

- (1) quality of protein (amino acid balance) may be an important factor determining the nutritive value of pasture herbage and
- (2) the improvement brought about through fertilization may be the result of a change in the constitution of its proteins.

M. Sc.

AGRICULTURAL CHEMISTRY

FRANKLIN RUTHERFORD FORBES

CHEMICAL STUDIES OF BOVINE FOETAL FLUIDS
DURING VARIOUS STAGES OF GESTATION.

Chemical studies have been carried out on bovine amniotic and allantoic fluids with special reference to the sugars. Other organic substances were isolated and studied.

The proteins of amniotic fluid were not precipitated by trichloroacetic acid. Other means of precipitating the proteins have to be used, prior to colorimetric determinations of inorganic phosphorus.

Much larger quantities of sugar were found present in amniotic fluid than had previously been reported. The Herzfeld colourimetric method for the quantitative estimation of sugar was used. A modification was made to the method involving the use of a photoelectric cell in the apparatus. The sugar was identified as fructose.

An organic substance was isolated and studied.

Allantoin was isolated and identified from allantoic fluid at different stages of gestation. All of the fluids tested gave reactions for sugars.

M. Sc.

BOTANY

ALBERT WILLIAM SMITH HUNTER

A KARYOSYSTEMATIC INVESTIGATION IN THE *GRAMINEAE*.

The history and present state of the classification of the *Gramineae* is briefly reviewed. Some of the different characteristics on which phylogenetic systems have been based are considered. The subject of chromosome morphology is discussed in detail, and the application of idiograms and karyotypes to taxonomic studies is explained. The main purpose of the present study was to scrutinize and extend the findings of Avdulov who has recently published a monograph in which extensive changes, based on karyological studies, have been made in the classification of the *Gramineae*. Taking the grasses in order by tribes, Avdulov's results are summarized. To them are added the results of an original investigation of thirty-three species belonging to twenty-nine genera from ten tribes, and also new results from other workers. The evolution of different forms within the family is touched upon.

M. Sc.

PHYSICS

DONALD G. HURST

PHOTOELECTRIC CURRENTS IN IRRADIATED ROCKSALT CRYSTALS.

The internal photoelectric current in rocksalt crystals previously irradiated with β and γ rays has been studied. The observed decrease of the current with time has been shown to be due to the growth of a back voltage in the crystal. In these crystals a reverse current flows when the crystal is illuminated, without an external field, shortly after the passage of a photocurrent. This reverse current has been shown to be an ordinary photoelectric current due to the back voltage.

M. Sc.

AGRONOMY

R. M. MACVICAR

INHERITANCE OF SEED COLOR IN ALFALFA.

This paper presents the results of an investigation to determine the inheritance of black and white seed coat colors in alfalfa. The "black" character appeared to have arisen as a mutation in a third generation selfed line. Black x Yellow hybrid progenies in F_2 exhibited a wide range of seed coat color extending from normal yellow to dark mulatto. Inheritance proved to be fairly complex requiring the assumption of at least three factors. One gene, primarily responsible for pigmentation of the seed coat, and at least two modifying factors, were postulated as the most probable genetic explanation of the breeding behaviour. It was concluded that the character of blackseededness would be valueless from a utility standpoint.