picnic, like Christmas, comes but once a year.

Crossing Over:

With the departure of the Veterinary Science Department to new quarters in the remodelled annex to Hiram Smith Hall this winter, a rather extensive reshuffling of the different groups within the Genetics Department took place.

Dr. Crow, his *Drosophila* and his graduate students, have moved into Rooms 205 and 212. Although neither Dr. Crow nor his students have shown any imperialistic tendencies, the *Drosophila* are showing their true (eye) color and are threatening to take over at least the entire second floor.

The corn geneticists have moved into Room 211, bringing an apparently limitless supply of corn of various (and variegated) colors, and their coffee pot, with them. This leaves the potato breeders alone in Room 2, and by the looks of the equipment being installed therein they plan to carry out extensive experimentation with the tubers.

The entire animal breeding group, including Drs. Chapman and Tyler, Mrs. Payton and Ruth Brisse, the students and the calculators--mechanical and otherwise--have moved into Rooms 207 to 210 on second floor.

Bob Hitt now has his office in 206, Dr. Rieman has moved into Dr. Chapman's former office, and Dr. Hougas has the former calculating room. Dr. Shackelford's students have moved into Room 1, leaving Max his office all to himself.

Remaining in their former quarters and in some cases expanding slightly are the genetics of microorganisms group on the second floor, the cytogeneticists on the first floor, and the blood lab and physiology of reproduction groups on the ground floor.

Further changes are planned and it is hoped will be carried out during the next year. It is planned to install a ceiling, insulation and a new ventilating system in Room 213 in order to have it as a permanent *Drosophila* lab, and then to remodel 212 as a general chemistry lab for the department.

One other long awaited improvement which appears to be in sight is the paving of the parking lot behind the Genetics Building.

CURRENT RESEARCH

Corn:

Dr. Brink and his students are continuing intense investigations of the factors governing pericarp color in corn.

Carl Campbell is investigating the genetic phases of the widely varying pericarp colors associated with the diffuse gene, a dominant suppressor of pericarp color which preliminary experiments indicate is not an allele of the P locus.

Howard Clark is continuing studies on the modifiers of the variegated phenotype present in long separated sublines within inbred lines. The relative stabilities of different mutations from variegated are being tested.

Peter Barclay is studying the dosage effect of Modulator, a major modifier of the variegated phenotype. He is also attempting to determine if McClintock's Activator (Ac) is present in our stocks, and if so, what is the relation of Ac to P.

Elsayed Kassem has found that inbred lines treated with nitrogen mustard gas showed mutations in both the plus and minus directions in regard to yield and fertility. Further yield trials are being conducted this year to determine if progressive mutations have been induced.

Fred Valentine is studying orange variegated pericarp, its mode of inheritance and its relationship to the commoner form of variegated pericarp.

Theo. vanSchaik is working on the effect of higher physiological activity as a result of heterosis on the mutability of the gene for variegated pericarp in maize.

Mei Fradkin is studying the possible relationship of variegated pericarp to gene mutation and chromosome breakage at other loci in the genome.

Nancy Worner has an indication from preliminary linkage tests that Modulator (M_p) may occupy different positions in the chromosomes like McClintock's Ac and Ds. More data will be available this year.

Corn Grass:

Walt Galinat is studying the genetics and morphology of corn grass, a macromutant of corn. Various series of plus and minus modifier genes are found to affect the expression and dominance relation of this factor.

Sweetclover:

Dr. W. K. Smith is continuing work on the improvement of low coumarin sweetclover lines. Two of his intermediate coumarin lines are being tested this year throughout North Central United States and in Canada.

Kuell Hinson is continuing studies on the genetic nature of the barrier between two species of sweetclover resulting in chlorophyll deficiency. Some work is also being done on male sterility.

Spud Nuts:

Last fall Dr. Rieman released two new varieties, one of them a beautiful red. October saw the arrival of Dr. Floriano Guimaraes, from the Horticultural Experiment Station, Rio Grande, Brazil; while here he studied the Wisconsin breeding program. In January, Gus Stokes finished his Ph.D. work here, and with his wife and trailer left for the University of Kentucky. Two new students came here late in June. Don Young (B.S. McGill) has taken up the work on the peculiar fungus observed by Drs. Cooper and Rieman in potato tubers. He is now trying to isolate the fungus via tissue culture. Steve Takats (B.S. Cornell) has barely started on a problem in haploidy-producing 24-chromosome Tuberosums.

In the cytology lab, Dr. Cooper is making a new histological study of tuber formation. He is also finding some striking correlations between tissue growth and scab resistance. Betty Williams and Kay Beamish spent a lot of time during the winter months counting chromosomes. Both now have passed their prelims and are happily busy with their thesis problems. Betty is working on pollen sterility and seed development in three varieties of S. tuberosum, while Kay is interested in hybrids between various diploid species and a hexaploid, S. demissum.

A new member of the group is Dr. M. S. Swaminathan from Cambridge University. He is continuing a study of the cytogenetic relationships among tuber-bearing Solanums. These make up a uniform polyploid series, from diploid to

hexaploid, and their utilization in breeding has been the object of investigations in European labs for some time. With the establishment of the National Potato Introduction Station at Sturgeon Bay, under the direction of Dr. Hougas, we can foresee more intensive work along these lines in this country.

One final comment should perhaps be made here. Several Ph.D. candidates in the department, looking in at our extensive remodeling of Room 2, have already asked us if we will be able to provide free potato chips for their beer parties. We will not!!

Fur Breeding:

The past year has been chiefly one of reorganization, substitution and expansion. A new building (the old virus lab) has been added to the facilities of the mink ranch and, in consequence of this, the mink pens have been moved from their original site. Our chinchilla population, now reproducing itself lustily, has been permanently located in an air-conditioned room, newly fashioned from a part of the Stock Pavilion basement.

Increase of space has extended (unusually enough) to the human members of the division. Bill Moore and Tom Roos now occupy a remodeled Room 1A, leaving a much relieved Dick Shackelford all alone in his office.

Present research projects include continued studies on the physiology of reproduction in both mink and chinchilla encompassing normal and hormonally altered conditions. In addition, a statistical analysis of mink breeding records, with emphasis on production, is being carried out.

Drosophila Lab:

With Frank Seto finishing up his thesis on X-ray induced lethals, this lab is primarily concerned with inheritance and mechanisms of insecticide resistance. Gerald Stott is involved in a long-range problem involving the resistance of various crossover combinations between resistant and susceptible strains. These tests are designed to locate the dominant factors for resistance. Gary is also continuing his work on a heritable tumor found in a wild *Drosophila* population. John Burrington is finishing a study of the DDT resistance of various combinations of chromosomes from resistant and susceptible strains.

Microorganisms Laboratory:

There have been several problems of great interest in the genetics of microorganisms laboratory recently. Studies of the "transduction" system in *Salmonella*, especially with regard to motility and flagellar traits, have furthered the elucidation of the mechanism of this system. Transduction and lysogenicity experiments are also being performed with *E. coli*. *Salmonella* phase variation, antigenic characters of *E. coli*, mating systems of *E. coli*, are some of the other subjects being scrutinized. Branch Howe has been focussing his attention on *Neurospora*.

Newcomers to the laboratory group are T. C. Nelson, a Columbia University Ph.D., and Helen Byers, who comes here from Indiana University. Two British visitors working on *Salmonella* in the laboratory in the past year have been Bruce Stocker and C.C. Spicer. Shirley Harvey, a home economics graduate student, has been working with us as chef for our ever-demanding bacteria.

Blood Laboratory:

The J substance in cattle blood has occupied Bill Stone's attention for the past year; he has been studying the immunochemical and immunogenetic aspects of this interesting characteristic. Cliff Bryan is continuing his investigation of the manifold peculiarities of the hybrid substance, as well as antigenic relationships in the genus *Columba*. Wilmer Miller has a variety of interests including the investigation of the time of appearance of antigens in pigeon embryos, the detection and inheritance of species-specific substances

of C. livia; he is attempting to induce mutations in rabbits by means of antibodies. Embryo studies on pigeons and doves are being continued by Joy Palm. Martin Bacharach, Sam Scheinberg and Connally Briles are working with red blood cell antigens of chickens. A newcomer to the lab is Jack Stimpfling.

Students from three Scandinavian countries have been visitors in this laboratory during the past year. Dr. Mikael Braend, and Mrs. Braend, from Norway were here from January to August of 1952. Dr. Neimann Sorensen, from Denmark, was here from February 1952 until the end of January 1953. Jan Rendel, from Sweden, and a former student of Ivar Johansson who studied in this department, has been here since June of 1952. He was joined by his wife and young son in December. Jan has made important contributions to our knowledge of sheep red blood cell antigens.

Physiology of Reproduction:

Three men from this section received Ph.D.'s last summer: Clayton O'Mary, Les Ulberg and Wally Black. Wally has continued on as "Senior Investigator" in the lab. Clayt and Les accepted assistant profships in animal husbandry departments--Clayt at the University of Georgia and Les at Mississippi State College.

Dr. and Mrs. Casida were in Europe for over five weeks last summer--a trip combining pleasure and science. Dr. Casida presented two papers--one at the Conference on Physiology of Mammalian Germ Cells, Ciba Foundation, London, entitled "Some Factors Affecting Fertilization and Embryonic Death," and the second paper "Comparative Fertilization Rates of Bulls with High and Low Non-return Rates" was given at the II International Congress of Physiology and Pathology of Animal Reproduction and of Artificial Insemination, Veterinary School in Copenhagen, Denmark.

The cowboys in the lab are Wally Black, Bill Kidder, Jim Wiltbank and Harold Hawk. They are involved in various kinds of studies but all have to do with the repeat-breeding problem in cattle.

Ahmed El Sheikh has been studying the evaluation of fertility of rabbit semen.

The sheepmen, Hank Voigtlander and Clarence Hulet, have been probing into the causes of fertilization failure and embryonic death. The stilbestrol studies with feeder lambs are also being continued.

The swine researchers, H. L. Self and Lou Baker, have been following up leads from previous investigations. The interaction between breed and environment with regard to reproductive response and embryonic development is being studied as well as further hormonal work.

Poultry:

Cletis Williams has been conducting a most interesting study on group behavior, specifically, the peck order, in a flock of hens, and its relationship to mating habits, production and fertility. He has also conducted studies on sex-linkage.

Animal Breeding Group:

Camille Bernard, having passed prelims in February, is completing his research on heritabilities of economic characters in swine and genetic correlations between these characters. He has accepted a position at the Dominion Experimental Station at Lennoxville, Quebec, and expects to be going there later this year.

Jim Chung has obtained his Master's degree and is starting a new experiment on selection in laboratory rats under different environmental conditions.

Vern Felts is having his sheep data, collected through the W.S.I.P. (of which he is now officially in charge), coded for punching on IBM cards, and plans to obtain from these data heritability and repeatability values for wool and lamb production.

Eric Bradford is continuing to gather information on the performance of inbred and linecross boars in comparison with outbred boars on farms in the State, and plans to analyze the data collected here on inbreeding, linecrossing and topcrossing in swine.

Dave Mitchell arrived during the winter and is working on the dairy cattle breeding project under Dr. Tyler.

Hassan Karam is now in Egypt after obtaining his Ph.D., and we understand is being married to a Madison girl this spring. Congratulations Hassan!

Jim Craig obtained his Ph.D. last summer and is now on the staff at the University of Illinois. Jim and Jean have a son born in February and they tell us that "this is number one and the fun has just begun."

Forest-Tree Breeding:

Progress continues to be made in the forest-tree breeding research program. During the past spring Bob Hitt has established the first plantations in which comparisons are to be made between the progenies of individual tree selections of red pine.

RECENT ADVANCES IN GENETICS

<u>Ph.D.</u>	<u>Prelims</u>	<u>M.S.</u>
Gus Stokes	Kay Beamish	Kuell Hinson
Bill Stone	Betty Williams	Elsayed Kassem
Wally Black	Cliff Bryan	Nancy Worner
Les Ulberg	Cletis Williams	Mei Wang Fradkin
Clayton O'Mary	Elsayed Kassem	Jim Duckwall
Jim Craig	Camille Bernard	Theo. vanSchaik
Cliff Bryan	Sam Scheinberg	Howard Clark
		Jim Chung
		Fred Valentine
		Walter Hartstirn
		Harold Hawk
		Clarence Hulet
		Eric Bradford
		Jan Rendel
		Hank Voigtlander

NEW STRAINS (IMPORTED AND DOMESTIC)

		<u>Major Professor</u>
Helen Byers	M.A. Indiana	Lederberg
Carl Campbell	M.S. Penn State	Brink
Ahmed El Sheikh	M.Sc. Cairo	Casida
Shirley Harvey	B.S. Wisconsin	Lederberg
Clarence Hulet	B.S. Brigham Young	Casida
Thomas Nelson	Ph.D. Columbia	Lederberg
Jan Rendel	Agronomexamen--Royal Agric. College of Sweden	Irwin
Jack Stimpfling	M.S. Denver	"
Gerald Stott	M.S. Utah State	Crow
Stephen Takats	B.S. Cornell	Rieman
Donald Young	B.Sc. McGill	"
H. L. Self	M.S. Texas A & M	Casida
John Burrington	B.S. Harvard	Crow
Henry Voigtlander	B.S. Wisconsin	Casida

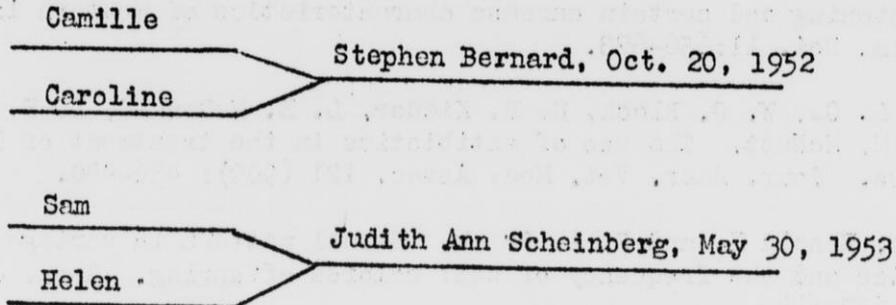
SEX LINKAGE

Howard Fradkin and Mei Wang
Wilmer Miller " Lotus Simon

TRANSLOCATIONS

Gus Stokes	University of Kentucky
Clayton O'Mary	University of Georgia
Lester Ulberg	Mississippi State College
Jim Craig	University of Illinois
Hassan Karam	College of Agriculture, Alexandria, Egypt

ENTRIES IN THE HERD BOOK



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Contributors:

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John Burrington	Tom Roos
Helen Byers	Steve Takats

Grateful acknowledgment is made to the Departmental Secretaries--Bette Schotten, Gloria Way and Marie Gschwendner-- for their assistance in getting out this edition of the Genotype.

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