

BIENNIAL REPORT

1950 - 1952



NORTH CAROLINA
DEPARTMENT OF AGRICULTURE

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BIENNIAL REPORT

for 1950-1952

NORTH CAROLINA
DEPARTMENT OF AGRICULTURE

L. Y. BALLENTINE, COMMISSIONER

RALEIGH, N. C.



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L. Y. BALLENTINE
Commissioner of Agriculture



A. HUGH HARRIS
Assistant Commissioner of Agriculture

STATE BOARD OF AGRICULTURE

L. Y. BALLENTINE, *Commissioner*
Ex-Officio Chairman

GLENN G. GILMORE	Julian
HOYLE C. GRIFFIN	Monroe
CLAUDE T. HALL.....	Roxboro
O. J. HOLLER.....	Union Mills
J. MUSE McCOTTER.....	New Bern
MISS ETHEL PARKER.....	Gatesville
CHARLES F. PHILLIPS ¹	Thomasville
J. H. POOLE	West End
A. B. SLAGLE	Franklin
J. E. WINSLOW	Greenville

¹ Appointed by the Governor to replace W. B. Austin, Jefferson, resigned.

PERSONNEL

OF THE

STATE DEPARTMENT OF AGRICULTURE

JUNE 30, 1952

L. Y. BALLENTINE, *Commissioner*

ADMINISTRATION

A. HUGH HARRIS	<i>Assistant Commissioner</i>
LILLIAN R. PARKER	<i>Stenographer Clerk I</i>
LYDIA S. PERRY	<i>Stenographer Clerk III</i>
DORIS B. WOFFORD	<i>Stenographer Clerk III</i>

DIVISION OF ACCOUNTS

A. R. POWLEDGE	<i>Accountant II</i>
ELLA V. DODSON	<i>Accounting Clerk II</i>
CATHERINE C. DUPREE	<i>Accounting Clerk I</i>
ELSIE W. JORDAN	<i>Accounting Clerk II</i>
SALLIE H. JORDAN	<i>Accounting Clerk II</i>
MRS. GRACE H. MALLOY	<i>Accounting Clerk III</i>
MYRNA L. NOWELL	<i>Accounting Clerk I</i>

PUBLICITY AND PUBLICATIONS

BLACKBURN W. JOHNSON	<i>Public Information Officer III</i>
MRS. M. PAULINE DeCOSTA	<i>Information and Editorial Assistant</i>
JOSEPH A. HUNTER	<i>Clerk II</i>
BETTYE T. ROGERS	<i>Clerk I</i>

INSPECTION

E. H. COOPER	<i>Tax Auditor III</i>
WALTER E. BURGESS	<i>Seed Specialist</i>
LINDSEY ENNIS	<i>Feed, Fertilizer and Insecticide Inspector I</i>
HARVEY C. MCPHAIL	<i>Feed, Fertilizer and Insecticide Inspector I</i>
KENNETH M. MINTZ	<i>Seed Specialist</i>
JOE N. TATE, JR.	<i>Feed, Fertilizer and Insecticide Inspector I</i>
J. W. WOODSIDE	<i>Feed, Fertilizer and Insecticide Inspector I</i>

MARKETS

JOHN A. WINFIELD	<i>Director Agricultural Marketing</i>
MARGARET L. AMANDOLIA	<i>Stenographer Clerk I</i>
NANCY W. BRACKETT	<i>Stenographer Clerk II</i>
GILBERT CLARK	<i>Marketing Specialist IV</i>
EVELYN S. CONYERS	<i>Laboratory Technician I</i>
GRADY COOPER, JR.	<i>Marketing Specialist II</i>
J. B. COTNER	<i>Marketing Specialist IV</i>
GEORGE C. CREECH	<i>Marketing Specialist I</i>
JOHN HOLMAN CYRUS	<i>Marketing Specialist II</i>
JAY P. DAVIS, JR.	<i>Marketing Specialist III</i>
MRS. LOUISE T. DUNN	<i>Stenographer Clerk III</i>
ELIZABETH C. EDWARDS	<i>Stenographer Clerk II</i>

OLLIE W. FAISON	Marketing Specialist III
JESSE R. FERRELL	Marketing Specialist II
ELVIN H. FRAZIER, JR.	Marketing Specialist I
CLEO M. GAULT	Laboratory Technician I
JOE B. GOURLAY	Marketing Specialist III
WENDELL P. HEDRICK	Marketing Specialist IV
VERNON W. HILL	Marketing Specialist III
RUBY M. HINSON	Stenographer Clerk III
JULIUS P. JENRETTE	Marketing Specialist III
ALBERT B. JOHNSON	Marketing Specialist II
FRED P. JOHNSON	Marketing Specialist IV
RALPH BOGAN KELLY	Marketing Specialist III
ETHEL Y. KIKER	Marketing Specialist II
HAZEL MCA. MADDREY	Accounting Clerk I
PAULINE M. MANEY	Typist Clerk I
MRS. HELEN R. MARLEY	Stenographer Clerk II
HUGH B. MARTIN	Marketing Specialist III
MARGIE B. MASSENBURG	Stenographer Clerk III
N. P. McDUFFIE	Marketing Specialist I
CANDLER C. MILLER	Marketing Specialist III
MARJORIE D. MOORE	Stenographer Clerk III
HOBART W. MYRICK	Marketing Specialist III
MRS. MARY L. NORMAN	Stenographer Clerk II
PHOEBE D. POWERS	Stenographer Clerk II
H. D. QUESSENBERRY	Marketing Specialist III
MRS. DOROTHY Y. REAVES	Typist Clerk I
JAMES RITCHIE, JR.	Marketing Specialist II
CARSON W. SIEFFIELD	Marketing Specialist IV
ANNE B. STODDART	Accounting Clerk I
CURTIS F. TARLETON	Marketing Specialist III
CARL H. TOWER	Marketing Specialist III
CHRISTOPHER H. VENTERS	Marketing Specialist II
J. V. WHITAKER	Marketing Specialist IV

CREDIT UNION

D. R. GRAHAM	Credit Union Superintendent
A. S. BYNUM	Fiscal Examiner II
HOWARD L. PIJAHN	Fiscal Examiner II
MRS. MYRTICE B. WILDER	Stenographer Clerk II

DAIRY

C. W. PEGRAM	Director of Dairy Service
DELMA B. HALL	Laboratory Assistant
ELMO H. HOLLOMON	Dairy Specialist II
PAUL R. JORDAN, JR.	Bacteriologist
W. L. MCLEOD	Dairy Specialist II
FRANCIS PATTERSON	Dairy Specialist II
JAMES C. PLASTER	Dairy Specialist I
MARY M. WEATHERS	Stenographer Clerk II
GILES M. WILLIAMS	Dairy Specialist II
MARY SUE P. WILLIAMS	Laboratory Technician II

ENTOMOLOGY

C. H. BRANNON	State Entomologist
JAMES F. GREENE	Entomologist I
J. A. HARRIS	Entomologist II
ELLISON C. NELSON, JR.	Entomologist I
PAULINE P. NEWSOM	Stenographer Clerk II
D. L. WRAY	Entomologist II

SEED LABORATORY

WILLARD H. DARST	<i>Director of Seed Testing</i>
SUSIE D. ALLEN	<i>Seed Analyst III</i>
STELLA W. ETHEREDGE	<i>Seed Analyst II</i>
LULA PURVIS GRAY	<i>Seed Analyst II</i>
JOAN MASSEY	<i>Stenographer Clerk I</i>
MARY A. NICHOLSON	<i>Seed Analyst II</i>
EDITH R. ROGERS	<i>Seed Analyst I</i>
EVALDS SMITS	<i>Seed Analyst II</i>
MRS. MILDRED W. THOMAS	<i>Seed Analyst II</i>

ANALYTICAL

E. W. CONSTABLE	<i>State Chemist</i>
L. V. AMBURGEY	<i>Microanalyst</i>
CAROLINE ANDREWS	<i>Chemist I</i>
HENRY W. BARNES, JR.	<i>Chemist II</i>
Z. B. BRADFORD	<i>Chemist III</i>
BURNEY A. BRITT	<i>Chemist II</i>
DAVID E. BUFFALOE	<i>Chemist III</i>
MRS. MARGARET B. CARTER	<i>Chemist II</i>
JAMES A. CHAPMAN	<i>Laboratory Assistant</i>
DOROTHY M. DAVIS	<i>Stenographer Clerk II</i>
JOHN J. FILICKY	<i>Chemist II</i>
MRS. EVELYN A. FREEMAN	<i>Stenographer Clerk I</i>
CHAS. H. GODWIN, JR.	<i>Foods, Drugs and Cosmetics Inspector</i>
HEBER B. HATCH	<i>Typist Clerk III</i>
SAMUEL H. HINTON	<i>Laboratory Assistant</i>
EUGENE T. HORD, JR.	<i>Chemist II</i>
VELVA E. HUDSON	<i>Typist Clerk III</i>
BERNICE JEFFRIES	<i>Laboratory Assistant</i>
JESSE G. JERNIGAN	<i>Chemist I</i>
DELWIN P. JOHNSON	<i>Chemist II</i>
ROSA D. KIRBY	<i>Chemist I</i>
ERNEST L. LONG	<i>Chemist I</i>
H. D. MATHESON	<i>Chemist II</i>
W. P. MATTHEWS	<i>Chemist III</i>
HARRY A. MILLER	<i>Assistant State Chemist</i>
L. M. NIXON	<i>Chemist IV</i>
FRED P. NOOE	<i>Food, Drug and Cosmetic Inspector</i>
H. F. PICKERING	<i>Chemist III</i>
J. S. PITTARD	<i>Chemist III</i>
JOHN L. RAY	<i>Chemist II</i>
L. B. RHODES	<i>Food Chemist</i>
CLYDE W. ROBERTS	<i>Food, Drug and Cosmetic Inspector</i>
WILLIAM SYLVER, JR.	<i>Laboratory Assistant</i>
ROBERT T. TEAGUE, JR.	<i>Chemist II</i>
HAZEL WILLIS	<i>Stenographer Clerk III</i>

CROP STATISTICS

FRANK PARKER	<i>Director of Statistics</i>
JOHN T. RICHARDSON	<i>Administrative Officer</i>
MARY SOUTHALL ALLEN	<i>Research Assistant</i>
RUTH F. ALLEN	<i>Calculating Machine Operator</i>
MRS. FRANCES D. CHANDLER	<i>Research Assistant</i>
JEAN F. DEWESE	<i>Research Assistant</i>
MRS. SARAH F. DRAKE	<i>Research Assistant</i>
GEORGE M. FERRELL	<i>Statistician I</i>
MARTHA J. FRAME	<i>Research Assistant</i>
WILLIAM C. HINSON, JR.	<i>Jr. Statistician</i>

DONALD B. JONES	Jr. Statistician
PEARL K. JOYNER	Vari-Type Operator II
MRS. WILLIE M. KNOTT	Vari-Type Operator I
HELEN E. KORNEGAY	Research Assistant
MARY D. MATTHEWS	Clerk II
JANIE H. MURPH	Research Assistant
FRANCIS M. NINE, JR.	Duplicating Machine Operator II
NANGY C. PENNY	Stenographer II
HANS C. WAGNER	Duplicating Machine Operator II
OLAF WAKEFIELD	Sr. Statistician

SOIL TESTING

JAMES WALTER FITTS	Director of Soil Testing
MAXINE BISSETTE	Chemist I
MARGARET L. BROCK	Stenographer Clerk II
MILDRED S. COMBS	Typist Clerk I
LUCY D. ELMORE	Chemist I
ARTHUR GILES	Laboratory Assistant
NANCY ANN HOUSE	Typist Clerk I
JAMES S. HUNTER	Laboratory Assistant
MILDRED K. LOWE	Stenographer Clerk II
ADOLF MEHLICH	Assistant Director
NANCY B. SMITH	Chemist I
NANNIE ISABELLE SMITH	Chemist I
MARGARET E. STANCL	Typist Clerk I
MRS. DIXIE R. VICK	Stenographer I
MURIEL M. WEATHERS	Chemist I
CHARLES D. WELCH	Agronomist

BLISTER RUST CONTROL

OLIN D. HEFNER	Entomologist I
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VETERINARY

HAL J. ROLLINS	State Veterinarian
MELVA P. ALEXANDER	Laboratory Technician I
JOSEPHINE A. ALLEN	Stenographer Clerk III
WILLIAM ANDREW	Poultry Specialist I
W. R. BAYNES	Veterinarian III
JEANETTE E. BULL	Stenographer Clerk I
G. I. BULLOCK	Poultry Specialist II
JULIUS B. CASHION	Poultry Specialist I
JESSE J. CAUSBY	Poultry Specialist I
KENNETH G. CHURCH	Poultry Specialist I
HENRY B. COLLINS	Livestock Inspector
EUGENE C. COUCH	Poultry Specialist I
ELIZABETH K. CUDDEBACK	Laboratory Technician II
MARY L. DAUGHETY	Stenographer Clerk II
W. J. ELKINS	Poultry Specialist I
L. J. FOURIE	Poultry Specialist III
GEORGE D. FULLER	Livestock Inspector
CALVIN C. GATZ	Veterinarian III
L. M. GREENE	Veterinarian III
FRANK S. HALL, JR.	Clerk I
FRANK HOWARD, JR.	Laboratory Assistant
G. W. IVEY	Poultry Specialist II
R. RUSSELL JETER	Veterinarian II
W. W. KEEVER	Poultry Specialist II
FRED D. LONG	Poultry Specialist I
PETER S. PENLAND	Poultry Specialist I

VERLIN E. REESE	<i>Poultry Specialist I</i>
PHIL R. SANDIDGE	<i>Poultry Specialist I</i>
ARTHUR L. SHEALEY	<i>Veterinarian II</i>
JOHN R. SHIVAR	<i>Poultry Specialist I</i>
THOMAS L. WELLBORN	<i>Poultry Specialist I</i>
CHARLES S. WINSTON	<i>Laboratory Assistant</i>
AUBURN L. WRIGHT	<i>Poultry Specialist I</i>
THOMAS F. ZWEIGART, JR.	<i>Veterinarian II</i>

TEST FARMS

CECIL D. THOMAS	<i>Director of Test Farms</i>
HELEN L. RAY	<i>Stenographer Clerk II</i>
ELWOOD A. ALLEN	<i>Senior Herdsman</i>
HERBERT W. ALLEN	<i>Farm Foreman II</i>
MRS. LILLIAN A. BISHOP	<i>Stenographer Clerk I</i>
FENNER B. HARRIS	<i>Herdsman</i>
J. L. REA, JR.	<i>Test Farm Superintendent</i>
CLIFTON M. BLACKWELL	<i>Farm Foreman II</i>
J. M. CARR	<i>Test Farm Superintendent II</i>
MRS. MARY P. CLARK	<i>Stenographer Clerk I</i>
ELIZABETH FLOYD	<i>Stenographer Clerk II</i>
CHESTER KEARNEY	<i>Feed and Farm Laborer</i>
MARGARET W. ALLSBROOK	<i>Stenographer Clerk I</i>
W. C. ALLSBROOK	<i>Farm Foreman II</i>
R. E. CURRIN, JR.	<i>Test Farm Superintendent</i>
RANDOLPH WHITLEY	<i>Herdsman</i>
JOSEPH L. BOONE	<i>Poultryman</i>
BERNICE H. HARRELL	<i>Stenographer Clerk II</i>
GARFIELD HARRIS	<i>Farm Foreman II</i>
MURRAY R. WHISENHUNT	<i>Test Farm Superintendent</i>
R. L. YORK	<i>Dairy Herdsman I</i>
JAMES A. GRAHAM	<i>Test Farm Superintendent</i>
GORDON D. SHEETS	<i>Farm Foreman II</i>
ANNA L. SHEPHERD	<i>Stenographer Clerk I</i>
DAN L. TAYLOR	<i>Herdsman</i>
ERNEST W. ENGLISH	<i>Poultryman</i>
THILBERT A. SUGGS	<i>Farm Foreman II</i>
JESSE W. SUMNER	<i>Test Farm Superintendent</i>
EARL M. WELLS	<i>Dairy Herdsman</i>
B. L. WILLIAMS	<i>Stenographer Clerk II</i>
VESTER NOAH BAIRD	<i>Farm Foreman II</i>
ROSE E. BRADFORD	<i>Stenographer Clerk II</i>
J. W. HENDRICKS	<i>Test Farm Superintendent</i>
CLYDE Z. McSWAIN, JR.	<i>Farm Supervisor</i>

WEIGHTS AND MEASURES

C. D. BAUCOM	<i>Superintendent of Weights and Measures, Director of Gasoline and Oil</i>
CHARLES E. DOLAN	<i>Heavy Duty Scale Inspector</i>
DOROTHY GOODSON	<i>Stenographer Clerk II</i>
DONALD E. HAIGLER	<i>Weights and Measures Inspector</i>
J. T. JACKSON	<i>Weights and Measures Inspector</i>
CELESTE MC. JOHNSON	<i>Stenographer Clerk II</i>
MARION L. KENLAW, JR.	<i>Weights and Measures Inspector</i>
GROVER R. KISER	<i>Weights and Measures Inspector</i>
T. WAVELY LUCAS	<i>Truck Driver</i>
JOHN I. MOORE	<i>Weights and Measures Inspection Supervisor</i>
WILLIAM SHOOK	<i>Heavy Duty Scale Inspector</i>
JAMES E. WILLIAMS	<i>Truck Driver</i>
S. M. WOOLFOLK	<i>Weights and Measures Inspector</i>

STATE MUSEUM

H. T. DAVIS	<i>Museum Director</i>
LUDIE VIRGINIA ASHE	<i>Maid</i>
MRS. CLARE S. JOHNSON	<i>Clerk I</i>
JULIAN W. JOHNSON	<i>Museum Exhibits Designer</i>
MARY KNIGHT	<i>Stenographer Clerk II</i>
F. B. MEACHAM	<i>Zoologist</i>
OWEN WOODS	<i>Janitor-Messenger</i>

HOG CHOLERA WORK

CHARLES R. BORDER	<i>Veterinarian III</i>
RALPH HAMILTON	<i>Veterinarian I</i>

CUSTODIAL

ROBERT HARRIS	<i>Stock Clerk I</i>
WORTH JEFFRIES	<i>Stock Clerk I</i>

STATE WAREHOUSE SYSTEM

A. B. FAIRLEY	<i>Warehouse System Superintendent</i>
HAZEL K. COBB	<i>Clerk II</i>
WAYNE B. FERRELL	<i>Warehouse Examiner</i>
MRS. HALLIE K. MORROW	<i>Stenographer Clerk II</i>
HILDA E. STRICKLAND	<i>Stenographer Clerk I</i>

GASOLINE AND OIL INSPECTION

T. W. ANDERSON	<i>Gasoline and Oil Inspector</i>
CAREY M. ASHLEY	<i>Chemist I</i>
MILTON BAREFOOT	<i>Gasoline and Oil Inspector</i>
BOYD L. BARNETTE	<i>Chemist I</i>
I. L. BLAYLOCK	<i>Gasoline and Oil Inspector</i>
MALVER L. BOYETTE	<i>Gasoline and Oil Inspector</i>
LUTHER J. BRITT	<i>Gasoline and Oil Inspector</i>
JOHN A. BYNUM	<i>Gasoline and Oil Inspector</i>
WILLIAM L. CARPENTER	<i>Chemist II</i>
JACK C. CONNOLLY, II	<i>Chemist I</i>
JOSEPH DENTON	<i>Gasoline and Oil Inspector</i>
OTTO DUNCAN	<i>Gasoline and Oil Inspector</i>
ODELL A. EVANS	<i>Calibrator</i>
J. A. GALLOWAY	<i>Gasoline and Oil Inspector</i>
ELLIOTT HARRISON	<i>Laboratory Assistant</i>
H. H. HATCHER	<i>Gasoline and Oil Inspector</i>
HUGH F. HAYES	<i>Chemist II</i>
HORACE E. HERMAN	<i>Calibrator</i>
CECILIA P. HOLDING	<i>Chemist I</i>
IRA G. HOLLOWAY	<i>Gasoline and Oil Inspector</i>
ALTON R. HOYLE	<i>Gasoline and Oil Inspector</i>
THOMAS S. HUGHES, JR.	<i>Chemist I</i>
HERMAN L. JONES	<i>Gasoline and Oil Inspector</i>
MARY M. LASSITER	<i>Stenographer I</i>
ROY A. MCKEITHAN	<i>Calibrator</i>
FRANCIS W. OAKES	<i>Gasoline and Oil Inspector</i>
W. T. O'BRIANT	<i>Gasoline and Oil Inspector</i>
WILLIAM C. ORTH	<i>Chemist II</i>
DOUGLAS M. PAIT	<i>Gasoline and Oil Inspector</i>
NELLIE A. PARRISH	<i>Stenographer Clerk I</i>
HARVEY R. PEARMAN, JR.	<i>Chemist I</i>
WILLIAM B. PHILLIPS	<i>Gasoline and Oil Inspector</i>

PARLEY B. RASMUSSEN, JR.	Chemist I
JAMES R. RIVERS	Gasoline and Oil Inspector
H. L. SHANKLE	Chemist IV
J. T. SHAW	Chemist II
HARRY W. SHELTON	Chemist I
RAY D. SIGMON	Gasoline and Oil Inspector
KOY S. SMITH	Gasoline and Oil Inspector
NINA G. SUMNER	Chemist I
FRED SWANBERG	Chemical Engineer
RALPH G. THORNBURG	Chemist I
THOMAS G. TROGDON	Chemist II
LEON E. VAN BRUNT	Calibrator
MARSHALL T. WHITE	Chemist I
EDNA I. WILLIAMS	Stenographer Clerk II
HUBERT S. WILLIAMS, JR.....	Chemist I
ALICE C. YOUNTS	Chemist I

BIENNIAL REPORT

OF THE

NORTH CAROLINA DEPARTMENT OF AGRICULTURE

By L. Y. BALLENTINE
Commissioner of Agriculture

The biennium 1950-52 has been an eventful period for the State Department of Agriculture, one marked by a noticeable quickening of activities in each of the Department's 17 Divisions.

This is reflected in the succeeding chapters, each devoted to the work of a particular Division. As far as possible, the text is accompanied by pictures giving a graphic presentation of many of the Department's functions and accomplishments.

No effort will be made here to summarize all of this work, as it would only mean unnecessary duplication of effort. Some developments of the past two years, however, are worthy of special mention, either because of their outstanding significance or because they are not dealt with elsewhere.

THE CHALLENGE PROGRAM

For some years there has been an increasingly cooperative spirit among various organizations and agencies concerned with agricultural conditions in North Carolina. This attitude has materialized in the formation of an over-all planning and coordinating group known as the North Carolina Board of Farm Organizations and Agencies, which includes in its membership representatives of: The State Grange, the N. C. Farm Bureau Federation; N. C. State College, including both the Agricultural Experiment Station and the Agricultural Extension Service; the U. S. Soil Conservation Service, the Production and Marketing Administration; the Farmers' Home Administration, the Division of Vocational Teaching of the N. C. Department of Public Instruction; the Rural Electrification Administration, the State Department of Conservation and Development and the State Department of Agriculture.

No mere discussion group, this board has demonstrated its capacity for achievement by developing and sponsoring the Challenge Program. This is a united agricultural movement, already well under way,

dedicated to: "Increased per capita income, greater security, improved educational opportunities, finer spiritual values, stronger community life, and more dignity and contentment in country living."

The ultimate success of this program remains to be seen, but the enthusiasm with which it has been received augurs well for the future of North Carolina agriculture.

"NICKELS FOR KNOW-HOW"

Another project in which this Department has been vitally interested is the "Nickels for Know-How" Program designed to supplement existing funds for agricultural research and the dissemination of research information. The 1951 General Assembly paved the way for this fund by authorizing a referendum among farmers on the proposal that an assessment of five cents a ton be collected by the Department of Agriculture on sales of commercial feed and fertilizer in the State, this money to be turned over to the Agricultural Foundation of N. C. State College.

The referendum, held on November 3, 1951, went overwhelmingly for the proposal. The vote was 61,004 for and 7,059 against, as certified by the State Grange and the N. C. Farm Bureau Federation, which were designated by the legislature to conduct the referendum.

Collection of this assessment began on January 1, 1952, and receipts for the first six months totaled \$105,368.37, which have been paid to the Agricultural Foundation. Payments are made to the Foundation on a quarterly basis.

BUILDING PROGRAM

I am happy to report that, after some unavoidable delays, good progress is being made on the new livestock judging arena and other improvements at the State Fair Grounds. When these are completed North Carolina will have an exposition plant that will reflect credit upon the State and one which, I am confident, will prove of great value in promoting better appreciation of the State's resources and opportunity in agriculture, industry and commerce. Further details about this improvement program will be found in the chapter relating to the State Fair.

Work also is getting under way on the annex to the Agriculture Building after many months' delay due to restrictions on building materials. Besides providing new and modern quarters for the State Museum of Natural History, this structure also will afford space for offices and laboratories sorely needed to meet the increasing demands on the Department's services.

Many problems have come up during the biennium demanding the attention of the Board of Agriculture, the Department's policy-making body, and members of the Board have been unstinting in their devotion to their responsibilities. I have found their judgment sound and their wisdom broad.

Although the law requires only two meetings of the Board a year, it has met at the call of the Commissioner 13 times during the past two years. Appended hereto is a summary of its considerations and actions.

HIGHLIGHTS OF BOARD MEETINGS

1950-1952 Biennium

Aug. 21, 1950
Raleigh

Budget—General

Present: W. B. Austin, Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, O. J. Holler, J. Muse McCotter, J. H. Poole, A. B. Slagle.

Heard budget requests for each of the Department's 16 divisions for the 1951-1953 biennium. Suggested changes and authorized revisions.

Budget—Special
Items.

Insecticide controls — Discussed need for expanded activities and instructed State Chemist to prepare special budget request to finance this work.

Peanut test farm — Heard Commissioner's report on requests from peanut growers for test farm in commercial peanut growing area; approved budget request for funds to purchase and operate such a farm.

Veterinary research laboratory — Approved efforts to obtain funds for establishing a veterinary research and diagnostic laboratory to be operated jointly by the Department of Agriculture and N. C. State College.

Land for test farm — Approved special budget request for funds to purchase garage building and lot adjoining Upper Mountain Test Farm, Laurel Springs.

Grain Storage

Instructed State Superintendent of Warehouses to ascertain whether new legislation needed for extending loans to warehouses for grain storage.

Seed Regulations

Discussed proposal to amend seed regulations with reference to labeling Ladino and White clovers; no change approved.

Sept. 27, 1950
Raleigh

Test Farm Land

Present: Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, O. J. Holler, J. Muse McCotter, Miss Ethel Parker.

Heard request from owners of property at Statesville, adjoining Piedmont Test Farm, for privilege of purchasing narrow strip of test farm land between their property and new highway. Authorized Commissioner to appoint committee to investigate and set price for land.

Quarantine

Extended quarantine areas in regulation for control of Camellia Flower Blight.

Budget

Reviewed changes in budget requests outlined at previous meeting and approved revised budget for the Department's operations during the 1951-53 biennium.

Oct. 16, 1950
Raleigh

Gasoline and Oil
Inspection

Present: Glenn G. Gilmore, Claude T. Hall, O. J. Holler, J. Muse McCotter, Miss Ethel Parker, J. H. Poole, J. E. Winslow.

Superintendent of Weights and Measures introduced 12 chemists employed to man new portable laboratories for gasoline and oil inspection, and explained procedures to be followed in this control work.

Test Farm Land

Heard report of committee appointed at September meeting to investigate sale of land strip from Piedmont Test Farm. Approved committee's recommendation to offer land at \$2,000 per acre, or 4.6c per square foot.

Fertilizer—Bulk

Assistant Commissioner reported on new practice of delivering fertilizer in bulk directly to farm fields. Board discussed possibility of need for regulations governing such deliveries; deferred action pending investigation by Assistant Commissioner.

Dec. 20, 1950
Raleigh

Present: Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, O. J. Holler, J. Muse McCotter, Miss Ethel Parker, Charles F. Phillips, J. H. Poole, A. B. Slagle, J. E. Winslow.

Oath of Office— New Member	Charles F. Phillips, new member appointed by the Governor to replace W. B. Austin, sworn in by Secretary of State Thad Eure.
Fertilizer Law	Heard and approved proposed changes in North Carolina Fertilizer Law, as presented by Dr. R. W. Cummings, Director of Research, N. C. Experiment Station.
Seed Inspection	Heard Commissioner's report on meeting with N. C. Seedsmen's Association. Heard and discussed the Association's recommendations for changes in inspection and testing procedures and revisions in North Carolina Seed Law.
Quarantine	Extend quarantine area in regulation for the control of White Fringed Beetle.
Feed Standards	Revised minimum standards for dairy and scratch feeds in feed regulations. (To conform with standards set by Association of Southern Feed Control Officials)
Milk Dispenser	Heard request from manufacturer of mechanical refrigerated milk dispenser for approval of its use in public eating places. Authorized Markets Division to make a survey based on test installations of a few dispensers and report back to Board.
Paint Control	Discussed need for paint control law. Authorized study of Virginia paint law and drafting of bill for presentation to legislature.
Medicated Feeds	Held hearing on medicated poultry feeds. Appointed committee to confer with Experiment Station specialists and health authorities and make recommendations.
Departmental Activities	Heard reports of division heads on activities of their respective divisions during the year.
<i>Jan. 8, 1951</i> <i>Raleigh</i>	Present: Glenn G. Gilmore, Claude T. Hall, O. J. Holler, J. Muse McCotter, Charles F. Phillips, A. B. Slagle, J. E. Winslow.
Grain Storage	Heard report of Warehouse Superintendent on legal authority to make loans to warehouses for grain storage. Instructed him to draw up regulations covering grain warehouse operations.
State Fair Buildings	Authorized and witnessed signing of contracts for construction of Youth Housing Center and Livestock Judging Pavilion at Fair grounds. Approved transfers of funds for these projects.
Medicated Feeds	Amended regulations on medicated feeds in accordance with recommendations of investigating committee.
<i>May 8, 1951</i> <i>Raleigh</i>	Present: Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, O. J. Holler, J. Muse McCotter, Miss Ethel Parker, Charles F. Phillips, J. H. Poole, A. B. Slagle, J. E. Winslow.
Oath of Office— Re-appointed Members	Oath of Office administered by Secretary of State to Claude T. Hall, J. H. Poole and A. B. Slagle, reappointed by the Governor to serve six-year terms.
State Fair	Received Auditor's Report on 1950 operations of N. C. State Fair. Re-appointed Dr. J. S. Dorton as Manager of State Fair for another year. Authorized employment of full-time promotion director for State Fair and fairground facilities.
Peanut Test Farm	Heard Commissioner's report on steps initiated to locate farm suitable for peanut research.
Grain Storage	Adopted regulations governing operation of grain warehouses.
Peanut Storage	Amended regulations governing peanut warehouses.
Warehouse Loan	Approved loan of \$20,000 from Warehouse Fund to Mutual Gin Co., Mount Gilead.
Test Farm Salaries & Perquisites	Heard report of Commissioner and head of Test Farms Division on inequities in salary ranges and perquisite allowances for test farm employees. Discussed matter with head of Personnel Division. Authorized committee to visit farms, investigate and present recommendations.

Test Farm Land	Rescinded action of October 16, 1951, on sale of land strip from Piedmont Test Farm. Agreed to offer land to property owners at cost of survey and transfer of title.
Bang's Disease	Authorized State Veterinarian to hold hearing on proposed tightening of dairy regulations to eliminate Bang's reactors from dairy herds.
Quarantine	Amended Japanese Beetle quarantine areas.
Milk Dispenser	Received report from Markets Division on results of test installations of milk dispensers, authorized at December 20 meeting. Authorized Commissioner to call a public hearing in this matter.
New Laws— Administration	Heard reports of division heads on new or amended laws enacted by 1951 General Assembly and explanations of how they affect work of divisions.
<i>June 20, 1951</i> <i>Raleigh</i>	Present: Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, O. J. Holler, Charles F. Phillips, J. H. Poole, A. B. Slagle, J. E. Winslow.
Fertilizer Regulations	Adopted Official Fertilizer Grade List for 1951-1952. Held hearing and adopted amendment to regulations pertaining to mixture of insecticide Chlordane in fertilizers.
Milk Dispenser	Held hearing on question of approving use of refrigerated mechanical milk dispensers in restaurants. Voted to defer action.
Bang's Disease	Held hearing and adopted amendment to dairy regulations designed to eliminate Bang's reactors from dairy herds.
"Nickels for Know-How"	Received petitions from N. C. State Grange, N. C. Farm Bureau Federation and N. C. Agricultural Foundation for authority to hold referendum vote on assessments of five cents per ton on feed and fertilizer, funds from said assessment to be used for agricultural research. Voted to authorize referendum.
Agricultural Fairs	Held hearing and adopted regulations governing operations of agricultural fairs.
Test Farm Salaries & Perquisites	Heard preliminary report from committee appointed to study test farm salaries and perquisites. Authorized committee to continue its work.
Test Farm Land	Authorized appointment of a committee to investigate possibilities of re-locating Piedmont Test Farm.
<i>July 26, 1951</i> <i>Willard</i>	Present: Claude T. Hall, O. J. Holler, J. Muse McCotter, Miss Ethel Parker, Glenn G. Gilmore, Charles F. Phillips, A. B. Slagle, J. E. Winslow.
Coastal Plain Test Farm	Ceremony and resolution honoring Charles T. Dearing, retiring Superintendent of farm. Introduction of new Superintendent, Jesse W. Sumner. Discussion of farm's research program by Experiment Station personnel. Testimonial dinner in honor of Dr. Dearing.
<i>July 27, 1951</i> <i>Raleigh</i>	Present: Glenn G. Gilmore, Claude T. Hall, O. J. Holler, J. Muse McCotter, Miss Ethel Parker, Charles F. Phillips, A. B. Slagle, J. E. Winslow.
Agricultural Research	Discussed at length the State's agricultural research program and means for more complete and rapid dissemination of research findings.
Soil Testing	Heard explanation and report from head of Soil Testing Division on new publication, "Fertility Status of North Carolina Soils."
Test Farm Land	Heard offer (presented through perquisites committee) from J. L. Wiggins to buy small acreage from Upper Coastal Plain Test Farm which he desired to flood in damming stream to create a fishing lake. Board agreed long-term lease preferable to sale, and instructed head of Test Farms Division to draw up proposed rental agreement.

October 15, 1951
Raleigh

Fertilizer
Regulations

State Fair—
Promotion

Test Farm Salaries
& Perquisites

Cornmeal
Improvement

Cotton Fibre
Laboratory

State Fair—
(Oct. 16)

Present: Glenn G. Gilmore, Claude T. Hall, O. J. Holler, Miss Ethel Parker, J. Muse McCotter, Charles F. Phillips, J. H. Poole, J. E. Winslow.

Amended fertilizer regulations with reference to information on tag regarding borax guarantees.

Introduction by Commissioner of John W. Fox, newly appointed public relations and promotion manager of North Carolina State Fair and fairground facilities.

Heard and adopted detailed recommendations of committee on test farm salaries and perquisites.

Heard report of Commissioner on project of Markets Division for improving quality of cornmeal.

Heard report on work of new cotton fibre testing laboratory and made inspection tour of laboratory.

Inspected fairgrounds and attended opening of 1952 State Fair.

Jan. 7, 1952
Raleigh

Tobacco—
Curer inspection

Peanut Test Farm

Quarantines

Present: Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, J. Muse McCotter, Charles F. Phillips, J. H. Poole, A. B. Slagle, J. E. Winslow.

Held hearing on Department's charges for seals of approval to be affixed to tobacco-curer assemblies. Went on record as favorable to request for reduction of charges, and authorized study of receipts and expenditures to determine what the reduced amount should be.

Heard review of steps taken to locate suitable farm for peanut research; received recommendations from advisory committee for purchase of H. B. Spruill farm at Lewiston; authorized purchase of the farm at a price of \$50,000.

Amended Camellia Flower Blight quarantine areas.

Amended regulations for control of White Pine Blister Rust.

May 1, 1952
Raleigh

Agricultural
Building Annex

Soil Testing
Director

Milk Containers

Test Farm Land

Present: Glenn G. Gilmore, Hoyle C. Griffin, Claude T. Hall, O. J. Holler, Miss Ethel Parker, J. Muse McCotter, Charles F. Phillips, J. H. Poole, A. B. Slagle, J. E. Winslow.

Heard report of Commissioner that material had been released by National Production Authority for construction of new agricultural building annex, and building operations were expected to get under way almost immediately.

Approved appointment of Dr. J. W. Fitts as head of Soil Testing Division, replacing Dr. W. L. Nelson who resigned to accept research and teaching position at State College.

Adopted clarifying amendment to dairy regulations with reference to use of single-service containers for serving milk in public eating places.

Heard J. L. Wiggins (in favor) and Charles M. Killebrew (opposing) proposed lease of land to Mr. Wiggins for a lake site at the Upper Coastal Plains Test Farm. Authorized rental to Wiggins under conditions to be incorporated in proposed lease agreement.

Authorized easement to Rural Electrification Authority for construction of line across Coastal Plain Test Farm.

Declined offer from American Agricultural Chemical Company to purchase small tract of land from Piedmont Test Farm for erection of fertilizer plant.

Heard report on progress in preparation of new peanut test farm for research work.

Peanut Test Farm

Test Farm Budget

Authorized appointment of committees to visit all test farms and make recommendations for their 1953-55 budget requests.

Quarantine
Agricultural
Research

Adopted revised regulations for control of White Fringed Beetle. Heard report by Dr. R. W. Cummings, Director of Research, N. C. Experiment Station, on status of research program and plans for the future.

Upper Coastal Plains Test Farm Celebration State Fair	Authorized Fiftieth Anniversary celebration at Upper Coastal Plains Test Farm, Rocky Mount. Received Auditor's report on State Fair operations in 1951. Re-appointed Dr. J. S. Dorton as State Fair Manager for ensuing year. Heard Commissioner's report on plans for State Fair development from surplus funds.
Advisory Committees	Approved suggestion by Commissioner for setting up advisory committees of representatives from State's farm organizations and agencies to confer with Board and Department executives.
Tobacco-Curer Inspection Fees	Commissioner reported lawsuit instituted by Florence Mayo NuWay Co. in matter of charges for seals of approval on tobacco-curer inspection fees.
Board Room	Approved moving Board Room to more suitable location when new annex to Agriculture Building is completed.
Museum	Authorized appointment of outside Museum advisory committee and employment of an expert to plan renovation of exhibits and equipment.
<i>June 17, 1952</i> <i>Raleigh</i>	Present: Claude T. Hall, O. J. Holler, Miss Ethel Parker, Charles F. Phillips, J. H. Poole, J. E. Winslow.
Fertilizer Regulations	Adopted Official Fertilizer Grade List for 1952-1953. Amended fertilizer regulations with reference to tolerances allowed in respect to borax guarantees. Amended fertilizer regulations pertaining to mixtures of DDT with fertilizer.
Tobacco-Curer Inspection Fees	Held hearing and adopted new formula for computing charges in compliance with court order resulting from lawsuit of Florence Mayo NuWay Co. Reduced charge for seal of approval from \$1.00 to 65 cents.
Peach Inspection	Authorized Division of Markets to inspect and issue certificates of approval on peaches sold at roadside stands and packing houses.
Resolution— Dr. Nelson	Adopted resolution of appreciation for services of Dr. W. L. Nelson, former head of Soil Testing Division.



A. R. POWLEDGE

ACCOUNTS

A. R. POWLEDGE
Chief Auditor

On July 1, 1949, a new system of collecting revenue from sale of fertilizer and feed was approved by the Department. This new method, known as the "Monthly Reporting System", has proven very satisfactory. Proof of this is the decided increase in tonnage since the new system was installed. For the fiscal year ending June 30, 1951, the fertilizer tonnage was 1,838,500 tons. For this same period the feed tonnage was 827,825 tons. For the year ending June 30, 1952 the fertilizer tonnage was 1,900,904 tons and feed tonnage 943,183. These tonnages are highest in the history of the Department.

This Monthly Reporting system has proved to be a great saving in time and labor to the Department and to the feed and fertilizer manufacturers. However, our former system of tags and stamps has not been discarded as many users prefer this method to the new system.

The "Nickels for Know How" Act was put into effect on January 1, 1952. Collections for the Agricultural Foundation have totalled \$105,368.37 on tonnage sold through June 30, 1952.

The financial report of the Department and the various divisions follows:

DEPARTMENT OF AGRICULTURE Code 1101

STATEMENT OF DISBURSEMENTS

July 1, 1950 — June 30, 1952

SUMMARY BY PURPOSES	1951-52	1950-51
I. ADMINISTRATION	\$ 30,844.58	\$ 32,475.56
Accounting Office	17,787.45	16,119.08
Publicity and Publications	29,419.76	28,087.35
II. INSPECTION	73,182.94	72,363.89
III. MARKETS	250,416.02	256,590.70
IV. CREDIT UNION	19,550.11	18,297.52
V. DAIRY	48,330.91	41,302.83
VI. ENTOMOLOGY	37,052.70	30,639.17
VII. SEED LABORATORY	34,778.62	35,343.14
VIII. ANALYTICAL	182,912.39	156,364.57
IX. CROP STATISTICS	133,512.12	91,881.93

SUMMARY BY PURPOSES		1951-52	1950-51
X.	SOIL TESTING	60,740.89	53,959.80
XI.	BLISTER RUST CONTROL	4,271.26	3,909.90
XII.	VETERINARY	172,906.68	162,579.31
XIII.	TEST FARMS	420,742.26	376,340.31
XV.	WEIGHTS AND MEASURES	66,673.31	71,363.99
XVI.	STATE MUSEUM	24,325.13	21,168.92
XVII.	HOG CHOLERA WORK	13,172.50	8,222.26
XVIII.	CUSTODIAL	12,432.00	11,964.50
XIX.	MISCELLANEOUS	86,759.68	178,342.72
XX.	RABIES	475.38	336.36
XXI.	JAPANESE BEETLE CONTROL	2,509.75	7,477.36
XXII.	WHITE FRINGED BEETLE CONTROL	9,900.00	9,977.52
XXIII.	INDEMNITY DISEASED SLAUGHTERED LIVESTOCK	12,658.27	14,601.35
TOTAL EXPENDITURES		\$1,745,354.71	\$1,699,710.04

SUMMARY BY OBJECTS		1951-52	1950-51
11.	SALARIES AND WAGES	\$1,075,562.17	\$975,343.31
12.	SUPPLIES AND MATERIALS	110,310.78	109,578.82
13.	POSTAGE, TELEPHONE AND TELEGRAPH	23,356.77	21,963.12
14.	TRAVEL EXPENSE	167,111.03	167,730.38
15.	PRINTING AND BINDING	29,838.62	29,152.32
16.	MOTOR VEHICLE OPERATION	14,998.19	12,496.18
17.	LIGHT, POWER AND WATER	5,734.29	5,704.06
18.	REPAIRS AND ALTERATIONS	15,012.59	10,776.07
19.	GENERAL EXPENSE	97,499.14	78,168.22
22.	INSURANCE AND BONDING	2,465.24	2,409.76
23.	EQUIPMENT	46,185.48	50,800.97
32.	ADDITIONS AND BETTERMENTS	25,622.01	77,723.39
33.	STORES FOR RESALE	19,298.66	17,415.12
	Contribution to the Retirement System	62,359.74	40,448.32
	Purchase of Land	50,000.00	
	Advance for Surplus Commodities Revolving Fund		100,000.00
TOTAL EXPENDITURES		\$1,745,354.71	\$1,699,710.04
	Less Transfer from RMA Fund	45,036.46	55,133.14
	Less: Transfer from Cooperative Agreement	1,743.27	2,523.75
	Test Farm Perquisites	12,882.42	8,861.01
TOTAL		\$1,685,692.56	\$1,633,192.14
	Treasurers Cash June 30	134,978.72	145,572.76
	Investments in Bonds and Premium on Bonds	103,874.98	103,874.98
	Revenue Collections		
	Fertilizer Tax	461,712.29	462,142.38
	Feed Tax	243,575.39	207,169.08
	Contribution from General Fund	567,703.00	519,380.00
	Other	402,107.84	377,301.43
TOTAL RECEIPTS		\$1,675,098.52	\$1,565,992.89
TOTAL CREDIT BALANCE JUNE 30		\$ 238,853.70	\$ 249,447.74

SHEEP DISTRIBUTION PROJECT
Special Fund — Code 3

RECEIPTS AND DISBURSEMENTS
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Credit Balance—July 1	\$ 30,614.94	\$ 32,788.87
Revenue Collections	251,309.60	370,761.12
Disbursements	255,194.13	372,935.05
	\$ 26,730.41	\$ 30,614.94
CREDIT BALANCE—JUNE 30		

DISTRIBUTION OF SURPLUS COMMODITIES
Code 19

RECEIPTS AND DISBURSEMENTS
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Credit Balance—July 1	\$104,197.95	
9/15/50 Transferred from Code 1101		\$100,000.00
11/14/50 Transferred from Code 3		8,174.25
Repayments—Other Items	30,833.08	116,716.41
Disbursements	26,341.31	120,692.71
	\$108,689.72	\$104,197.95
CREDIT BALANCE—JUNE 30		

RESEARCH AND MARKETING ACT, FEDERAL FUND
Special Fund — Code 51

RECEIPTS AND DISBURSEMENTS
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Credit Balance—July 1	\$ 5,843.85	\$10,256.32
Receipts—RMA Matching Fund	43,000.00	50,720.67
DISBURSEMENTS		
Marketing Division Expenses in connection with RMA project—Transferred to Code 1101	45,036.46	53,846.73
Crop Statistics Division Expenses in connection with RMA project—Transferred to Code 1101		1,286.41
	\$3,807.39	\$5,843.85
CREDIT BALANCE—JUNE 30		

SPECIAL DEPOSITORY ACCOUNT REPORTING SYSTEM
Code 52

STATEMENT OF RECEIPTS
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Receipts		
Cash—Bond Deposits (Reporting System)	\$3,500.00	\$3,250.00
	\$3,500.00	\$3,250.00
CREDIT BALANCE—JUNE 30		

GASOLINE AND OIL INSPECTION
General Fund — Code 320

STATEMENT OF DISBURSEMENTS
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Revenue Appropriation	\$297,423.00	\$227,168.00
Disbursements	205,281.65	203,836.27
	<hr/>	<hr/>
UNSPENT BALANCE OF APPROPRIATION	\$ 92,141.35	\$ 23,331.73

STATE WAREHOUSE SYSTEM — SUPERVISION
Special Fund — Code 1801

FINANCIAL STATEMENT
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Credit Balance—July 1	\$40,734.33	\$43,208.69
Receipts		
Revenue Collections	32,076.05	27,871.48
Miscellaneous Collections	30,193.24	13,195.30
Expenditures	28,996.27	29,849.47
Miscellaneous Expenditures	35,021.39	13,691.67
	<hr/>	<hr/>
CREDIT BALANCE—JUNE 30	\$38,985.96	\$40,734.33

STATE WAREHOUSE SYSTEM — PRINCIPAL
Special Fund — Code 1802

STATEMENT OF RECEIPTS AND DISBURSEMENTS
July 1, 1950 — June 30, 1952

	1951-52	1950-51
Cash on hand—State Treas.—June 30	\$ 151.07	\$ 49,326.07
Receipts		
Repayment of Loans	24,083.56	5,825.00
	<hr/>	<hr/>
Total Availability	24,234.63	55,151.07
Disbursements		
Loans to Warehouses	15,000.00	55,000.00
	<hr/>	<hr/>
Treas. Cash—June 30	9,234.63	151.07
Loans to Warehouses	187,021.44	183,805.00
Invested in 2½% Gov't. Bonds	550,000.00	550,000.00
	<hr/>	<hr/>
TOTAL WORTH—JUNE 30	\$746,256.07	\$733,956.07

COOPERATIVE INSPECTION SERVICE

Special Fund — Code 1803

STATEMENT OF DISBURSEMENTS

July 1, 1950 — June 30, 1952

	1951-52	1950-51
Treas. Cash—July 1	\$ 66,391.52	\$ 18,595.53
U. S. Treasury Bonds—2½% par value	40,000.00	40,000.00
	<hr/>	<hr/>
Credit Balance—July 1	106,391.52	58,595.53
Receipts	225,657.97	253,587.76
Disbursements	229,688.19	205,791.77
	<hr/>	<hr/>
CREDIT BALANCE—JUNE 30	\$102,361.30	\$106,391.52

CONTRIBUTION FROM THE GENERAL FUND

General Fund — Code 3212

STATEMENT OF DISBURSEMENTS

July 1, 1950 — June 30, 1952

	1951-52	1950-51
Revenue Appropriation	\$567,703.00	\$716,925.00
Expenditures		
Contribution to Department of Agriculture—Code 1101	567,703.00	519,380.00
	<hr/>	<hr/>
UNSPENT BALANCE OF APPROPRIATION		\$197,545.00

DIVISION OF CHEMISTRY

DR. E. W. CONSTABLE
State Chemist



E. W. CONSTABLE

The work of the Division of Chemistry applies in main to certain agricultural products such as fertilizers, liming materials and landplaster, insecticides and stock and poultry feeds, also to foods, drugs and cosmetics, automotive anti-freezes, and linseed oils. This work is based on State control laws applying to these commodities. A common basic requirement is that all shall carry certain labeling and guarantees and that they shall measure up to these. Where wholesomeness, health and safety are of concern, it is further required that prescribed precautions to those ends shall be observed.

The work is carried out by the registration of some products, and by the collection of samples of all of these commodities from all parts of the State to be analyzed chemically and otherwise in order to determine compliance with guarantees and other requirements. The work is further augmented by checking labeling and by inspection of manufacturing, handling and storage facilities where this is pertinent.

FERTILIZERS, FERTILIZER AND LIMING MATERIALS

Mixed fertilizers and fertilizer materials sold for consumer use in the State are subject to analysis according to guarantees and proposed use. These analyses may cover only one of, or varying combinations of, the following: Nitrogen, phosphate, potash, calcium, magnesium, chlorine, sulphur, boron, manganese and acid forming or acid neutralizing qualities. Limes are analyzed for calcium, magnesium and acid neutralizing value; landplaster for calcium sulphate. Coverage for the biennium was as follows:

Official fertilizer samples	20,252
Unofficial fertilizers and fertilizer material for farmers	237
Official liming material, liming material with potash and landplaster	119
Research—N. C. Experiment Station	68
<hr/>	
TOTAL	20,676

The analyses of official samples collected during the biennium showed that the fertilizers sold in this State during that period were generally of good quality and measured up to guarantees made for them. In a limited number of cases, analyses showed certain lots of fertilizer to be below guarantee. In such cases, consumers were reimbursed according to deficiency and penalty provisions of the fertilizer law.

Upon completion of individual analyses, reports were forwarded to those concerned as promptly as circumstances would permit. All results were made available to the public collectively in annual issues of The Bulletin published by the Department for that purpose.

COMMERCIAL FEEDS

Commercial livestock and poultry feeds are analyzed for content of protein, fat, crude fiber and, at times, urea. They are further analyzed microscopically to determine the individual ingredients of which the feed is composed. The coverage for the biennium was as follows:

Official feed samples	4,803
Unofficial and miscellaneous samples	574
TOTAL	5,377



Fertilizer samples are carefully weighed before analysis. Files in background carry approximately 6,000 official samples.



Samples of livestock and poultry feeds are analyzed under a microscope to determine the various components.

According to these analyses, the feeds sold in the State during the biennium were found to be generally of satisfactory quality and to measure up to guarantees. A number of lots, however, were found deficient. Where these lots had been sold to consumers, they were reimbursed for deficiencies according to the penalty section of the feed law. In other instances, manufacturers were required to repossess and reprocess lots which had not gotten into the hands of consumers.

Detailed reports of analyses were forwarded to those concerned as soon as the work was completed. Information on deficient brands was published periodically in the *Agricultural Review*. Results on all work were made available annually in a *Feed Report* issue of *The Bulletin*.

ECONOMIC POISONS

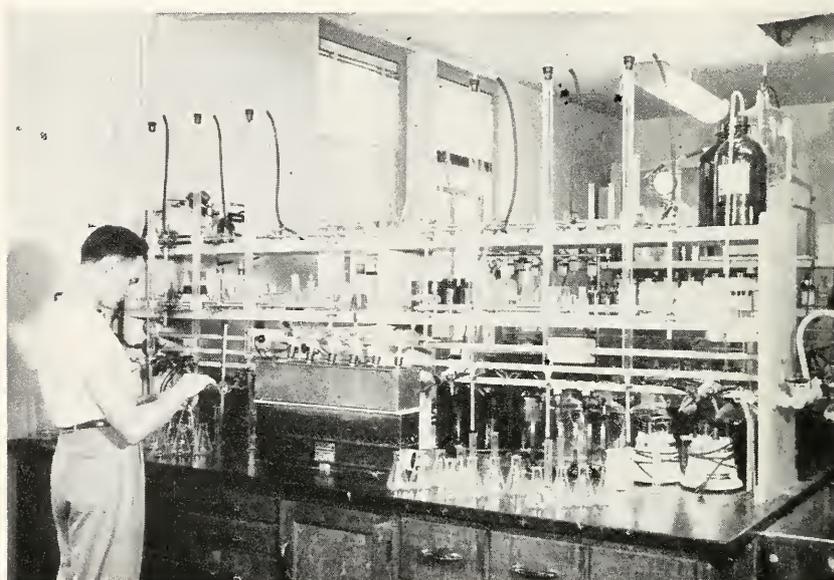
The inspection and analysis of economic poisons during the present biennium have been improved in a noteworthy manner. Up through 1948, the year in which the present economic poisons law became effective, the average yearly registration of brands approximated 300. Following that year and through 1952, this average has been close to 2,000 per year; the latter part of this period, above 2,200. Detail of that growth is shown in the following tabulation:

<i>Year</i>	<i>Registrations</i>	<i>Year</i>	<i>Registrations</i>
1941	232	1948	1214
1943	218	1949	1797
1945	317	1950	1864
1946	412	1951	2351
1947	524	*1952	2255

* This year incomplete.

Obviously several things contributed to this increase in registration—the new law which brings in all economic poisons whereas the preceding one covered only agricultural insecticides, the greatly increased need and demand for these products, the development of many new ones and the great expansion in the industry. It remains, however, that the large increase in use of agricultural insecticides alone would have required a greatly enlarged control program if stability in the insecticide field were to be maintained. This extends also to the non-agricultural field.

Prior to 1947 the average number per year of official insecticide samples collected and analyzed was approximately 300. For the year 1951 the first annual issue of *The Bulletin* which was devoted solely to economic poisons was published. This followed the style of the



Insecticides are analyzed in this laboratory. The apparatus in the foreground serves to separate benzene hexachloride into its component parts.

annual issues of the Fertilizer and Feed Bulletins and comprised 144 pages. With other material pertinent to insecticides, it carried the analyses for approximately 1,400 official insecticide samples. In addition to this, a number of unofficial and miscellaneous samples were analyzed. The coverage in this work is being further increased for 1952.

During the preceding biennium, 1948-50, one new insecticide laboratory was provided and was ready for use in the latter part of that period. In personnel, one chemist was provided for the work. Other help had to be borrowed or transferred, thus curtailing other programs. There are now three full-time chemists on this work. Clerical help also is provided. Inspection and collection of samples has been combined with stock feed inspections on a year-round basis. Three full-time inspectors and part-time of another are now on this combined work. Funds have been made available for additional laboratory space and will be utilized as soon as the new annex to the Agriculture Building, which is now under way, is completed.

A weak point in the present program is inadequate inspection service. The present force cannot fully carry the needed field work to keep both feed and insecticide work going. Therefore, request for one additional inspector is included in the budget for the coming biennium. In view of the critical nature of insecticide control it is hoped that this need will be taken care of.

LINSEED OILS

Following the practice of making cross-section surveys on linseed oils, for checking composition, labeling and use of inspection stamps, 346 samples were collected and analyzed. Results showed these products to be on a very satisfactory level as to all claims and requirements.

ANTI-FREEZES

Prior to the enactment of the automotive anti-freeze law of 1949, these products were the cause of much trouble and damage. Along with the reliable brands on the market, there were types put out by the unscrupulous which were extremely damaging and destructive to automotive equipment. Motorists could not discern between the good and the bad until the damage had been done. This reflected on all brands.

This law requires registration and clearance of all anti-freezes with this Department before their sale is legal. The law apparently has afforded complete protection to both consumers and sound producers



The apparatus shown in the foreground of this laboratory picture is used in making some types of food analyses.

since no single complaint has reached the Department subsequent to the enactment of the law, nor has it been found necessary to decline registration of any brand for which this was requested. Both industry and the trade have co-operated fully in the enforcement of the law.

Application was made for registration of 75 brands in 1950-51 and 63 brands in 1951-52, a total of 138 registrations for the biennium. All were found acceptable.

FOODS AND DRUGS

The overall purpose of the food and drug work is to assure the public of being provided with clean, wholesome, safe foods, drugs and cosmetics. The work is carried out under the State's basic pure food law—the North Carolina Food, Drug and Cosmetic Act. This is supplemented by specific laws dealing with bakeries, bottling plants, flour and its products, corn meal and oleomargarine.

In the great majority of cases, those who handle and sell food products appear to have a high sense of responsibility and operate under generally satisfactory conditions. Difficulty usually stems from a minority, largely attributable to carelessness, or to indifference and ignorance of both the ethics and responsibilities of the food and drug industries.

INSPECTION OF PLANTS AND SALES OUTLETS

The food laws require that foods shall not be exposed, stored, handled or processed in a manner whereby they may become contaminated. Sound and wholesome ingredients also are required. Plant inspections are made in order to determine if these requirements are met. In case of minor defects, prompt correction is required. Suspension of activities or other action may be required in cases of gross defects.

SUMMARY—FOOD PLANT INSPECTIONS

Bakeries and Doughnut Plants	2258
Bottling Plants	1485
Other types of plants (processing and packaging, meats, pickles, seafoods, flour and meal, candy, po- tato chips, fruits and vegetables, etc.)	2353
TOTAL	6096

PLANT OPERATIONS SUSPENDED
(Largely Voluntary)

Bakeries	70
Bottling Plants	45
Miscellaneous plants	12
TOTAL	127

Systematic inspection also is made of conditions in wholesale and retail outlets and of the labeling of goods handled therein. Obvious defects can be detected at this level and corrections advised. The occurrence of major defects or appearance of fraud may result in the offending product being placed under embargo pending correction, or in further action. In a number of instances unsatisfactory conditions were required to be corrected. Of approximately 10,000 label inspections, 708 instances of defective labeling were observed and corrections required.

ADULTERATION AND MISBRANDING OF FOODS

The various reasons for which foods fail to meet the requirements of the law will place them under the classifications either as "adulterated," "misbranded" or both. Adulteration may come from many causes such as unsound raw products, improper handling and pro-

cessing, rodents and insects, exposure in various manners, etc. With these is the intentioned adulteration for fraudulent purposes. Misbranding more often arises from oversight or lack of information. However, fraudulent branding and economic cheats are not uncommon.

Among the actions taken during the biennium were three which involved disregard of law and ethics. In one case a packing company located near Washington, N. C., slaughtered and sold as food for human use pork from hogs which had been placed under veterinary quarantine because of a diseased condition. Part of the meat was consumed before the Division learned of the circumstances. By embargo action, 12,160 pounds of this meat was removed from the market and destroyed. In a recorder's court action the court concurred in the destruction of the meat, but terminated the case with a warning to the operators. This work was carried out jointly with the Beaufort County Health Department.

In five North Carolina towns—Asheville, Forest City, Elizabeth City, Roanoke Rapids and Wilmington—a total of 1,566 pints of fresh oysters were removed from sale under State action, because of containing excess water. These were cases of deliberate and fraudulent adulteration. Since these oysters were shipped from sources outside the State, the actions were handled jointly with the U. S. Food and Drug Administration.

Another version of deliberate fraud which was dealt with was the marketing of horse meat, represented to be beef and sold as hamburger to school lunch rooms, hospitals and cafes. The towns principally concerned were Asheville, Charlotte, Forest City, Gastonia, Hickory, Marion, Rutherfordton, and Salisbury. Action in Asheville courts resulted in conviction of offenders. The chief violator, operating from an adjoining state, is under indictment but has not yet been apprehended. No repetition of the violation has been discovered. The work was carried out jointly by State and Federal enforcement officials and local health departments.

OFFICIAL SAMPLES

A basic factor in the enforcement of the Food and Drug Laws is the collection and analysis of official samples. Chemical analysis is the final qualifying factor in a great majority of instances. Since analytical work is tedious and time-consuming, it is important that samples be judiciously selected in order to obtain maximum coverage with the amount of work that can be done.



These photos show damage resulting from fires at Oxford, N. C. The food products shown here were damaged in varying degrees by fire, fumes, smoke and water. In many cases such products can be partly salvaged for human use, but food inspectors must supervise the classifying and clearing.

Department inspectors collected 1,476 official samples during the biennium. These were carried through appropriate analyses—chemical, physical, microscopic, and optical.

A large number of unofficial samples are sent in from various parts of the State each year. They represent a great variety of products and interests. Effort is made to analyze as many of these as the individual situations merit and as time may permit.

FIRES, FLOODS, STORMS, AND WRECKS

Varying quantities of foods and drugs are involved in fires, floods, storms and wrecks and are exposed to contamination, damage, or destruction. Understandably, effort at a maximum salvage is most likely to follow in order to minimize losses. The danger involved in rerouting such salvage into channels for human consumption usually is not known or is overlooked or ignored.

Immediate attention is given to these situations. All exposed products are placed under embargo, then separated and classified according to their condition. Those which are satisfactory for human consumption are permitted to be salvaged for that purpose. Those not suitable for this use are denatured and diverted to other permissible uses or are destroyed.

During the biennium the Division dealt with 14 fires of various proportions, in which foods and drugs were involved. The most serious of these were in Whiteville and Durham, involving gross losses of \$164,000 and \$124,200, respectively. Other such fires occurred in Greensboro, Chadbourn, Lincolnton, Lenoir, Oxford (two), Raleigh (two), Laurinburg, and Washington (two). The gross losses of all totaled approximately \$446,000, involving some 1,700 tons of products.

Fortunately, the state suffered no storms or floods of consequence during the biennium. There were two wrecks of minor proportion which involved food and drug products.

CHEMICAL CONTROL OF DRUGS

The control of drugs as set up in the drug section of the North Carolina Food, Drug and Cosmetic Act is in general the least understood of the control laws with which the Department deals. This work often is confused with the practice of medicine or pharmacy. It is no more the practice of medicine or pharmacy than is the manufacture of scalpels the practice of surgery. The purpose of drug control is to make available to the professions using drugs and to the public a supply of reliable, honestly labeled drugs.

The chemical control of drugs is exactly the same in principle as the chemical control of foods or fertilizers. The law requires honest, factual labeling in each case, requires that ingredients be listed and guaranteed and that the products measure up to these guarantees. Visual inspection will show whether the labeling complies with requirements. However, when products are apparently labeled according to requirements, the only final proof is chemical analysis.

In some instances packages have been found to contain an entirely different product from that declared on the label. There was just such an occurrence in North Carolina not so long ago. A consignment of a bottled product labeled "Castor Oil" actually contained turpentine. It was sold and used as a purgative, a common use of such oil. The results can well be estimated.

Another instance of this nature which the Division recently investigated was a situation in which an antiseptic was used instead of a prescribed antacid for indigestion. This was due to lack of labeling. These are examples of the too-frequently occurring miscarriages in the handling of drugs. A more adequate plant inspection and control program is the best means for curtailing these occurrences.

Regrettably, there occurs each year instances in which unsatisfactory drugs appear on the market and are recalled because of trouble. The Division dealt with five such cases during the biennium. These were handled in co-operation with the U. S. Food and Drug Administration. Four involved non-sterility where absolute sterility was critical. One dealt with excess potency which rendered the product dangerous when used as directed. In these cases prompt action was critical in order to avoid repetition of the injury which brought the defects to light.

Each year brings complaints of the illegal sale and misuse of dangerous drugs which are restricted to use on prescription only. The more common complaint involves the barbiturates (sleeping pills). These complaints were fewer for the present biennium than previously. Prompt action upon complaint is a deterrent, however more adequate inspection and checking would be more effective. Three cases of this kind were investigated and cleared.

Other cases dealt with a fraudulent "Cure for diabetes," offered as a substitute for insulin, so called cures for epilepsy, teething powder which caused mercury poisoning and a dandruff remedy which contained a substance injurious to the eyes.

The "New Drug" section of the law is a very effective protection to consumers. This section requires that all new drugs shall clear under the State law or the similar Federal law. The Division dealt

with 21 such items, among them being several cancer remedies and cures for asthma. It is needless to record that the cures for cancer and asthma regularly fail to pass muster.

Effective work is being done on drugs. However, coverage is not by any means considered adequate or what it should be. Request is being made to the 1953 Legislature to provide two food, drugs and cosmetic inspectors and two chemists. One of the purposes for these will be improvement in the drug control program. Further improvement is anticipated when the new building annex, now under way, is completed. This will make available space for an adequate drug laboratory.

OLEOMARGARINE

Change was made in the oleomargarine laws in 1949 which permitted the sale of the colored product in public dining rooms, provided such sales were accompanied by placards and other identifying means. The Division has checked on observance of these requirements in a limited way, particularly where there was cause to believe there was misrepresentation. The few cases of violation which were found appeared to be due to ignorance of requirements. They were readily corrected. The change in the law created a greatly expanded inspection job which, to fully cover, would be beyond the capacity of the present inspection staff while carrying on its many other duties also. The provision for new inspectors as now being requested will enable, among other things, a broader coverage of this field.

CO-OPERATION WITH OTHER AGENCIES

Full co-operation with other agencies concerned in the same or kindred lines of work is a strong asset to both the Division and to those agencies. The joint efforts of the Division with the N. C. Board of Pharmacy and the State Bureau of Investigation promptly curbed cases of illegal sale of drugs. Joint work with the Health Departments of Charlotte and Asheville stopped the illegal sale of horse meat and resulted in the trial and conviction of the offenders. Such action with the Health Department of Washington, N. C. resulted in the destruction of a large quantity of diseased pork. Similar work with the U. S. Food and Drug Administration quickly and effectively removed dangerous drugs from the market. It also was very effective in curbing the sale in this State of watered oysters shipped from other states. These joint actions produced results much more promptly and effectively than would have been possible otherwise.

LABORATORIES AND EQUIPMENT

The principal laboratory need is additional funds for setting up and equipping laboratories in the space that will be available for that purpose in the new building. This includes renovation and enlargement of some of the present laboratories in order to relieve congestion which has developed over a period of years as a result of periodically increasing load. Request is being made for such provision.

PERSONNEL

In general, the character and efficiency of the personnel and its work has been of a high order and merits appreciation and commendation. Salaries have been improved, but there still is the difficulty of ever rising costs. It is hoped that the coming Legislature will be able to adjust salaries to relieve this economic pressure on members of the staff.

Some of the programs are handicapped because of limited help. To relieve this, request is being made for one additional inspector for feed and insecticide inspection, two chemists and two inspectors to enable bringing food and drug work up to a more adequate level and one secretary to take care of the greatly increased load of office work.



D. R. GRAHAM

CREDIT UNION DIVISION

D. R. GRAHAM
Superintendent

During the two-year period ending June 30, 1952, credit unions operating under North Carolina charter showed an increase of 6,000 in membership and \$2,000,000 in resources. This is substantially the same increase shown between 1948 and 1950. During the period, nine credit unions were organized and six liquidated for a net increase of three. Prior to July, 1950, major emphasis had been placed

on organizing new credit unions. For the past two years, greater emphasis has been placed on teaching credit union officials the philosophy and mechanics of operating a credit union. During the period of intense organizational activity, a number of credit unions were organized which for various reasons we now find it necessary to liquidate. In most of these instances the groups show lack of interest or failure to keep proper records. Both group interest and good record-keeping are essential to successful credit union operation.

Credit unions are now operating in the majority of the counties in the State and break down into the following classifications: Rural community, 65; urban community, 38; manufacturing 27; public utilities, 21; government, state, county and municipal employees, 19; postal employees, 16; retail merchandise, nine; newspapers, nine; restaurant, three; and miscellaneous, four. A number of credit unions listed under other headings make loans for agricultural purposes. For example, the credit unions at Champion Paper and Fibre Company, the American Enka Corporation and Chatham Manufacturing Company have a number of employees who live on farms and who finance their farm operations through credit union loans.

Although North Carolina Credit Union Law is regarded as one of the best in the nation, some changes are being considered. This law, enacted in 1915 and altered but little since then, imposes a limitation of \$50 on unsecured loans. A corresponding provision in the federal credit union law, enacted in 1934, has been amended from time to time, increasing to \$400 the maximum amount of unsecured loans. Some credit union officers and members feel that the North Carolina law should be similarly amended.



Many North Carolina credit unions are helping their members to finance farming operations. For instance, the tractor and hay-baler in the top photo and the poultry house in the lower photo were financed with loans made by the Chatham Employees Credit Union, of Elkin.

Credit unions operating within white groups have done an outstanding job of taking care of their members' short-term credit needs and in the last few years several Negro credit unions have forged to the front in this respect. Three community credit unions among Negroes in Gastonia, Winston-Salem and Chowan County, with total resources in excess of \$800,000, have done a remarkable job in not only taking care of their members' short-term needs but in financing homes and farms. Many of these people would never have owned property had it not been for the credit union, as they were unable to obtain credit elsewhere.

NUMBER, MEMBERSHIP AND ASSETS
OF STATE-CHARTERED CREDIT UNIONS

	<i>June 30, 1950</i>	<i>June 30, 1952</i>
Active Credit Unions	208	211
Total Members	49,031	55,081
Total Assets	\$9,322,611.23	\$11,314,522.03

NORTH CAROLINA CREDIT UNIONS
CONSOLIDATED BALANCE SHEET

June 30, 1952

ASSETS

	<i>June 30, 1950</i>	<i>June 30, 1952</i>
Cash on Hand	\$1,340,364.74	\$2,207,593.25
Loans to Members	5,864,501.56	6,998,183.61
U. S. Government Bonds	1,765,919.44	1,944,308.35
Other Assets	351,825.49	164,436.82
	\$9,322,611.23	\$11,314,522.03

LIABILITIES AND CAPITAL

Shares	\$7,022,866.83	\$8,584,978.68
Deposits	932,358.36	1,050,826.11
Reserve Fund	327,732.83	478,763.32
Notes Payable	615,124.80	710,775.00
Undivided Earnings	232,683.88	356,561.68
Other Liabilities	191,844.53	132,617.24
	\$9,322,611.23	\$11,314,522.03

DAIRY DIVISION

C. W. PEGRAM

Director



C. W. PEGRAM

Because milk and other dairy products play an important role in the diet of North Carolinians, the State Legislature has from time to time adopted laws to insure purity and quality for the consumers. This Division is concerned with investigating various aspects of the dairying industry and execution of existing laws and regulations.

The Board of Agriculture made a distinct contribution toward milk safety by adopting a regulation requiring permanent removal of all dairy animals infected with brucellosis (Bang's disease) from herds producing fluid milk—either raw or pasteurized—for human consumption. This regulation became effective at the end of the 1950-52 biennium, and its State-wide application will place North Carolina as a leader in animal health requirements for all milk supplies. Enforcement will be a co-operative effort with the Veterinary Division, and plans are being developed for a mobile laboratory to be used jointly with the veterinary staff.

This Division is especially concerned with administering the following three important laws affecting dairy products:

1. The Ice Cream Law, which provides for standards in cleanliness and sanitation, purity of dairy products, and correct tests of butterfat.
2. The Milk and Cream Import Law, which provides for the control of milk coming into North Carolina, requiring the same standards as those for milk produced in this State.
3. The Babcock Test Law, which provides for inspection, grading and testing of milk and other dairy products offered for sale by a milk producer, manufacturer or distributor.

The Board of Agriculture also amended the rules and regulations to provide that milk or liquid milk products sold for consumption on the premises shall be served in the original single service bottle or container. This regulation offers consumers protection in that the name of product, grade and name of processor are carried either on the cap or the package. The consumer is also served standard measure.



Soft type ice cream installations have increased throughout the State. During the biennium inspections were made of 213 counter freezer and soft ice cream manufacturers.

Ice cream is enjoyed by young and old, and national sales levels for May 1952 show this State to be in 10th place, only slightly behind the ninth position. The 1952 production was 12,137,000 gallons as reported by the Federal and State Crop Reporting Service. This represents a per capita consumption of approximately $3 \frac{1}{3}$ gallons. The control program as carried on by the Division warrants some recognition for this phenomenal consumer acceptance.

During the biennium nearly 2,000 inspections were made of the 75 wholesale plants and 213 counter freezer and soft ice cream manufacturers. Along with these inspections 2,849 samples were analyzed for butterfat, total solids and bacteria count. Results of all analyses were sent to plants and retail operators. In cases where deficiencies were found, follow-up field inspections were made.

During this period it was necessary to issue only ten closing orders, embargo 73 gallons of ice cream and $121\frac{1}{2}$ gallons of ice cream mix. It was necessary to take court action in only one case. This low percentage of legal action may be taken as evidence that co-operation has been received from the ice cream industry. Part credit for this accomplishment is due to the ever-vigilant field men who, while having been strict, have rendered assistance to the industry in regards to matters of sanitation and purity of product.

The use of foreign fats as a substitute for butterfat may present distinct control problems in the near future. Several states are already confronted with this issue.

Despite the fact that Grade A milk production has increased during the past ten years it has been necessary to import large amounts of milk from other states. Approximately 28 million pounds were imported in 1951, a considerable reduction over the 53 million pounds imported in 1949. This shortage reaches its peak in the fall and winter months, after the opening of schools. The deficit is also due in some measure to demands of military facilities located in the State.

The 1949 Legislature provided for regulating the movement of emergency milk supplies from outside the State through a permit system. Approved permits are required of the out-of-state supplier and the state receiver.

Much effort is spent on this program by the Division as it is necessary to make field inspections of the out-of-state supplier. Tanker deliveries are checked at delivery points and samples are secured for laboratory analysis. It has been necessary to revoke a number of permits and to refuse issuance to some applicants.

This activity has resulted in an improved milk supply for fluid consumption and has prevented the State from being the dumping ground for low quality milk.



Super markets and paper cartons are changing consumers' milk buying habits. This movement undoubtedly has increased sales.



Tanker transportation of milk has proved very satisfactory for long distance hauls and there are indications that tankers may be used in the near future to deliver milk from dairy farms to processing plants.

There is a great need for increased production of Grade A milk in the State and such increase would be of economic value and would further contribute to milk quality.

The butterfat test law was amended in 1951, giving clarification to the matter of licensing testers and to methods of sampling and testing. The Division acts in the capacity of a referee between the producer and the buyer. Butterfat is variable for many reasons, and is often the cause of suspicion between the producer and buyer.

The Dairy Division is proud of the progress made in test supervision. Testers are given strict examinations before licenses are granted. Approved methods of sampling, proper storage of samples, and accurate testing equipment are required at all buying plants. A continuous system of check testing is followed, with approximately 385 investigations involving 20,000 fresh samples being made annually. Over 5,000 notices are mailed yearly to producers informing them of this Division's findings. Special investigations are made upon request. The complaints are decreasing each year and this indicates the development of confidence between buyer and seller.

The amended butterfat test law also provides for certain definitions of milk, cream, butter, cheese, ice cream and other frozen desserts. Provision was made for authority to issue "Stop Sales" in cases of contamination, failure to meet standards and definitions, or misbranding.

Samples of milk and other products are purchased on state-wide level. Securing of these samples involves auto travel over long distances, as it is necessary to get samples to the central laboratory on the same day as purchased.

Plans are now in progress to establish a mobile laboratory which will be used as an adjunct to our central laboratory. This should result in greater efficiency and make for better state-wide coverage. Standards for milk and dairy products are established primarily to insure honesty and fair dealing with the consuming public. Their goal, when reached, protects the honest manufacturer.

This Division's sampling plan of control offers the consuming public worthwhile protection in regard to purity and quality of product. This practice makes for better compliance with standards and definitions. Consequently adulteration has been reduced to a minimum.

Reports of laboratory findings are sent to all local health departments, and this information is of value to them in their control programs. Every co-operation is offered to all health agencies in regard to providing the people of this State the best possible milk supply.

STATISTICAL REPORT

July 1, 1950 — June 30, 1952

Plant Investigations (Butterfat check testing)	774
Testers Licenses issued (yearly)	98
Butterfat check tests (Fresh daily)	35,757
Composite samples (checked test)	1,620
Supervised Tests	466
Total	37,843
Milk and other Dairy Products analyzed—Official	3,872
Milk and other Dairy Products analyzed—Unofficial	250
Ice Cream and Frozen Desserts samples analyzed—Official	2,849
Ice Cream and Frozen Desserts samples analyzed—Unofficial	22
Ice Cream Plant Inspections	1,980
Dairy Farm Inspections	1,280
Court Convictions	1
Butter Plant Inspections	12
Cheese Plant Inspections	4
Sediment Tests	2,109
Temperature checks	1,154
Methylene Blue Tests	2,000
Gallons Ice Cream Embargoes	73
Gallons Ice Cream Mix Embargoes	121½
Gallons Milk Embargoes	6,023
Out-of-State Milk Supplies Inspected	30
Milk Cans Condemned	40



C. H. BRANNON

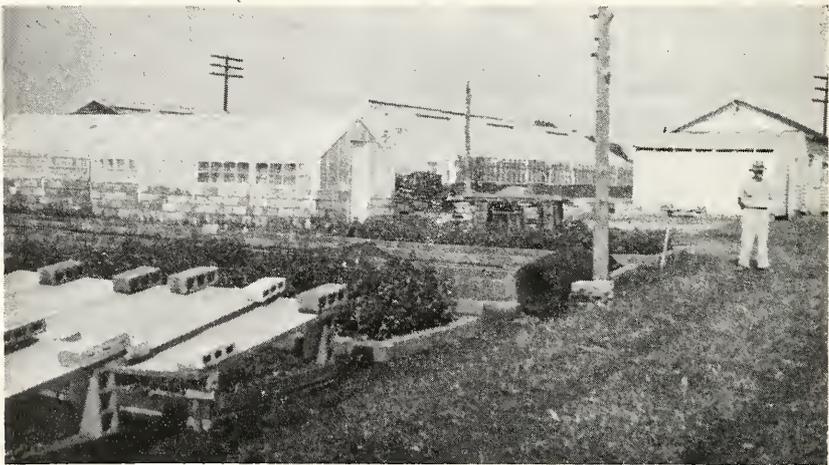
DIVISION OF ENTOMOLOGY

C. H. BRANNON
State Entomologist

The Division of Entomology enforces the State insect pest and plant disease laws and regulations and administers the laws and regulations pertaining to State bee diseases. Assistance is given in the enforcement of Federal quarantines—such as the Japanese Beetle and White - Fringed Beetle quarantines—through co-operation with the U. S. Bureau of Entomology and Plant Quarantine. Duplication and conflicts are avoided, since close co-operation is maintained with entomologists and plant pathologists of the North Carolina Extension Service, the Experiment Station and the Federal government.

NURSERY INSPECTION

The largest single project of this Division is the annual inspection of all nurseries in the State. This work is performed by staff members during the summer of each year. Nursery certificates totaling 170



Inspection of nurseries, of which there are more than 400 in North Carolina, is one of the most important services of the Entomology Division.



One of the largest orchid establishments in the South is located in North Carolina. It is the Carolina Orchid Growers, Inc., of Southern Pines, whose plant is shown above.

were issued in 1936-37, and since that time the number of nurseries has increased to approximately 400. In addition, approximately 100 State certificates are issued to dealers of nursery stock.

WHITE-FRINGED BEETLE

The White-Fringed Beetle project is conducted jointly by this Division and the U. S. Bureau of Entomology and Plant Quarantine. During the past biennium considerable aid in supplying insecticides and labor was donated by counties, business firms and individuals. The State furnished most insecticides and some personnel, and the Federal government supplied spray equipment, transportation and supervisory personnel.

This project is concerned with inspection, control and quarantine enforcement. Since infestation is still limited in the State, control work is being continued. In addition to the control work in the known infested area, inspections for both larvae and adults were continued in order to locate new infestations resulting from artificial spread.

During 1950-51 the White-Fringed Beetle was discovered in Harnett and Wake, bringing the total infested area to 16,692 acres in 20 counties. DDT foliage treatment was administered to 6,083 acres and 2,044 acres received DDT soil treatment. Certificates totaling 13,422 were issued for movement of nursery stock, soil, etc.

No newly infested counties were found during 1951-52; however, 1,887 acres were added to the infested territory. An area of 373 acres was designated as inactive, since no beetles were found there during the preceding three years. DDT foliage treatment was applied to 4,204 acres and 954 acres received DDT soil treatment. Certificates for movement of nursery stock and soil totaled 14,838.

JAPANESE BEETLE

Japanese beetle control is also a co-operative project between this Division and the U. S. Bureau of Entomology and Plant Quarantine.

The Federal Japanese beetle quarantine was extended to North Carolina in 1951 and includes the following counties: Beaufort, Bertie, Buncombe, Cabarrus, Camden, Carteret, Chowan, Craven, Cumberland, Currituck, Dare, Davidson, Duplin, Edgecombe, Forsyth, Gates, Guilford, Greene, Halifax, Harnett, Henderson, Hertford, Hyde, Johnson, Jones, Lenoir, Martin, Mecklenburg, Washington, New Hanover, Northampton, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Pitt, Randolph, Rowan, Sampson, Tyrrell, Nash, Wayne, Wilson, and Beaver Dam Township and City of Canton in Haywood County, and Blowing Rock Township in Watauga County.

Japanese beetle infestation now covers parts of the entire State. After a pest becomes widespread over the State it is physically and financially impossible for the State and Federal governments to continue control activities, and they then become the responsibility of individuals, communities, municipalities, or counties.



Mist-blower in action to control Japanese beetles.



Nematode damage in bulb field.

In the summer of 1950 traps were placed in 36 localities and Japanese beetles were found in 32 counties. All nurseries were scouted at least once, and nine localities received mist-blower foliage treatment. Increased infestation was discovered in eastern and western parts of the State.

The following summer 1,500 traps were used in scouting along all the main highways in proposed non-regulated areas. During this season all nurseries were scouted from one to three times. Thirteen nurseries within the regulated area and three small nurseries in Caldwell County were found infested. DDT mist-blower treatments were applied at Marion, Boone and Blowing Rock.

Three sections of the State were placed under Federal quarantine in August, 1951. The quarantined area includes 35 counties in the east, seven in the Piedmont, and two and part of a third in the mountains. Approximately 15,180,000 plants have been certified for movement under the quarantine. Several approved treatments are available to shippers of regulated items when it becomes necessary to treat for certification. Truckers have been notified that front vents must be screened while their truck are within the heavily infested area during the flight season of the beetle.

NARCISSUS BULB INSPECTION

The future of the narcissus industry in the State depends upon this project designed to detect plants infected with eel worm or nematode. This operation, carried on in the early spring, is confined largely to New Hanover County with some work being done in Beaufort, Chatham and Guilford counties. In 1951 the inspection included 129 acres on 14 properties. Presence of nematode was found in one property and the infected bulbs were treated with hot water and the soil was fumigated. The following spring 115 acres were inspected on 10 properties with infection being reported on three properties. One infected property had not been previously inspected, and another was infected from bulbs imported in 1951. All infected bulbs were subjected to the standard hot water treatment or destroyed and all infected soil was fumigated.

CAMELLIA FLOWER BLIGHT

Camellia flower blight was discovered in one Brunswick County nursery in 1949. The owner of the infected nursery has given this Division complete co-operation. Quarantine and control work has progressed satisfactorily and it is believed that the spread of this disease can be prevented. Camellias grown under quarantine regulations are carefully inspected and certified under expert supervision.

APIARY INSPECTION

This Division does not have a full time apiary inspector, but a trained member of the staff performs such work in this field as his other duties will permit. Following is a summary of the bee inspection work during the past biennium:

Number of colonies inspected.....	3,972
Colonies infected with American foulbrood.....	64
Colonies infected with European foulbrood.....	100
Colonies infected with sacbrood	200
Colonies infected with nosema and paralysis	100
Colonies with other brood diseases	50
Number of queen breeders inspected	7
Number of package bee shippers inspected	12

Due to shortage in personnel, inspections were limited to queen breeders, package bee shippers, transient beekeepers and others requesting inspection.

INSECT COLLECTION

The State insect collection continues to grow and thousands of new insect records were added and catalogued during the past year. Currently more than 13,000 different species of insects and near insects are recorded from North Carolina. The State insect collection is

the largest in the South and more space is needed for efficient handling. Thousands of specimens continue to come in for identification from all over the State. Many new kinds of insects have been recorded from these inquiries, most of which were household pests or insects affecting trees, animals and man. An increasing number of students from colleges and schools use the facilities of the insect collection and laboratory. Also many scientists from all over the United States have referred to this collection for study and much material has been examined and exchanged.

During the past year some permanent equipment was added to take care of the collection, but more will be needed when larger quarters are available. A new supplement to *List of Insects in North Carolina* has recently been published bringing up-to-date information on insects newly found within the State. An increasing amount of advice and service is rendered to both State and Federal field workers.

WHITE PINE BLISTER RUST

North Carolina has over 581,000 acres of white pine to be protected from deadly blister rust. This disease cannot be spread from pine to pine, but must develop from pine through wild or cultivated currants or gooseberries of the genus *Ribes*. This program for the most part consists in eradicating *Ribes* from important white pine areas. The disease can be spread from pine to *Ribes* over a distance of some 150 miles, but *Ribes* cannot infect white pines over 900 feet away.

Blister rust is now found on white pine in Ashe, Buncombe, Haywood, McDowell and Yancey counties. Infected *Ribes* are found in Avery, Graham, Jackson, Madison, McDowell, Mitchell, Transylvania and Watauga counties.

Resurvey was made in Madison County on 51,109 acres. Control area examination and eradication were confined mostly to Yancey, Mitchell and Avery counties, where 3,200 *Ribes* were removed from 402 acres of control area. Rust was found on white pine in Avery County at 13 different locations, including four nurseries. It is the purpose of the blister rust program to keep bushes down in order to prevent commercial damage.

White pine is found in 25 western North Carolina counties and annually yields about 30,000,000 board feet of lumber. The survey is about complete in those counties where wild *Ribes* and white pine are known to occur together. Work in the future will consist of making sufficient surveys to keep up with the spread of the pine and such eradication as is found necessary.

The following shows the present status of control work:

Total control acres	1,361,532
Total control acres Ribes free	1,355,981
Total control acres Ribes bearing	5,551
Total Ribes bearing control acres on maintenance	2,891
Per cent control acres on maintenance total	99.8
Per cent control acres on maintenance Ribes bearing	52.1

Present and potential white pine in the State is valued at over \$28,000,000. Blister rust is a threat to this valuable timber, but it can now be controlled at a small cost due to the long-range program of this Division.

EUROPEAN CORN BORER

Scouting surveys show Craven County to be the only new area infested with the European corn borer during the past biennium.

PHONY PEACH DISEASE

Scouting for phony peach disease began in 1930, when several counties were found infected. As a result of systematic eradication measures, the disease apparently disappeared after 1939. However, later research proved that the native wild plumb is capable of spreading the disease without showing signs of phony infection, and recent investigations have shown that three species of leaf-hoppers spread the disease from infected to healthy trees.

In the light of this later information a phony disease survey was again made in the summer of 1951, when all commercial peach orchards were carefully scouted in Polk and Rutherford counties. Two infected trees were found in Polk County.

In 1952 the commercial orchards in Cumberland and Scotland counties were surveyed, and two phony infected trees were found in Cumberland. Inspections in the vicinity of nurseries growing peach trees revealed no stock infected with the phony disease.

DURA STEM BORER

Due to a defective fumigation chamber at the port of Baltimore, broom corn imported from Italy heavily infested with the dura stem borer and the European corn borer was shipped into many localities of North Carolina in March and April, 1951.

In co-operation with the Federal government, surveys were made of infested stock at broom factories in the State. Many factories cooperated in destroying infested straw, and one carload of it was fumigated with methyl bromide at Greensboro, N. C.

While no infestations have been found in areas surrounding the plants which received shipments of the infested broom corn, scoutings must be made for some years to ensure against spread of these pests.

DIVISION OF MARKETS

JOHN A. WINFIELD
Director



JOHN A. WINFIELD

Diseases, insects and weather hazards, which the farmer faces in producing his crops and livestock, are replaced by a host of other controlling factors when the commodities he produces are ready for market. To mention a few of these, there is the problem of preparing each product before selling, determining where, how, and when to sell, and arranging for proper methods of handling and transporting the commodities for sale.

These problems do not end with the producer sale, however. They continue through each marketing channel from the producer to the consumer. They become more prominent during periods of over-production and times of short supply, and are lessened only through efficient marketing methods.

Seeking to eliminate as many of these problems as possible, the Markets Division, during the 1950-52 biennium, placed continued emphasis on the establishment of additional marketing facilities and efficiency in the use of existing ones.

The demand for marketing assistance and information from producers, handlers and processors was enlarged to a record point during the biennium as sharp increases occurred in the production of certain food and fiber crops, as well as in tobacco, the State's principal cash crop. The short labor supply also added to this demand as the need became more acute for major technical changes in facilities for marketing all farm commodities.

Evidence of this is particularly noticeable in North Carolina's expanding grain industry, which now is producing approximately 100,000,000 bushels of grain annually. Prior to 1950, suitable off-farm storage facilities for 750,000 bushels of grain had been established. During the past biennium, however, Division personnel were instrumental in arranging for the establishment of facilities for holding approximately 760,000 additional bushels, bringing the total capacity now to 1,510,000.

Technical assistance to cotton ginneries, who willingly followed the advice of Division specialists, proved highly valuable to the State's large number of cotton farmers. It is conservatively estimated that North Carolina ginneries invest each year about two dollars in new

gin machinery for every bale of cotton ginned. This was particularly true during the past biennium when, as a result of modern equipment and improved operating techniques, ginners reduced rough prep to a record low of 1.1 per cent. The record low prior to that time was 5.0 per cent in 1948.

Meeting, in part, the demand for additional market news information during the past biennium, the Division began compiling and releasing daily price quotations on corn and soybeans in the fall of 1950. Prices on wheat, oats and milo were added in the summer of 1951. At present, prices are compiled and reported daily to the press and radio from 14 local markets and four terminal points.

In co-operation with the Agricultural Extension Service, arrangements were made in 1951 to begin collecting and releasing daily price quotations on cotton from six of the State's leading markets. Excellent results were obtained in this venture and the demand for its continuance is increasing.

Tobacco growers, who through the production of the flue-cured and burley crop each year realize 57 per cent of the State's farm income, are becoming more conscious of the need for recognizing the U. S. Standard Grades under which tobacco is sold and are preparing their offerings in such a way as to meet the requirements of the buyers.



Specialists instruct farmers in the proper sorting and grading of their leaf for market.

During the 1950-52 biennium, division specialists strengthened their efforts to further promote this practice by conducting a service program in 31 flue-cured counties and 18 burley counties. Further assistance was given to more than 5,000 growers in improving their practices of grading and handling tobacco for market.

Special efforts were continued in the establishment of f.o.b. markets for a more orderly system of marketing the State's fresh fruit and vegetable crops. Because of their perishable nature, these crops must be moved to the processor or consumer as soon as possible after harvest. Typical acceptance to the f.o.b. system of sales may be found among eastern North Carolina's commercial lettuce growers.

Encouraged by Division specialists and other agency personnel, a small group of lettuce growers in the Castle Hayne, Wrightsboro, and Burgaw sections marketed their 1950 crop on the f.o.b. basis. By 1951, the volume of lettuce handled through this method more than doubled, and in 1952, practically all of the crop was sold f.o.b.

These are a few accomplishments made in the field of agricultural marketing. There is still a great deal to be done.

North Carolina, as well as other southeastern states, is witnessing a steady growth in population, brought about primarily by the rising tide of industry. This means that the production of food and fiber crops must be stepped up proportionately. It also means that our shift from a seller's market to a buyer's market is being accelerated.

Despite the increased grain drying and storage facilities over the State, there still exists a tremendous need for additional facilities. These must be established before local manufacturers can be assured of a constant supply of grain to meet their demands and before farmers, in turn, can expect the highest possible return for their products.

Grading of corn and soybeans for commercial movement has increased tremendously during the past few years. And the demand by farmers, as well as handlers, for additional grading services is continuing to increase at a rapid pace. This is an important service that is performed by the grain marketing specialists and is one that must be continued. The time required for this work, however, is hampering the progress of the expanded marketing program for all grains.

Intensive work with tobacco growers must be continued if the overall improvement in preparation and marketing practices is to become outstanding.

Because of its relatively small cotton crop and the varied conditions under which it is grown, North Carolina is at somewhat of a disadvantage in marketing cotton. To overcome this disadvantage, it will be necessary to continue to increase the distribution of fiber test results to the consumers who buy cotton for specific end uses.



North Carolina's poultry industry is expanding. More than 13,000,000 pounds of chickens and turkeys, most of which went to the armed forces, were officially graded by Markets Division specialists during the past biennium.

North Carolina's poultry industry is continuing to expand each year and consumer demand is gradually changing from fresh, ice-packed whole chickens to more cut-up and tray-packed whole chickens or parts, along with cut-up frozen poultry. To meet this demand, local processors will require a considerable amount of technical assistance from marketing specialists in changing their operations.

There are also definite indications that all dressed poultry moving through interstate commerce channels will have to be processed under the USDA inspection program. This means that several of the processing plants in this State will have to rebuild, remodel or make major changes before they meet these requirements if they expect to continue distributing poultry to their present customers. Here again, the demand for technical assistance will be great.

With an increased number of cattle in the State and a demand for quality beef by consumers, the need for a more concerted program of producing, processing, and distributing quality beef is becoming apparent. Better marketing facilities also must be established to handle the increasing numbers, and more grading service, both live grading for stocker cattle and grading of slaughter cattle, is being required. Division specialists in the livestock section will be called

upon to do this work in addition to performing their other duties.

The rapid increase in milk production in North Carolina, along with a growing consumer demand, has created a need for a better marketing system in the dairy industry. This has been met in part by the state-wide milk marketing regulations adopted in 1949 by the Commissioner of Agriculture under the milk audit law and amendments thereto. Additional technical assistance will be necessary in the future, however, in order to establish a more uniform and equitable system of marketing milk produced by the State's dairy farmers.

The program of distributing foods to schools and charitable institutions is steadily increasing. During the coming school year, the number of meals served in school cafeterias will increase by five million over the previous year. Since the volume of food handled is based on the number of meals served, additional duties and facilities for handling the increasing quantities of food will be necessary.

No one can accurately predict the future. However, present conditions, and future production plans, point to a continued increasing demand for marketing services. The Markets Division, although limited in personnel and equipment, stands ready to assist in every way possible. Close co-operation from other agencies, long enjoyed by Division specialists, will continue to be solicited in the coming years.

A summary of activities for the past biennium in the various phases covered by this Division follows:

TOBACCO

The marketing of flue-cured and burley tobacco, North Carolina's most valuable agricultural crop and the source of 57 per cent of the State's farm income, presents many complex problems.

Growers have a tendency to become careless in their preparation and marketing practices during periods of emergency. Since the Korean conflict this has been particularly true, and specialists in the tobacco section are placing stronger emphasis on the importance of properly grading and handling tobacco for market.

The primary problem is the failure of growers to recognize the U. S. Standard Grades under which tobacco is sold on the warehouse floors, and to prepare their offerings in such a way as to meet the requirements of the buyers. Such practices cause many lots of tobacco to be graded down, and command prices below the true auction market value. This is cutting into the tobacco farmer's margin of profit from the marketing end, while inflation and increased cost of produc-



Proper grading and handling increases the market value of tobacco.

tion is cutting his profits from the other end. The combination of these factors leaves many growers with a very narrow margin on which to operate their farm business.

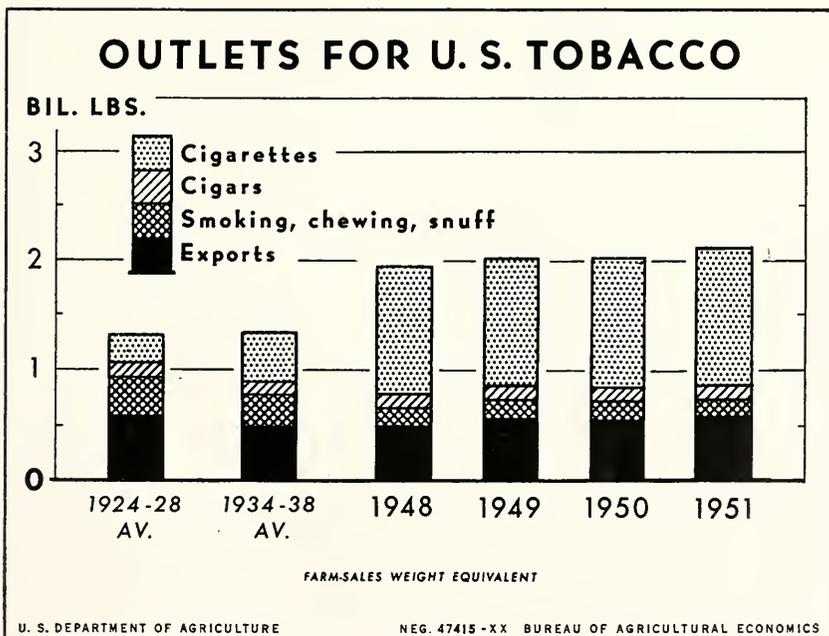
During the 1950-52 biennium, Division specialists, through co-operation with the U. S. Department of Agriculture under the Research and Marketing Act, were able to spend more time assisting flue-cured and burley growers with their preparation and marketing problems. This service program was conducted in co-operation with the Extension Service, Vocational Agriculture teachers, farm organizations, and warehousemen in 31 flue-cured tobacco growing counties and in 18 burley counties. Specialists are helping North Carolina tobacco farmers get a better understanding as to what the major problems are in preparing and marketing tobacco, and then assisting them in making adjustments to meet the situation by starting at the source of the problem. During the biennium, 5,203 growers were assisted by specialists in improving their practices of grading and handling tobacco for market so as to increase the market value by making the lots of tobacco more uniform in grade.

The second and third annual issues of the North Carolina Tobacco Report were prepared during the 1950-52 biennium. The popularity of this bulletin made it necessary to print 8,000 copies of both the second and third issues, which were distributed to growers,

warehousemen, dealers, libraries and others interested in tobacco marketing. The Tobacco Report reaches many growers who otherwise would receive very little marketing information, thus helping them to get a better picture of the tobacco marketing situation.

In complying with the statutes of North Carolina, the Department issued a monthly report of tobacco warehouse sales. These reports were distributed to a mailing list of about 1,000, including growers, bankers, railroad representatives, members of the industry, press, radio, and civic and farm organizations.

During the 1951 marketing season, a large quantity of some of the new varieties of flue-cured tobacco appeared on the warehouse floor. Because of the questionable characteristics of this tobacco it was discriminated against by tobacco inspectors and buyers. This situation caused many growers to receive prices far below the market value for their tobacco. Marketing specialists, working with specialists from State College, and officials from the tobacco branch of the U. S. Department of Agriculture, immediately sought to correct this problem and by the middle of the marketing season most of the trouble had been cleared up. Data collected in connection with this problem indicated that certain modifications should be made in the U. S. Standard Grades. Marketing specialists were instrumental in bringing about





These technicians are testing cotton samples for uniformity of fiber length in the Department's new Fiber Testing Laboratory.

many of these changes, which will better classify the type of flue-cured tobacco being grown today.

It is the unquestioned belief that cigarette and tobacco taxes are at or near the peak at which continued increase in consumption of tobacco products can be expected. Division specialists organized farm groups to appear before the Ways and Means Committee of the U. S. Congress in opposition to a proposed tax increase of 3 cents per package on cigarettes. The proposed increase was held to 1 cent per package which was considered a victory for tobacco growers.

Assistance has been rendered warehousemen on the Wilson, Greenville, Kinston, Greensboro, Windsor, Burlington and Ellerbe tobacco markets in solving buyer and warehousing problems.

Co-operation and assistance was rendered to the Chambers of Commerce in Lillington, Winston-Salem, Greensboro, and Asheville in aiding tobacco growers served in their respective areas.

The work thus far has made only a small dent in the surface. Tobacco is North Carolina's major crop and it is grown in 94 of the State's 100 counties. It will take many years of intensive work with growers before an over-all improvement in preparation and marketing practices will be noticeable, although much improvement on the individual basis is already apparent. This individual progress gives a favorable trend in connection with work done during the past few years.

COTTON

The position of cotton production in North Carolina has improved materially during the past biennium and is stronger today than at any time since 1929. This advantage is attributable to (1) the integration of cotton production, in varying ratios, with other crops in a diversified agriculture, (2) higher grade index, (3) improvement in gin service, (4) modern production practices, and (5) more efficient marketing procedures. Indications are that the average plantings will level off at around 750,000 acres.

Activities of Division specialists during the past biennium were concentrated primarily on (1) technical assistance to cotton gins and (2) initial marketing practices. The objectives are (1) to sustain the full potential value of seed cotton in the ginning process and (2) to promote the marketing of cotton on the basis of grade, staple and fiber qualities.

Projects of this nature are effective in direct ratio to on-the-spot inspection and personal contact. During this biennium, 1,280 gin visits were made for inspection of equipment and operating techniques and to plan new facilities and improvements. Each year, the ginners of North Carolina invest in new gin machinery about \$2 for every bale ginned. Modern equipment and improved operating techniques have reduced rough prep to 1.1 per cent for the 1951 crop. The record low prior to this biennium was 5.0 per cent in 1948.

The growing use of laboratory test results by initial consumers of raw cotton, in buying cotton in large lots or for specific end uses, places North Carolina at a disadvantage because of its relatively small crop and the varied conditions under which it is produced. To relieve this disadvantage, a fiber testing laboratory was set up by the Division in 1951, but not in time to release results during the ginning and marketing season. Arrangements have been made to test cotton fibers from approximately 30 gins in 16 principal areas during the 1952 season. Releases will be made at 10-day or two-week intervals and will go to the cotton trade, spinners, and producers requesting them. These tests will include fineness, tensile strength, maturity, and length uniformity.

All activities in connection with cotton have entailed close co-operation with other agencies concerned with cotton, as well as all raw cotton interest organizations.

As previously indicated, work with cotton is largely technical and has necessitated the services of specialists with a modicum of engineering resourcefulness. During the last year of this biennium, Division specialists undertook, as an exploratory project, to provide tech-



The Department has encouraged the construction of modern grain storage and handling facilities. Shown here is the new Cargill plant at Wilson.

nical assistance to corn millers. The problem with these mills is largely sanitation and the need to meet Pure Food Standards. This program has, of necessity, been limited because it was undertaken without any additional personnel. The demand for this service from the very beginning was more than could be met with the personnel available. It is hoped that necessary personnel can be added not only to take care of the immediate problems of the corn millers but to help expand this and other corn processing industries. Fortunately, quite a bit of basic engineering is applicable to cotton ginning and corn processing.

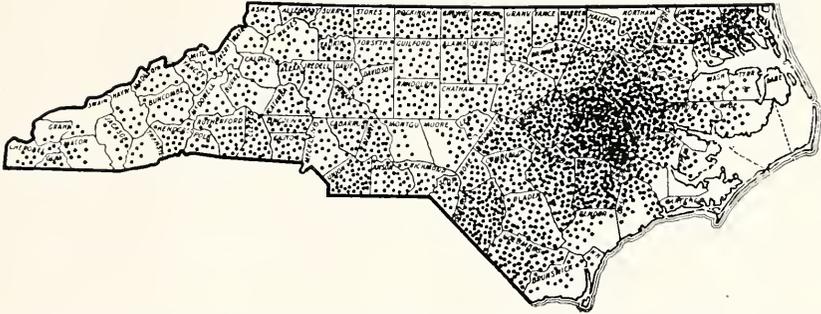
GRAIN

The rapid increase in production of all grains in North Carolina has demanded better marketing practices through harvesting, drying, storing and processing facilities.

North Carolina now produces 72 million bushels of corn, 14 million bushels of oats, 9 million bushels of wheat, 5 million bushels of soybeans, 1.5 million bushels of milo and 1 million bushels of barley. This is approximately 100,000,000 bushels of grain with inadequate storage on and off the farm.

The use of hybrid corn and the introduction of new small grain varieties, have increased the yields of grain, without having adequate storage or marketing facilities.

Storage alone is not enough. Proper care and conditioning before and during storage can prevent a loss of an estimated ten million bushels of grain annually in North Carolina.



This map shows the distribution of North Carolina's corn acreage (1950 crop). Each dot represents 1,000 acres.

Modern elevators and dryers erected for handling off-the-farm storage of grain are listed below:

Year	Storage Capacity Bushels	Drying Capacity Bushels Per Hour
1950-1951	300,000	800
1951-1952	460,000	1,200
Completed this biennium ..	760,000	2,000
Prior to 1950	750,000	3,800
Total completed	1,510,000	5,800
Planned for 1952-1953	400,000	2,000

These modern storage and drying facilities represent a step forward in keeping quality grain safely over a 12-month period. When the additional needs for storage facilities are met, local manufacturers will be assured of a constant supply of grain to meet their demands. Through a marketing program of this nature, surpluses at harvest season, which always result in a depressed market, can be handled more efficiently.

Grading of corn and soybeans for commercial movement has increased 100 per cent by truck; 100 per cent by rail; and 400 per cent by boat. A continued increase in this work is certain.

Grain grading demonstrations were conducted in all grain-producing areas of the State with farmers, buyers and processors attending. Plans to promote the use of established Federal grades in grain marketing were emphasized.

Through the efforts of Division specialists, a substantial saving to North Carolina farmers has resulted from the use of U. S. official hay grades. Hay can now be bought on U. S. grades with certificates attached.



New equipment aids specialists in grain grading laboratory.

Operators of seed-cleaning plants were visited and instructed in the preparation of seed for market so as to improve the quality of the product.

Division specialists co-operated with N. C. State College on research and extension problems in grain marketing, as well as with the Production and Marketing Administration in grading grain for Farm Storage loans. Co-operation was also extended the Department of Food Chemistry on grain problems under the Pure Food Act.

The increase in grain facilities and the demand for grain grading by farmers on the grain trade are now greater than the laboratory facilities and grain personnel can handle. It will be necessary to enlarge the laboratory and office space as well as add additional grain men.

FRUITS AND VEGETABLES

Improving the distribution of North Carolina's fresh fruits and vegetables and expanding market outlets for these commodities were the major objectives of Division specialists in fruits and vegetables during the 1950-52 biennium.

To conduct this work specialists prepared and mailed a special bulletin each year to more than 800 buyers of sound financial standing and known buying capacity. The bulletin contained information on

the volume and moving dates of all fresh fruits and vegetables produced in the State, as well as the location of markets or packing houses. Specific crop letters were also prepared and mailed to these same buyers about ten days before the harvesting date.

Additional work along these lines was handled through producer group meetings which were attended by independent buyers and chain-store and processing-plant buyers. Through these meetings, the buyer and seller were brought together and, as a result, the producer often received a greater share of the consumer's dollar for his commodities.

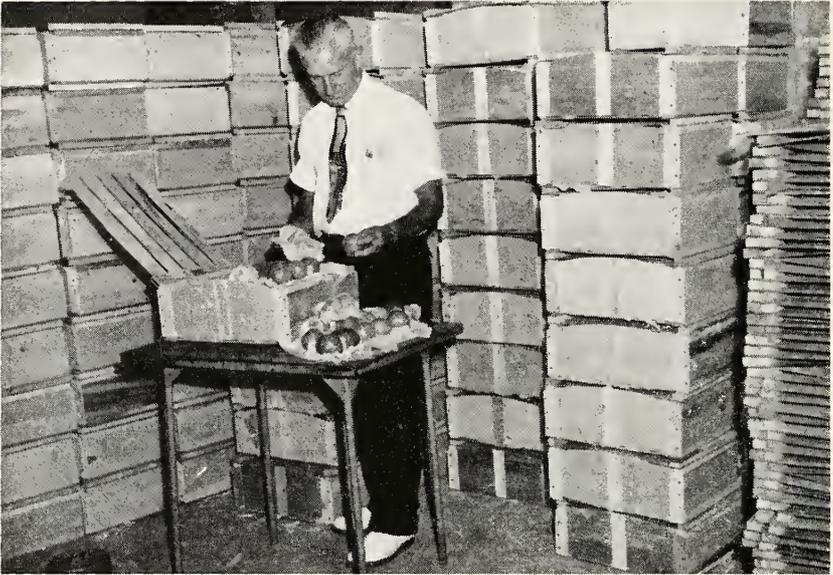
Specialists continued to keep in close contact with chain-store and independent-super-market buyers so that when a surplus of any one commodity existed arrangements could be made for special advertising and sales to help promote the movement of this commodity. Such efforts were of tremendous value to growers of fresh produce in the State and made it possible for many of them to harvest the remainder of their crops and sell on the open market.

Special assistance was given commercial peach growers in moving their crop to market. During the 1951-52 fiscal year, these growers were assisted in moving almost 600,000 bushels of peaches through various market channels without a surplus developing at any time during the season. To do this, it was necessary to plan an effective advertising program. This was done by special announcements over eight different radio stations, full-page advertisements in 16 newspapers and a special mailing of 1,500 circularized letters to buyers, prospective buyers and freezer locker operators.

Division specialists also inaugurated a system of marketing apples in the commercial producing area in western North Carolina which proved to be very satisfactory and encouraging to the growers. After meeting with growers to discuss their needs, the specialists were instrumental in getting a sales manager to establish an office in the main producing area and handle all varieties of apples grown on a commercial basis.

Further assistance in this program was given through working directly with growers, advising them on the dates to pick, obtaining information as to the daily loadings, assembling small loads to make up trailer or carloads, and supervising and assisting with proper loading.

One significant fact resulting from the work with commercial sweet potato producers and auction markets was the consolidation of two auction markets located only six miles apart. When these two markets were first established, growers were driving from one to the other in



Inspection of fresh fruits and vegetables for the armed forces during 1950-52 totaled more than 11,000,000 pounds.

an effort to get the highest price. With the two markets now combined into one, it is rapidly becoming one of the best sweet potato markets in the State.

By keeping a close check on the availability of good seed stock specialists were able to assist sweet potato growers in purchasing considerable quantities of disease-free seed stock. During the past fiscal year, for example, more than 5,000 bushels of seed stock practically free from internal cork were purchased. Each purchase of seed stock was carefully graded and supervised by the specialists to insure the grower of getting what he bought. By assisting growers in locating good seed stock, it is felt that the quality of potatoes is greatly improved and the grower is receiving a greater return from his labor.

Special assistance was also given in getting producers to change from shipping to commission merchants to selling f.o.b., which was found to be the best method of marketing fruits and vegetables. Establishment of the f.o.b. system of sales among the spring lettuce growers in eastern North Carolina proved highly satisfactory.

When the f.o.b. system was first established among the lettuce growers in 1950, it operated on a small scale. However, by the spring of 1951, the volume handled through the f.o.b. market had more than doubled.

Aware of the support and interest of this system of marketing, specialists arranged to get one of the State's largest fruit and vegetable buyers to establish an office in the lettuce area and handle the entire crop of these small producers before the 1952 spring lettuce crop was ready for harvest. As the harvesting season became nearer, specialists contacted growers as to their marketing intentions and found that more than three-fourths of them were planning to pack their crop co-operatively and pool their sales through f.o.b. market. Before the end of the season, the demand for North Carolina lettuce was far in excess of the supply, and growers once again felt that they had a most profitable season.

Fruit, vegetable and peanut inspection and certification remains an important service furnished by the Division specialists. It is important to note that the inspection program is self-supporting, and is paid for in the form of fees by those who request the service. In view of the fact that inspection is voluntary rather than compulsory, the volume of inspections made is evidence of the importance placed upon it by producers and shippers.

The men performing these services are employees of the Division, and are properly trained and licensed under co-operative agreement between the N. C. and U. S. Departments of Agriculture. All inspectors are trained and instructed to render services beyond inspection and certification duties. Included are such services as assisting growers and handlers in proper grading, packing, loading, and careful handling of the commodities. Greater emphasis is being placed on such services that inspectors may render.

During the 1950-51 fiscal year the Division's licensed inspectors certified 16,681 carlots and carlot equivalents of fruits, vegetables, and peanuts. During the 1951-52 fiscal year 19,137 carlots and carlot equivalents were certified. Of the 35,818 total carlots, peanuts and potatoes were the major items certified, with peaches, cabbage, apples, green corn, and lettuce ranking next in importance for certification.

During the biennium the Division furnished licensed inspectors at nine produce auction markets for grade determination on which prices were largely based for the produce sold at the auctions. During the 1950-51 year a total of 1,851,229 packages were graded by inspectors at the markets, and for the 1951-52 year 899,419 packages were inspected. Sweet potatoes, peppers, cucumbers, snap beans, and strawberries were the major items inspected, with squash, eggplant and lima beans next in importance. The decline in volume of inspections at the auction markets in the 1951-52 year was due to the unfavorable growing conditions for vegetables during the 1952 season.



Shipping point inspections are recognized as a valuable service to growers, shippers and buyers.

Five of the Division's specialists who are qualified and authorized to make receiving market inspections of fruits and vegetables, and the federal supervisor of inspections, inspected and certified 448 carlots of fresh fruits and vegetables for North Carolina produce receivers, and 4,759,473 pounds of fresh fruits and vegetables at, or for delivery to, military installations. During the 1951-52 year 402½ carlots and 6,550,172 pounds of fresh fruits and vegetables were inspected and certified for the same purposes.

A large volume of produce inspected for military installations was produced in North Carolina. This service rendered by the Division is very important as a protection to produce handlers against fraudulent practices by shippers of produce into the State, as well as furnishing a market for a large quantity of North Carolina fruits and vegetables. The Armed Services require inspection of the produce bought by the Quartermaster Market Center for use at military installations.

MILK

The dairy industry in North Carolina continued to show definite growth and progress during the 1950-52 biennium. The rapid increase in production of fluid milk and the increasing consumer demand has created many marketing problems for the dairy farmers.

This is especially true in the peak production season when the supply is in excess of consumer demand. Despite the steady increase in production of Grade "A" fluid milk each month, North Carolina is still deficit in fluid milk supplies for bottling purposes, except in the peak production months of May, June and July. It is necessary to import large quantities of fluid milk from other states in the fall and winter months.

The State-wide Milk Marketing Regulations adopted in 1949 by the Commissioner of Agriculture under the Milk Audit Law and Amendments thereto has contributed much toward a more uniform system of milk marketing in the State. Under this Act, the buyers of milk are required to submit monthly reports of all receipts and use of milk and must make uniform settlement to all producers in accordance with the class in which it is sold or used.

Marketing personnel have given considerable time and assistance to dairy plants in an effort to effect proper accounting and payment for milk received from milk producers.

Audits of plant records have disclosed underpayments to producers in some cases and corrections have been made immediately.

Monthly information of the production, sales, prices paid for milk and other data are collected by the Division. Complete information as to the quality of ice cream, butter, cheese and other dairy products manufactured is also collected. This information is compiled and released to the dairy industry and milk producers quarterly.

During the peak milk production period, dairy marketing specialists assisted in the assembly and movement of excess milk from areas of over-production to deficit areas in eastern North Carolina and other parts of the State. In the past, the movement of this milk has been a serious problem, due to the small quantities available from some plants and the long distance to the markets in need of fluid milk. This program has been improved materially, with the establishment of a large producer-owned co-operative plant in North Wilkesboro. This plant is operated as a bulk milk distributor and dairy products manufacturer. The establishment of this plant has assisted greatly in the assembly of milk for redistribution to deficit areas in North Carolina and surrounding states.

Continuing the informational work of the dairy marketing program, Division specialists worked with schools, colleges and adult groups. Much of this work was of a promotional nature aimed at increasing the use of dairy products. There still exists an important need for further efforts in this program. For example, approximately 62,500,000 half pints of milk were served in the school lunchrooms

during the year 1951-52 as compared with 7,722,141 half pints in 1943-44. Based on the average attendance in North Carolina, these figures show that only about one in three school children are drinking half a pint of milk for lunch. A great deal has already been accomplished in this endeavor; however, there is still a big potential market to be reached.

Co-operating with the State Library Commission, Division specialists developed, upon request, approximately 2,000 bookmarks in several designs which were used in promoting dairy products. These were used by several libraries and bookmobiles over the State. An additional 20,000 of these bookmarks were requested and will be available shortly for use throughout the State.

A simple cookbook was prepared giving recipes suitable for classroom work and for children at home. Several thousand copies of this booklet were prepared and distributed during the 1950-52 biennium and 5,000 more are in the process of being assembled. This was done in co-operation with the N. C. Milk Producers Federation.

GRADE "A" MILK PURCHASES FROM PRODUCERS BY
DISTRIBUTORS IN NORTH CAROLINA

	1950-51	1951-52
	Lbs.	Lbs.
July	37,150,439	42,301,008
August	36,149,980	41,614,473
September	35,202,110	39,675,934
October	35,668,192	39,334,465
November	35,136,211	36,806,458
December	35,774,562	39,603,399
January	37,890,375	42,256,084
February	35,237,682	40,914,868
March	40,760,830	43,602,637
April	43,064,027	46,764,910
May	46,950,594	49,526,093
June	42,167,470	43,952,631
	461,152,472	506,352,960

FLUID MILK IMPORTED FROM OTHER STATES BY
DISTRIBUTORS IN NORTH CAROLINA

	1950-51	1951-52
	Lbs.	Lbs.
July	124,512	751,079
August	989,284	1,207,878
September	4,853,617	2,908,368
October	4,417,096	5,523,980
November	3,712,540	5,019,265
December	2,326,554	3,379,581
January	2,194,131	2,201,586
February	1,927,002	1,421,993
March	2,745,988	1,646,878
April	1,148,555	701,092
May	694,547	780,159
June	382,526	1,427,307
	25,516,352	26,969,166

NUMBER OF GRADE "A" MILK PRODUCERS IN NORTH CAROLINA

	1950-51	1951-52
July	3,828	4,252
August	3,865	4,287
September	3,972	4,336
October	4,022	4,330
November	4,069	4,359
December	4,053	4,368
January	4,159	4,425
February	4,124	4,430
March	4,168	4,452
April	4,220	4,477
May	4,198	4,466
June	4,228	4,483

FLUID MILK AND CREAM SALES TO CONSUMERS BY
DISTRIBUTORS IN NORTH CAROLINA

	1950-51	1951-52
	Lbs.	Lbs.
July	32,800,898	36,717,073
August	34,785,533	40,027,243
September	38,362,749	42,509,350
October	37,831,590	45,539,537
November	37,057,389	42,631,234
December	35,601,033	41,177,880
January	36,691,907	43,262,542
February	35,240,582	42,169,500
March	39,974,715	44,354,091
April	39,133,162	44,700,588
May	39,764,413	45,999,001
June	36,910,777	41,274,133
	446,154,748	510,362,172

GRADE "A" AND UNGRADED MILK PURCHASES FROM PRODUCERS AND
FLUID MILK IMPORTED FROM OTHER STATES AS REPORTED
BY MILK DISTRIBUTORS IN NORTH CAROLINA

Year	Grade "A" Milk	Ungraded	Fluid Milk Imported
	Lbs.	Lbs.	Lbs.
1947	216,112,693	111,228,019	63,880,561
1948	256,361,205	96,665,367	78,799,151
1949	339,827,226	75,995,090	53,007,639
1950	426,965,826	64,199,236	30,001,193
1951	485,406,715	53,388,884	27,882,900
1952 (6 months Jan.-June)	267,017,223	22,781,504	8,179,015

LIVESTOCK

Major objectives of the Division's livestock specialists during the 1950-52 biennium were: (1) Securing breeding and stocker animals for commercial production; (2) marketing the cattle when finished for market; (3) moving cattle from surplus areas of the state into areas where there was a demand.

In accomplishing the first objective, more than 200 farmers throughout the state were assisted in the purchase of 2,162 high quality beef heifers. These cattle were purchased through the use of a revolving fund established in the Department several years ago to promote a better livestock industry in the state. Special assistance was also given in selecting and buying 445 head of cattle which were paid for directly by 48 farmers. Most of these cattle were purchased in western counties and placed in piedmont and eastern counties of the State.

More than 3,100 head of high quality calves (steers and heifers) were graded and sold by grade through organized feeder calf sales at various points over the state. Assistance in judging, grading and securing buyers was also given at 4-H and FFA Baby Beef Shows and Sales in which 2,200 steers were entered.

Division specialists again used the revolving fund to purchase 4,350 western yearling ewes which were sold to 280 North Carolina farmers. Approximately 800 farmers were assisted in moving more than 15,700 lambs through the 45 organized lamb pools held over the state. Lambs consigned to the pools were graded choice, good, medium, common and culls and were sold in carload lots to the highest bidder. Pool sale prices averaged from five to fifteen per cent above small-lot sales at local markets.

Special assistance was also given sheep producers in handling, pooling and selling 320,000 pounds of wool. Assembly points for the wool pools were Washington, Winston-Salem, Lumberton, Sparta, West Jefferson, Boone and Newland.

Realizing that improvements in purebred herds help improve the quality of commercial cattle in the state, Division specialists assisted in conducting 21 purebred cattle sales in which 1,420 head were sold.

In co-operation with N. C. State College, Division specialists checked live and carcass grades of cattle sold in 15 North Carolina auction markets for a five-week period. This survey gave a comparison of cattle and prices received for them on different markets throughout the state. It also showed the differences in prices paid for the same grade of cattle on large and small markets. Results of the price study indicated an advantage for larger markets.

In a survey of 75 representative state restaurants and 75 retailers of beef, it was found that 85 per cent of the good and choice beef purchased by these establishments was purchased from out-of-state packers. Reasons given for this were the lack of a state grading program and the lack of a dependable year-round supply of quality cattle.

With an increased number of cattle in North Carolina and a demand for quality beef by consumers, the need for a program of producing, processing and distributing quality beef in the State is apparent.

Division personnel encouraged producers to grain-feed their best steers and produce quality beef, using mostly grain produced in North Carolina. Arrangements were made with several state packers to buy quality cattle on a carcass grade and weight basis. It was believed that this type of marketing would assure the producer a market price for his cattle because he would have the advantage of selling them on their merits.

One valuable phase of the livestock marketing program included periodic checks with producers to determine when their cattle on feed would be ready for slaughter and assist them in locating a market for these cattle. A survey of cattle on feed during the past year showed 1,492 head with 80 producers reporting. Approximately 40 producers were assisted in actually moving more than 800 head of cattle to reliable slaughterers. Comparative figures on the live price and carcass grade price which were kept on a large per cent of these cattle indicated in every case that the carcass grade and weight price was a distinct advantage to the producer.

Co-operating with the Agricultural Extension Service, Division specialists assisted in conducting 56 livestock schools in an equal number of counties in the State during the winter months of 1951. In 1952, assistance was given in conducting 54 similar schools in the same number of counties.

Special assistance was also given in conducting six purebred ram sales in which 156 rams were sold. In addition, Division specialists purchased 26 purebred rams for use in commercial flocks.

Increasing numbers of livestock in the state are bringing about a greater need for better marketing facilities. Also a definite demand is developing for more grading service, both live-grading for stocker cattle and grading of slaughter cattle for sale. Special efforts have already been started toward filling these needs.

CO-OPERATIVES

Farm co-operatives made considerable progress during the 1950-52 biennium. Fourteen new associations were formed along with several educational types of organizations. Membership is now estimated at about 200,000 farm families with many members interested in one or more associations.

Division specialists assisted many of these associations and their members by explaining State and Federal laws; by aiding in the preparation of their charter, by-laws and marketing agreements, as well as amendments to older corporate set-ups to bring them in line with the new regulations.

Approximately 2,000 milk producers, the largest group of farmers to establish their own business during the biennium, organized the Yadkin Valley Dairy Co-operative, Incorporated at Wilkesboro.

All co-operatives are required by State law to report to the Division of Markets. These reports are analyzed, and constructive suggestions made for future operations.

Great need is developing for assistance in modernizing the corporate structure of older co-operatives as changes are constantly being made in tax laws.

COMMODITY DISTRIBUTION

Under a co-operative agreement between the U. S. and N. C. Departments of Agriculture, the Markets Division acts as distributing agency for all foods donated to the State for use in public schools and charitable institutions.

Foods made available for distribution are the result of one of two purchase activities of the USDA:

- (1) *Section 6 Commodities:* Commodities purchased under Section 6 of the National School Lunch Act, which provides funds to purchase foods that will help schools meet nutritional needs for the children.
- (2) *Section 32 Commodities:* Commodities purchased with funds provided under Section 32 of the Agricultural Adjustment Act, as amended, which provides that an amount equal to 30 per cent of the customs receipts may be used for surplus removal and price support programs.

Objectives of the Commodity Distribution Program as operated by the N. C. Department of Agriculture are:

- (1) To assist in the USDA's price support and surplus removal program by furnishing outlets for agricultural commodities purchased.
- (2) To encourage the consumption of these commodities in schools and institutions and create an expanded market.
- (3) To provide a means of getting these foods to the recipients so that the schools and institutions may furnish nutritionally adequate meals and thereby improve the health of the nation.

Serving as distributing agency the North Carolina Department of Agriculture has the following responsibilities:

- (1) To approve or disapprove all requests by schools and institutions for participation in the program.
- (2) To determine the adequacy of storage, preparation and serving facilities of the participating schools and institutions.
- (3) To request and accept only such quantities of foods as can be fully utilized.
- (4) To make certain that commodities are used solely for the benefit of eligible persons and are not sold or traded.
- (5) To keep complete books, records and receipts covering all transactions.

As a means of assuring adequate storage of foods, cold storage and common warehouses at Butner are utilized. The Department is in charge of these operations and distributes some of the commodities from that point. A great many of the items handled are distributed direct from freight car door at the receiving point.

Quality and Value of Commodities Distributed:

SECTION 6 — NATIONAL SCHOOL LUNCH ACT

Commodity	1950-51 (Carloads)	1951-52 (Carloads)
Beans, Canned Snap		12
Beans, Dried	8	8
Cherries, Canned		8
Cheese, Process	11	16
Grapefruit Sections, Canned	8	
Peaches, Canned		18
Peanut Butter	7	3
Peas, Canned		4
Pork, Smoked Shoulder Picnics	14	
Prunes, Dried		8
Tomatoes, Canned	19	12
Tomato Paste		1
Tomato Puree		8
	—	—
TOTAL	67	98

SECTION 32 — "SURPLUS FOODS"

Apples, Fresh	209	29
Beets, Fresh	3	
Butter, Creamery	31	
Cherries, Canned	10	
Cranberry Sauce	12	
Eggs, Dried	6	10
Honey	3	10
Milk, Dried	6	13
Orange Juice, Concentrate	10	15
Pecans, Shelled		6
Potatoes, Irish	215	
Turkeys, Frozen	7	
	—	—
TOTAL	512	83
	—	—
TOTALS	579	181
WHOLESALE VALUES	\$2,614,126	\$2,208,197



This housewife selects fresh frozen, cut-up North Carolina fryers.

These donations from the USDA make up only a small percentage of the total amount of food used in schools as the majority of it is purchased locally by the schools. These local food purchases total about nine million dollars each year.

The North Carolina Department of Agriculture set up a \$100,000 revolving fund in September, 1950, for the purpose of paying freight and re-packing charges. In several instances items were made available only in large bulk containers, such as 64-pound blocks of butter, 200-pound barrels of dried eggs, 175-pound drums of dried milk. Division specialists negotiated contracts with private firms to re-package these items into smaller packages which could be used more readily by the schools. Payments for these services, freight charges, warehouse rent and labor were paid from the revolving fund. Where this fund was used, recipients reimbursed the Department for the amount expended.

POULTRY AND EGGS

The increased consumer demand for high quality poultry and eggs was largely responsible for the tremendous progress made in marketing these products during the biennium.

Division specialists made a special effort to assist farmers and dealers and encourage them to adopt better methods of assembling,

processing and distributing poultry and eggs in order to fulfill consumer demand. These improved methods and techniques are assuring the consumers of a high quality poultry product and, at the same time, are reducing the costs of operation. They are making it possible for consumers to purchase quality products at reasonable prices which is beneficial in the expansion of the industry. The poultry industry in general reacted favorably to the changes necessary to meet consumer requirements.

Specialists in the poultry section made periodic checks for egg quality throughout the State in order to determine the quality of eggs being offered for sale by retail outlets. These inspections were made in 208 stores located in 38 counties, and 2,609 dozen eggs were checked. The results of these surveys indicated some disregard for quality; therefore, retailers were given instructions on the techniques of grading and how to care for their eggs. Wholesale distributors were given assistance in training 23 egg candlers. Five organizations were given technical assistance in remodeling or building egg candling rooms.

The Federal-State egg grading program made noticeable progress during the biennium. Twelve official egg grading stations, graded and certified 3,999,300 dozen eggs. Eighteen individual persons were given training and were licensed to grade eggs officially.



Planning assistance is provided for processing plants.

It is evident from the reaction of consumers in the past that more and better eggs should be offered for sale in one-dozen cartons. Additional help should be given to producers and distributors in grading, packaging, and distributing eggs.

Personnel of the poultry section drew plans for eight modern processing plant operations and gave technical assistance in remodeling or enlarging seven other similar poultry processing plants. Two additional plants started operating under the Federal-State grading and inspection program, providing an increased outlet for North Carolina grown chickens and turkeys.

A total of 6,887,232 pounds of chickens and 6,562,785 pounds of turkeys were officially graded for plants under contract during the biennium. In addition, 390,922 pounds of poultry processed by plants that did not meet USDA inspection requirements were graded for the Veterans Administration. This was made possible by an agreement with the Veterans Administration and USDA officials in order that additional outlets could be realized for North Carolina grown poultry.

Division specialists inaugurated a retail poultry merchandising training program during the biennium. Co-operating with the USDA, Poultry and Egg National Board, other agricultural agencies and allied industries, the specialists conducted 33 merchandising classes in 21 towns with a total attendance of 853. Instructions were given to those attending, predominately retail market men, on the latest methods of cutting, packaging, and displaying poultry and the proper grading and care of eggs.

Two periods of surplus broiler production occurred during the biennium, one in January, 1951 and another in May, 1952. It was evident that some means of disposing of the over supply of poultry had to be developed if the North Carolina broiler industry could expect to survive. Consulting with members of the industry, the specialists were instrumental in planning and conducting an intensive consumer campaign during both periods of surplus supply. First, assurance of full co-operation was obtained from the entire industry. After this, numerous radio, television and newspaper releases were prepared in sequence calling attention to the high quality poultry being offered to North Carolina consumers at very reasonable prices. The response was gratifying with many processors increasing their output as much as 30 per cent in order to take care of the increased demand.

In 1951 the price went to normal within two weeks and in May, 1952 two million broilers moved from North Carolina farms during the two weeks' drive and the prices went back to normal within four weeks. Many people closely associated with the broiler industry stated



The State's expanding turkey industry calls for up-to-date processing facilities such as this new plant.

that the surplus removal campaign in May, 1952 was the salvation of the industry. Better co-operation has never been obtained than was shown during the surplus removal programs.

Although approximately 90 per cent of the poultry processed and distributed in North Carolina is whole ice-packed poultry, the consumer trend is for cut-up, tray-packed and whole chickens or parts with a gradual increase in demand for cut-up frozen poultry. In addition to this consumer trend, there are definite indications that within a short time poultry moving into interstate commerce will have to be processed under the USDA inspection program. This means that at least 10 North Carolina plants will have to rebuild, remodel, or make some major changes if they are to continue distributing poultry to their present customers. Personnel of the poultry section propose to be in a position to help North Carolina processors meet consumer demands and to furnish technical assistance to operators who desire to ship North Carolina-processed poultry into interstate commerce. This will assure market outlets for the expanding industry.

MARKET NEWS

Increased demands for additional market news information were met in part by providing service on two new commodities and improving the dissemination of news for other commodities.

In the fall of 1950 the Market News Service, through a co-operative agreement between the U. S. and N. C. Departments of Agriculture, began reporting official daily prices on corn, soybeans and small grains from five North Carolina markets. This service was quickly recognized by the trade, and before the end of the following

year, several additional markets had been added from which daily quotations were obtained. At present, prices are compiled and reported daily to the press and radio from 14 local markets and four terminal points. A weekly summary of the local and national markets is mimeographed and mailed to approximately 200 interested persons over the State.

In co-operation with the Cotton Section of the Markets Division and the Agricultural Extension Service, arrangements were made in 1951 for providing daily market quotations on cotton from six of the State's leading markets. Prices were based on middling and strict low middling cotton and 1 1/32 inch staple. These quotations were obtained early each day during the cotton harvesting season and released to the press and radio for adequate coverage by noon. The value of this service is evidenced by the splendid co-operation that buyers and others volunteered to render for providing it again in 1952.

With the additional coverage of these two commodities the market news work in North Carolina now includes cotton, grain, fruits and vegetables, poultry and eggs, livestock, and tobacco.

To provide daily market price information as accurately and efficiently as possible, the Market News Service continued to maintain two offices. Information for the eastern and piedmont counties was compiled and edited in Raleigh, and for the western counties in Asheville.

An average day at these offices would include approximately 50 telephone calls from producers and handlers of farm products. Their requests for information are met by reports received over the approximately 8,000 miles of leased wires which connect Raleigh and Asheville with leading terminal markets throughout the nation. Information received over the leased wire, along with that obtained from local dealers and handlers of farm products, is used in preparing five different radio scripts and seven different press releases. Much of this same information is used in more than 1,000 market news bulletins which are prepared each day and mailed to interested persons upon request.

STATE MUSEUM

HARRY T. DAVIS
Director

Hopes for new and better quarters for the State Museum of Natural History were beginning to materialize as the 1950-1952 biennium closed. After many months of uncertainties and unavoidable delays construction work was about to get under way on the new Annex to the Agriculture Building, a considerable portion of which will be allotted to the Museum.



HARRY T. DAVIS

Construction of the Annex on the site of the old Museum was authorized by the 1949 General Assembly and plans were completed in 1950, but the outbreak of hostilities in Korea during the summer of that year was followed by material shortages and restrictions on all but the most essential construction projects. For a while it appeared that federal authorities would permit work on this building to proceed and a contract was awarded early in 1951 after the Legislature supplemented the original appropriation to care for increased costs.

It was not until the spring of 1952, however, that the "go-ahead" signal was finally given. This meant, of course, that all exhibits and equipment would have to be removed from the old building; but the Museum was permitted to retain two large halls at the Halifax Street entrance of the Agriculture Building. The most popular and instructive displays were concentrated in this space, which remains open to the public.

Other materials and equipment were transferred to storage space in the Mansion Park Building, where the Museum staff was also provided with offices and working space.

The actual packing and transfer of exhibits came in April and May, 1952. Recording and caring for materials accumulated through the years was a strenuous undertaking. Some of the items had been acquired nearly a century ago and much of the stored material had not been moved in 52 years. Some of this was discarded as it was of no further value; but the remainder, nevertheless, required four large rooms for storage.

With new quarters in prospect, the staff is planning to utilize them to the best advantage. This entails a study of the best current museum structures, methods and techniques, and applying the "know-how" to

our new facilities. New and more commodious quarters will require rearrangement and new backgrounds for former exhibits and will provide space for additional displays. The staff is also planning a more effective educational approach to Museum visitors.

On May 1, 1952, Commissioner Ballentine brought the Museum program to the attention of the Board of Agriculture and proposed that he appoint a committee of lay citizens and representatives of State agencies having related interests to advise and assist the Museum staff. He also expressed a desire to obtain temporary professional services to help in developing the new program for the Museum. The Board approved these suggestions.

ACCESSIONS

Accessions formally recorded for the two years number 1,362. Some of these included several items. To summarize, there were 107 rocks and minerals, 39 fossils, 44 botanical specimens, 197 insects, 21 other invertebrates, 36 fishes, 220 reptiles and amphibians, 106 birds, 58 mammals, 86 American Indian, 22 handicraft and farm implements, 418 pictures and lantern slides, 28 key library volumes and some 400 bulletins and pamphlets from exchanges. Some of these are quite important and others are merely incidental to identification for public services.

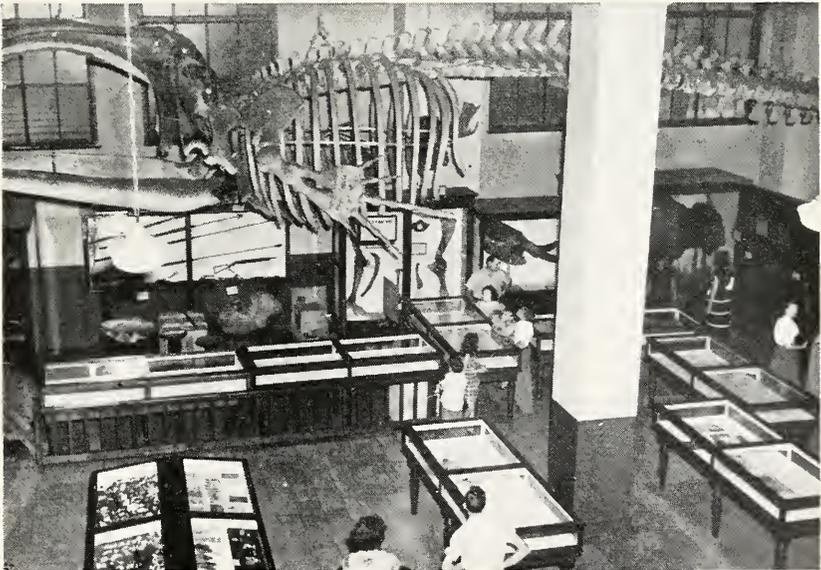
EXHIBITS

Major exhibits were not attempted while awaiting a program of dismantling, packing and moving. Portable exhibits were built and others rebuilt and improved. Most of our effort was devoted to planning exhibits for the new building and mounting such animals as we could in a way as to provide foundations for new exhibits.

In moving, many of the most complicated and costly exhibits were crowded into the two front halls that remain. This saved damage to cases and specimens that would have come with removal and storage. We thus have a reasonably good series of exhibits in smaller space, and a contact point for those interested in the exhibits or seeking information.

ATTENDANCE

A study of our attendance records indicates reason for optimism, although there was a small decline for the biennium, due to uncertainties and limitations during our transition period. News stories about demolition of the old Museum naturally discouraged visitors.



A 52-year-old section of the Museum of Natural History has been torn down to make way for a new Museum and office building. Pending completion of the new structure, many exhibits have been placed in storage; but the Museum has concentrated some of its more popular displays in two large halls in the Agriculture Building, with a separate entrance on Halifax Street, and these halls remain open to the public seven days a week.

It is encouraging that we had 840 high school classes and 1,118 other school groups during the biennium. These varied from eight to 190 in numbers and came from as far as Ocracoke and Shallotte in the east to Murphy and Warrentonville in the west. Of the 99 religious groups two came from as far as Portsmouth and Suffolk, Virginia. There were 33 farm groups, one of which was from Germany. There were 36 college science classes, 41 student nurse classes, and 101 Scout groups. For the first time we had three "Golden Age" groups.

In connection with attendance, it might be well to observe that values from a Museum can be measured by the number and receptivity of visitors multiplied by the number of interesting and effective exhibits.

PUBLICATIONS

The Information Circulars on natural history subjects related to this State continue very much in demand. We have these printed, mimeographed and multilithed. Some 270,000 copies on 25 different subjects have been distributed during the two years.

Some 45,000 printed leaflets giving the story of the Museum and its exhibits have been distributed to visitors. One thousand copies of the Museum's Biennial Report are mailed in exchange with other museums and institutions from which we receive valuable research and library publications.

The illustrated booklet, POISONOUS SNAKES OF THE EASTERN UNITED STATES continues to be in popular demand. The Museum has also distributed at cost, or free, hundreds of copies of TAR HEEL STATE, FOREST TREES OF NORTH CAROLINA, FOOD AND GAME FISHES OF NORTH CAROLINA, HISTORY AND POINTS OF INTEREST IN RALEIGH, and YOUR DEPARTMENT OF LABOR.

The book, BIRDS OF NORTH CAROLINA is now out of print and initial steps have been taken to bring out a revised edition. A book on mammals is also in preparation.

SERVICES AND COOPERATIVE WORK

The staff members have continued to work closely with the Carolina Geological Society, the Archaeological Society, the Carolina Bird Club, the N. C. Academy of Sciences, the Resource-Use Education Commission, Recreation Commissions, and the biology departments of our colleges. Talks have been prepared and made to various schools, clubs and other groups. We have helped with nature studies in our parks, provided the Wildlife Resources Commission with educational materials, and assisted the Hall of History in laying out exhibits. Each

year there are hundred of inquiries from citizens, and hundreds of biological and mineral specimens for laboratory analysis and identification. Hundreds of hunters and fishermen are given advice and assistance to enable them to take care of their trophies.

Several community natural history museums are being, or have been organized in North Carolina, notably at Durham, Fayetteville, Charlotte, Rocky Mount, Wilmington and Greenville. It has been our privilege to help in the planning of these and to provide them with specimens and cases where we had them to spare.

We have made other gifts to the State School for the Blind, the Albemarle City Schools, and turned over to the State Fair Division several old farming implements and a replica of the Liberty Bell.

Research material has been lent to universities in this State as well as in Massachusetts and Georgia. Native quartz crystals were supplied to the Naval Electronic Research Laboratory in Portsmouth, Va.

During June of 1952 one of the major U. S. petroleum companies sent a research man to examine and take small study portions from the cores of the 10,000 foot well that was drilled by the Standard Oil Company on Cape Hatteras in 1946.

Program packages have been supplied to some 131 school, club, and other groups during the two years. A few of these have been outside our State, such as the ones for the Crippled Childrens' Camp in South Carolina in 1951. Our information indicates that all these reached a total audience of some 13,675 persons. The material consisted of slide films, kodachrome slides and bird song records.

PERSONNEL

North Carolina's rich and varied plant life, both cultivated and native, has failed to receive the attention it deserves in the exhibits and educational activities of this Museum. To correct this situation the director plans to include in budget requests for the next biennium additional funds for the employment of a botanist, whose duties will include the collection and preparation of plant and flower exhibits.

PUBLICATIONS DIVISION

BLACKBURN W. JOHNSON

Editor



BLACKBURN W. JOHNSON

Demands on the Publications Division are in direct proportion to the number and extent of the activities of the whole Department of Agriculture. To keep the public fully informed on the work and programs of the Department means that this Division must keep pace with the new or expanded responsibilities of all of the other divisions combined.

Attempting to carry a constantly growing work load with no increase in staff has been the major problem of this Division in recent years.

Only a brief study of the reports of other divisions for this biennium will serve to give some measure of the increase in demands on the Publications Division—though they reflect but a part of it.

The volume of news releases and special articles prepared by the Division during the past two years was augmented by a number of educational drives to acquaint the public with specific features of the Department's work and agricultural programs sponsored in cooperation with other agencies.

Wide publicity has been given to such projects and movements as the new on-the-spot inspection program launched by the Seed Testing Division, the nature and purpose of the cotton fibre testing laboratory installed in the Markets Division, the gasoline and oil inspection program and the new portable laboratories used in this work by the Weights and Measures Division, control measures and recommendations by the State Veterinarian to prevent the spread or entrance of infectious livestock diseases threatening North Carolina.

Notable among the campaigns of a cooperative nature have been the "Nickels for Know-How" referendum, the Challenge Program recommended by the North Carolina Board of Farm Organizations and Agencies in its publication, "North Carolina Accepts the Challenge Through a United Agricultural Program," Farm and Home Week and the "Green Pastures" promotion.

Representing the Department on the North Carolina Resource-Use Education Commission, the editor has participated in numerous conferences resulting in the release of radio transcriptions on the fields

of work and responsibility of the various State agencies, and a color-sound film, "Tar Heel Family", which depicts the resources and needs of North Carolina.

Distribution of three prints of the film purchased by the Department was handled through this Division. These were sent on request for showing to schools, service clubs, youth organizations, agricultural meetings and civic groups in the State, and it is conservatively estimated that this distribution reached some 6,000 persons. By special arrangement, the film was also sent to a native Tar Heel now teaching at Wisconsin State College, who wanted to show his classes and faculty colleagues "that North Carolina is truly one of the great states in the Union," and to San Quentin Prison on request of the Supervisor of Prison Education.

A steady growth in circulation of the semi-monthly paper, *Agricultural Review*, has taxed the facilities of our mailing room. The mailing list for this publication now totals nearly 73,000 names of individuals who have requested this paper. The 48 issues of the *Review* prepared and edited by the Division during the 1950-52 biennium included 21 eight-page issues and 27 four-page issues, a total of 276 pages.

Growing out of a new responsibility placed in the Analytical Division by the General Assembly in 1947, and facilitated by increased appropriations in 1951, has been the addition of another annual report to *The Bulletin* series which this Division edits and prepares for printing. This has to do with inspection and results of analyses of economic poisons, and is published under the short title "Insecticide Report."

Similar annual reports in this series cover inspection and analysis of feeds and fertilizers, and a statistical and marketing report on tobacco. In all, eight issues of *The Bulletin* came off the press during the past biennium, including a three-year summary of the work of the Seed Laboratory.

This Division also provides secretarial service to the Board of Agriculture, and in this phase of its work, too, is reflected the general increase in departmental responsibilities and activities. As a part of this service the Publications Division is responsible for continuing the system of codification of regulatory measures adopted by the Board, which was inaugurated in 1950. This involves checking codification on all regulations and amendments, preparing them for the printer, proof-reading and distributing them to clerks of the courts and other State officials as prescribed by law. In this biennium 23

separate amendments, totaling 38 printed pages, have been so handled, and two complete chapters, comprising 38 pages, were revised and reprinted.

Demands for information on North Carolina agriculture in general, and the Department in particular, made it necessary for the Division to write four new pieces of literature for general distribution. One deals with the organization and functions of the Department, another outlines the legislative provisions under which the Department operates, and a third is a visitor's guide for groups who come to tour the building. The fourth is a brief summary of the State's agriculture.

Other functions of this Division, all of which have increased in volume during the biennium, include assistance to many individual visitors, dealing with innumerable telephone inquiries, and responding to thousands of letters, all seeking information on some phase of agriculture or farming.

By its very nature the Publications Division is a clearing-house of information on the separate divisions of the Department, and as such is called upon to fill in questionnaires and make a wide variety of special studies for other agencies both within and without the State.

The Division has met all these demands to the best of its ability and the limit of its facilities. With only four employees, two on the editorial staff and two in the *Agricultural Review* mailing room, it goes without saying that the needs have not been met with maximum effectiveness, and in some cases not even adequately. Nevertheless, the results have been gratifying and often in greater proportion than could be expected under the limitations.

The Commissioner's policy of an "open door" to both press and public has paid dividends to the Department as well as to the State. But it has taxed the capacities of this Division to its outside limit, and the need for a larger staff and increased printing appropriations has now become acute.

SEED TESTING DIVISION

W. H. DARST

Director



W. H. DARST

Efficiency in seed control depends on the effectiveness of three phases of the work involved, namely: Inspection, testing, and administration of the seed law. The importance of inspection has received new emphasis during the past biennium with the inauguration in North Carolina of a new policy best described as "on-the-spot seed control" — an innovation which already is bringing splendid results and holds promise of greatly improving seed supplies.

This policy places greater responsibility for seed control in the hands of trained seed inspectors. In the past inspectors, for the most part, simply sampled seeds on sale and sent the samples to the laboratory in Raleigh for analysis. If the seeds failed to meet the stated guarantee or other requirements, then it was up to the Seed Testing Division to take whatever steps that were necessary under the law. A time lapse of one to several weeks usually occurred between the date of sampling and completion of the analysis.

If a violation of the law was indicated by the analysis, the usual corrective action was issuance of a "stop-sale" order. But by the time instructions for such an order could be put into effect, part or all of the seed had been sold, or perhaps planted.

Yet the relative quality of seed on sale in a dealer's store or warehouse usually can be determined by a trained seed inspector. Recognizing that more efficient seed control depended on better inspection, this Division launched a new program of developing and training better qualified field representatives.

Satisfactory personnel could hardly be obtained, however, at the level of pay provided for ordinary inspectors. This was recognized by Commissioner L. Y. Ballentine and Assistant Commissioner A. Hugh Harris, who gave their approval to a new classification, that of "seed specialist". They helped in obtaining such a classification, with higher salary ratings, from the State Personnel Department. The requirements for this classification call for a college degree and minimum experience of one year as an analyst in a seed laboratory.

A graduate of North Carolina State College's School of Agriculture who had been trained as a seed analyst was employed in 1950

and a year later another man with similar qualifications was added. (Three others who could qualify as seed specialists were placed on the field force in July, immediately after the end of the biennium, making a total of five trained inspectors available for this work.)

A study of the causes of Seed Law violations in the past revealed that 90 to 95 per cent of them were due to mislabeling of seeds as to germination and noxious weed seed content.

The new seed specialists are equipped and trained to use small portable seed analysis kits and equipment for determining the viability of seeds by the new staining method, known as the Tetrazolium color test. Without this test, a new development, testing for germination at the point of sale would be impractical. The new field testing methods enable seed specialists to analyze seeds for purity in about 15 minutes, and to complete dependable germination tests for many seeds in one to four hours.

When a field representative determines by these methods that a particular lot of seeds is mislabeled as to noxious weeds, purity of variety, or percentage of germination, he is authorized to issue a "stop-



Inspector Kenneth M. Mintz draws an "official" seed sample, using a method prescribed by the Association of Official Seed Analysts.



North Carolina has been a leader in developing "on-the-spot" seed testing, which has been made possible by the discovery of new techniques. A portable analyzer is being used by an inspector in the top picture in a test to determine purity. In the lower picture he is employing the Tetrazolium color test to determine the viability of seed corn. If he finds a particular lot of seeds fails to meet Seed Law requirements, he is authorized to issue a "Stop Sale" order.

sale" order on the spot. A corresponding sample is then sent to the Department of Agriculture in Raleigh for verification in an official laboratory test. Field representatives have been instructed to use immediate "stop-sale" orders only when the results of field tests are safely conclusive of violations, and experience has indicated that they have not abused this trust of authority.

During the biennium a total of 39,763 samples of crop and vegetable seed were analyzed and tested by the seed laboratory. Of this number 37,245 were "service" samples sent to the laboratory by farmers and seed dealers for analysis and tests. A total of 2,518 "official" samples were analyzed. These were taken of seed on sale by inspectors for compliance with the seed law.

A total of 533 "stop-sales" were issued on lots of seed found to be in violation of the law. Several hearings on seed law violations were held before the Commissioner of Agriculture. Flagrant violations of the seed law were tried in the recorder's courts of Franklin and Columbus counties, and convictions obtained.

SOIL TESTING DIVISION

DR. J. W. FITTS
Director



DR. J. W. FITTS

Many North Carolina farmers are using soil tests as a guide in improving their farm management. From the tests they obtain information as to their lime and fertilizer requirements for the cropping system they are using. This results in more efficient use of these materials and a greater return for the money invested in them.

The number of samples received by the laboratory reached a peak of 85,000 in 1950, and has been maintained at this high level during the past biennium. Credit for this continued interest is due in large measure to educational efforts on the part of Extension Service, Soil Conservation Service and Production and Marketing Administration personnel, Vocational Agriculture teachers and local farm leaders.

Soils from all parts of North Carolina were tested. Approximately one-half of the samples received were from the Coastal Plain, one-third from the Piedmont, and one-sixth from the Mountain area. The Mountain area, however, had the best record for the number of samples submitted in proportion to the number of acres in cropland and plowable pasture.

January, February, and March continued to be the most popular months for submitting soil samples. Almost half of the total number of samples tested during the year were received in this three-month period. This seasonal pattern of soil testing reduces the efficiency of the laboratory and sometimes occasions delays in getting reports to the farmers.

SOIL TEST SUMMARIES

The primary purpose of soil testing is to give the individual farmer dependable information on the lime requirement and fertility status of each of his fields. A summary of soil test data, however, when prepared on a county, soil association area, or state basis can be of great value to educational agencies, research workers, and commercial companies. A bulletin entitled "Fertility Status of North Carolina Soils as shown by Soil Tests" was printed in 1951. This bulletin presented soil test data obtained during the period from July 1, 1949,

to June 30, 1950. Summaries for each county were given. It was shown that the phosphorus level in the soils was closely related to the amount of fertilizer that had been used. For this reason, the Coastal Plain soils were highest in phosphorus. The potassium levels were related to the nature of the soil rather than past fertilization. Soils in the Piedmont and Mountain regions were higher in potassium than soils of the Coastal Plain.

Peanuts and soybeans, crops which remove rather large amounts of potassium, have had a definite effect on the soil. A high percentage of soils growing these crops were low or very low in potassium. In contrast, soils where truck crops and burley tobacco had been grown were relatively high in potassium. Fields to be seeded to Ladino-grass were relatively low in phosphorus in comparison to truck crop, cotton, or tobacco fields.

The summary revealed a general need for lime in North Carolina soils for best production of legumes. The soils in the eastern portion were somewhat more acid than soils of the western portion. Difference in soil texture and crops grown, however, affects lime requirement, so that soils in the Coastal Plain may not have had as high lime recommendations as some of the western soils.

REPRESENTATIVE SOIL SAMPLES

The soil testing laboratory does not test a farmer's land, only the soil sample submitted. A poorly taken sample may be worse than none at all. To aid farmers in getting representative samples, soil containers and mailing cartons are provided. Complete instructions for taking samples are given on information sheets furnished with the cartons. Almost all of the samples received are in these containers. This facilitates the mechanical handling of samples at the laboratory. Cartons and information sheets are sent to various agricultural agencies for distribution including County Agents, Vocational Teachers, Soil Conservation Service and PMA.

SOIL TESTING TECHNIQUES AND PROCEDURES

During the past biennium, several changes were made in equipment and procedures used in testing soils in order to obtain more accuracy without reducing the speed of analysis. Several automatic dispensers were installed to quickly deliver measured quantities of solutions used in the analyses. A flame photometer was purchased for determining potassium and sodium. An automatic titrating assembly



Receiving, checking and numbering soil samples submitted for testing.



Measuring the acidity of soil samples with a pH meter to determine the amount of lime needed.



A portion of the soil testing laboratory where analyses are made for acidity, phosphorus, potassium, calcium, magnesium and organic matter.

was installed for use in the organic matter determination. Such equipment eliminates personal errors in analyzing samples and assures more uniform results.

INTERPRETATION AND RECOMMENDATIONS

The results obtained in the soil analysis must be interpreted in relation to the crop to be grown on a given type of soil. This is necessary since various properties of the soil will influence the removal of nutrients by the extracting solution. Crops vary also in their feeding power. After the soil tests are interpreted by a competent agronomist, recommendations are made for liming and fertilization.

The successful use of soil tests depends upon careful calibration with increases in crop yield from application of lime and fertilizer. During the past biennium, soil samples were collected from many of the field fertility experiments conducted by the Experiment Station workers and analyzed. New procedures and techniques are tried on these samples also to learn if any improvement can be obtained. With the constant change in farm management, including crop varieties and cultural practices, many research samples must be tested each year to establish soil tests as a reliable guide for predicting the amounts of lime and fertilizer needed to grow crops on a given soil.

SOIL TESTING IN THE FUTURE

In modern farm management, good soil tests are indispensable for guidance in liming and fertilizer practices. Both lime and fertilizer can be applied where needed most and where the economic gain will be greatest.

It is not necessary to test the land every year. If a representative sample was taken, the recommendation should be good during the next three to five years depending upon the cropping system followed. A sample should represent an area no larger than 10 acres as a maximum and for many conditions the area should be five acres or less. For maximum sustained crop production with the most efficient use of lime and fertilizer, at least four times the present number of samples should be tested each year in North Carolina. The new laboratory will permit an increase in the volume of samples tested. To reach this goal, however, it will be necessary to have a better distribution of samples throughout the year.

Although much progress has been made in recent years, soil tests are not perfect. Much research on methods as well as calibration needs to be done. With advances in other fields of agriculture, it is necessary to keep pace with the soil tests in order to be able to interpret the results and make as accurate recommendations as possible.



DR. J. S. DORTON

THE STATE FAIR

DR. J. S. DORTON

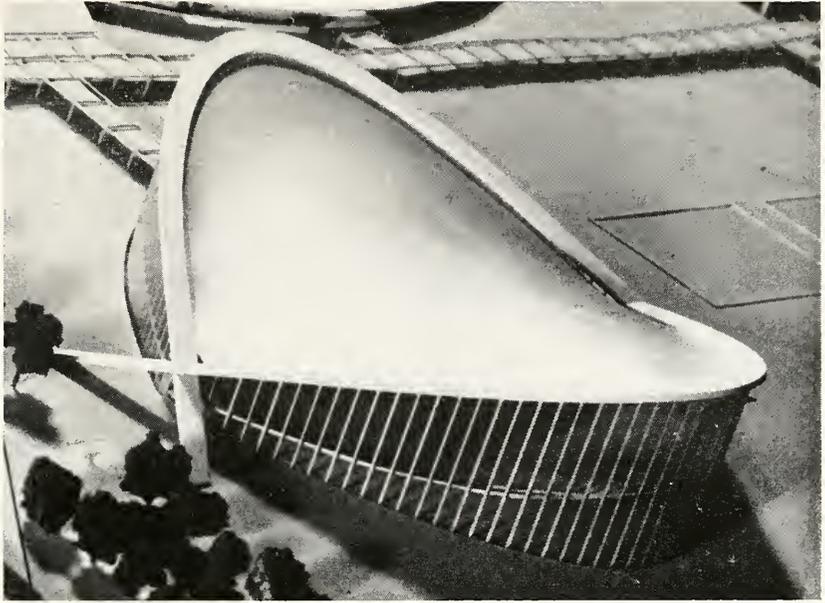
Manager

An exciting new era of service began for the North Carolina State Fair during the past biennium when a \$2,000,000 expansion, building and "face-lifting" program was started to eventually make the Fairgrounds a year around educational and inspirational center to mirror the agricultural, industrial, commercial and cultural progress of the State. In the meantime, two more educationally and financially successful State fairs were held in 1950 and 1951.

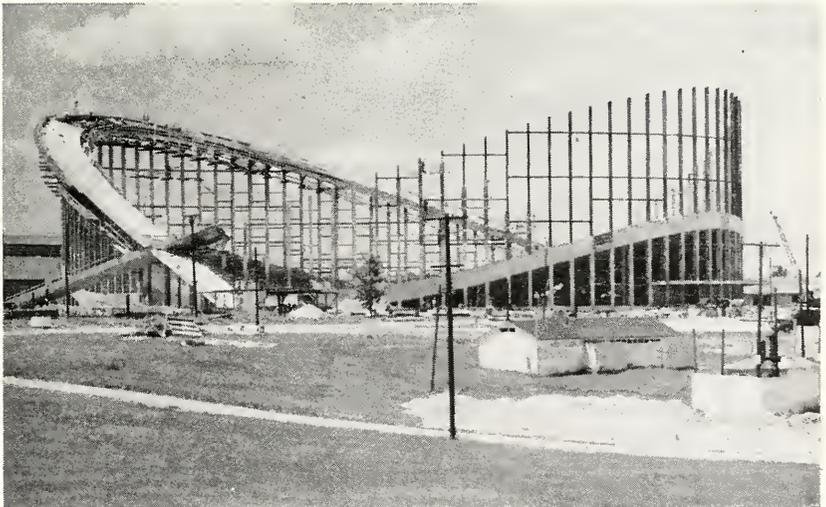
Despite rain on Thursday and Friday of Fair Week in 1950, and lack of exhibit space due to elimination of old facilities and unfinished construction on new buildings in 1951, the two Fairs produced the following financial results:

	1951	1950
<i>Revenue</i>	\$258,340.60	\$212,455.58
<i>Expense:</i>		
Premiums distributed	31,075.50	30,650.00
Maintenance and Improvement of grounds	44,311.22	19,383.28
Administration	17,721.55	19,582.53
Federal admission tax	27,556.33	21,339.54
Other operational costs	98,402.46	85,378.91
	<hr/>	<hr/>
TOTAL EXPENSE	\$219,067.06	\$176,334.26
<i>Profit From Operations</i>	\$ 39,273.54	\$ 36,121.32

Thus, the uninterrupted progress of making the Fair more useful each year since it became a division of the Department of Agriculture in 1937 was profitably maintained. The Fair was profitable to the patrons in affording opportunities to renew old acquaintances, make new ones, exchange ideas, gain new knowledge, and enjoy the many inspirational, educational, recreational and entertainment features. It was financially profitable only to the extent that the premium lists can be steadily increased and the physical plant can be maintained, improved and expanded.



An architect's model of the State Fair Arena, a revolutionary type of structure designed by the late Matthew Nowicki in collaboration with William Henley Dietrick, Architect of Raleigh, N. C.



A "progress shot" made during construction of the arena showing the concrete parabolic arches which support the structure, eliminating the necessity for view-obstructing posts inside the building.

The \$1,985,000 permanent improvement program voted by the 1949 General Assembly (reduced by \$150,000 through action of the 1951 General Assembly, and brought over the \$2,000,000 mark by use of accumulated profits of the Fair operations) proceeded satisfactorily despite building materials shortages and other unforeseen delays. Scheduled for completion and full use during the 1952-53 biennium are:

(a) The 9,500-seat livestock judging and exhibition coliseum—named “The State Fair Arena” and hailed by architects and builders as the most modern structure of its type in America.

(b) A youth center consisting of two dormitories with 128 beds, a combined dining and recreation hall, and an administration and clinic building, for the accommodation of boys and girls and others who exhibit at the Fair and visit the Fairgrounds at various times during the year.

(c) Three new livestock buildings, totaling nearly 75,000 square feet of exhibit space, plus modernization and re-location of other buildings with 124,980 square feet of floor space in the former State Highway Shops area acquired during the past biennium to increase the size of the Fairgrounds to 228 acres.

(d) Grounds improvement and beautification, including new access roads to new and enlarged parking fields which will accommodate 10,000 cars, and sufficient paving to make the entire Fairgrounds usable under all weather conditions.

Part of the permanent improvement program, and increases in premiums, are made possible through approval by the State Board of Agriculture to set aside a reserve for a “rainy Fair Week” and use the remainder of the \$331,536.70 surplus shown in the following report of the regular State Fair Fund as of December 31, 1951:

Cash—State Treasurer and Bank	\$256,342.43
Securities—U. S. Treasury Certificates	75,000.00
Accounts Receivable	534.00
	<hr/>
TOTAL ASSETS	\$331,876.43
Accounts Payable	339.73
Surplus	331,536.70
	<hr/>
TOTAL LIABILITIES AND SURPLUS	\$331,876.43

DIVISION OF DEPARTMENT OF AGRICULTURE

Since the State Fair became a division of the North Carolina Department of Agriculture March 4, 1937, a total of \$231,145.92 has been paid out to exhibitors in premiums in 11 Fairs held through 1951. (The Fair was suspended from 1942 through 1945 during World War II.) During the same period, but including the war years, \$259,220.33 was spent on improvement and maintenance of the Fairgrounds. Thus, nearly 14 per cent of the \$1,690,294 revenue from the 11 Fairs went back to the patrons in premiums, and slightly more than 15 per cent of the revenue was spent on improving and maintaining the grounds.

In addition, a major portion of the \$331,536.70 surplus built up during the period has been ear-marked for permanent improvements and enlarged premium lists.

From the annual audits of the Special State Fair Fund, the following figures are significant, especially the steady increase in the amount paid in premiums:

<i>Year</i>	<i>Revenue</i>	<i>Improvement, Maintenance of Grounds</i>	<i>Premiums Paid</i>
1951	\$258,340.60	\$44,311.22	\$31,075.50
1950	212,455.58	19,383.29	30,650.00
1949	233,523.22	25,635.68	28,550.00
1948	196,924.72	26,174.24	25,332.75
1947	166,312.27	34,639.31	20,283.00
1946	220,544.03	36,855.35	14,499.50
1942-45	(No Fair)	26,170.43	
1941	101,856.00	11,969.92	18,775.25
1940	80,742.52	7,379.71	17,254.25
1939	72,128.73	8,549.40	16,677.75
1938	78,599.32	7,358.78	15,383.00
1937	68,867.01	10,793.01	12,664.92

Proof of the educational and inspirational progress of the State Fair as the "biggest annual event in North Carolina from the standpoint of participation and attendance" is contained in reports of the 1951 Fair which showed that 953 individuals and organizations from 77 of North Carolina's 100 counties participated as exhibitors, and attendance was estimated at 425,000, a new all-time record among the 84 State Fairs held since 1853. Patronage estimates are borne out by

the highest gate receipts and Federal admission tax payments in history, despite unchanged gate admission prices since the Fair became a division of the Department of Agriculture.

For the future, the Fair has joined wholeheartedly and actively in the United Agricultural Program to meet "The Challenge" by providing a panoramic center for the inexhaustible resources of North Carolina and thereby stimulating the creative and productive capacities of the people in the "No. 1 State in the South".

SUPERVISION OF ALL FAIRS

In addition to operating the State Fair, the Department of Agriculture was charged by the 1949 General Assembly (in G.S. 106-520.1 to 106-520.7) with the responsibility for supervision of all Fairs in North Carolina to insure agricultural and educational emphasis in their operations. The legislative act also provides exemption from State license fees for the exhibits and attractions of Fairs which conform to rules, regulations and standards prescribed by the State Board of Agriculture.

After making a study of all Fairs for a period of two Fair seasons, the Board on June 20, 1951 adopted "Fair Regulations" as Chapter X of the Rules, Regulations, Definitions and Standards of the N. C. Department of Agriculture. To qualify as a bona fide Agricultural and Educational Fair and receive exemption from the license fees, a commercial fair must have at least three exhibits in each of at least 50 per cent of the 10 generally recognized educational, agricultural and industrial departments, with a minimum of 100 exhibits in the Fair by 40 different exhibitors. In addition, premiums offered must equal at least 10 per cent of the gross receipts of the Fair from all sources, and not less than \$1,000.

As a part of the supervisory program, the Commissioner of Agriculture can require such financial statements and other reports as he deems necessary and will have representatives make inspections of Fairs to insure their compliance with the rules, regulations and standards.

DIVISION OF STATISTICS

FRANK PARKER
Chief Statistician



FRANK PARKER

Statistics are essential in modern society. They are the tools by which changes are measured in agriculture, industry or any other phase of present day economy. They are basic to intelligent planning, whether it be for the solution of a marketing problem, the success of a research project or the gearing of individual farm operations to prevailing economic conditions.

National and State legislative bodies became aware of the need for agricultural statistics years ago when they made appropriations for the purpose of gathering and disseminating timely and factual information relating to agriculture. Congress provided for the collection of agricultural statistics on a national level in 1839, and North Carolina law-makers did likewise in 1877.

In 1919 the North Carolina and United States Departments of Agriculture entered into a mutual agreement for processing agricultural statistics in this State. Thereby the work of the Statistics Division was amalgamated with that of the Agricultural Estimates branch of the Bureau of Agricultural Economics, U. S. Department of Agriculture. This office, functioning as a co-operative endeavor between the two Departments of Agriculture, and of which the Statistics Division forms an integral part, is designated as the North Carolina Co-operative Crop Reporting Service and performs the vital task of collecting, compiling, analyzing and disseminating basic statistical data relating to practically every phase of agriculture in North Carolina. By combining the work of the State and Federal agencies in the field of agricultural statistics, not only is duplication of effort eliminated but more fields can be covered more intensively.

The entire work of the Crop Reporting Service is co-operative in the fullest sense, for the larger part of all information obtained comes from individual farmers and business men who co-operate with their fellows and with this office to pool their information for the common good. These voluntary reporters complete and return questionnaires, with no reward other than the knowledge that they are performing a public service and that the official reports are more accurate because of their help.

Fully realizing the importance of its work to the economy of the State, the Statistics Division has continually endeavored to render a maximum of service within the means of insufficient funds. However, in order to meet the statistical needs of an expanded and more complex system of farming, the availability of additional funds is an absolute necessity.

During the past biennium this office experienced an unprecedented demand for basic agricultural statistics, both from agricultural and non-agricultural interests. The public generally is becoming more and more interested in knowing which commodities are being produced inside and outside the State. The public is also interested in knowing when these commodities are ready for market, the disposition and use of such farm products, and the prices farmers are receiving. Farmers have realized that they are at a disadvantage when bargaining unless they are thoroughly familiar with crop and livestock supplies, both locally and nationally.

In order to meet this ever-increasing demand for information on crop and livestock production, the Statistics Division has developed more than 500 separate reports during each year of the 1950-52 biennium. These cover all phases of agriculture with primary emphasis upon the production, disposition, and prices of crops, livestock, and livestock products. Approximately 95 per cent of all the farmers in North Carolina contribute information through the annual Farm Census which serves as a basis for many of these reports. County estimates of acreage, production and value of eleven principal crops are prepared on the basis of the Farm Census information.

In addition, about 49,000 farmers, business men, agricultural workers and others report weekly, monthly, quarterly, or annually, on a voluntary basis, information used in the regular crop estimating program. To meet increasing demands for more detailed statistics on agriculture, our regular reporter list has been increased from 36,000 in 1950-51 to the present number of 49,000 in 1951-52—an increase of 13,000 during the past year. Some of our lists are still being increased to provide more reliable county data on those crops not covered by the annual farm census. Collection of these basic data from voluntary reporters involved the handling of 352,000 schedules during 1950-51 and 360,000 during 1951-52, in addition to the more than 300,000 individual reports collected each year through the Farm Census.

While most of the basic information is secured directly from voluntary reporters through mail, the statisticians of the Crop Reporting Service travel thousands of miles each year, making field observations



Main computing room in the Statistics Division, where report schedules are listed, computed and summarized before going to the statisticians for analysis and preparation of official estimates.

and investigations, as well as contacting farmers, merchants, county agents, and other persons and organizations that are familiar with crops and livestock within a particular locality.

After all available facts have been collected and processed, the Division releases report summaries to farmers, newspapers, radio stations, and other interested concerns. This is a continuous function throughout the year which gives current National and State estimates of agricultural production, stocks of various grains and seeds, prices received and paid by farmers, as well as farmers' intentions to plant crops and produce certain types of livestock. During the growing season, it is the sole authority and fundamental responsibility of the Crop Reporting Service to issue official forecasts each month on the prospective production of crops. Also, it is the responsibility of the Division to maintain and publish historical statistical information relating to agriculture.

One of the most outstanding and significantly important reports developed by this office is the Annual Farm Census, which is collected from more than 300,000 landowners in co-operation with the county commissioners.

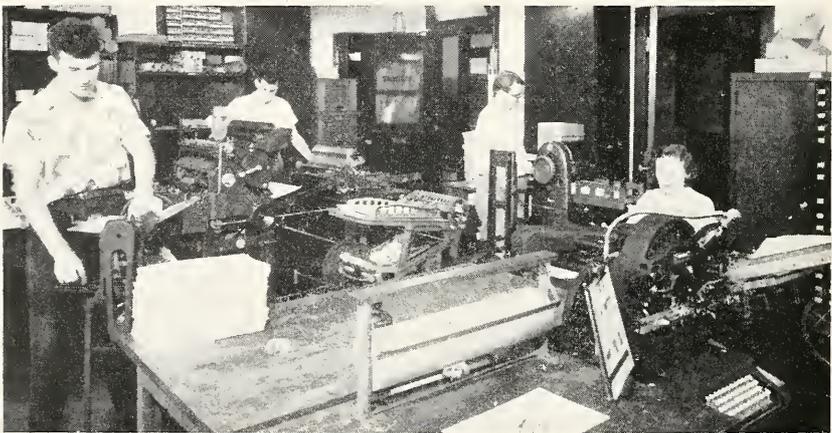
For the past two years as the Census data were processed and summarized, the preliminary results for each county were promptly published through individual county releases. Therefore, farmers and county agricultural officials had the benefit of the information even prior to the summation of the Census reports for the entire State. These releases, coupled with an otherwise expedited Farm Census

program, threw an almost insurmountable load upon the personnel of the Statistics Division, resulting in some delays in getting out the final results, but the vast uses made of the data by the various counties more than warranted the effort expended by this office.

A considerable portion of the work of the Statistics Division is devoted to editing, summarizing, analyzing and publishing the Farm Census results. For example, 7,380 man hours were required to complete the summary of county reports on the 1952 Census. Of this total, clerical requirements represented about 66 per cent or 4,900 hours and the time of professional statisticians amounted to 2,386 hours or 34 per cent of the total. This is equivalent to 612 man days of clerical work and 297 days of professional work. These figures do not include the time devoted to administration and educational work.

The Farm Census Law in effect during the year 1950-51 provided that the State contributed 10 cents per acceptable report to be used as incentive pay for collecting the information. The law under which the 1952 Census was taken provided 20 cents per acceptable report as supplemental or incentive pay.

The high standard of crop reporting work maintained in North Carolina brought a signal honor to the State during the year 1951-52 when a program was initiated in co-operation with the State College of Agriculture whereby foreign agricultural students and leaders were sent to Raleigh under the Point-Four Program to study our statistical techniques. These trainees came from Yugoslavia, Paraguay, Egypt, Indonesia, China and Venezuela.



Part of the Division's duplicating and mailing room, where several million copies of statistical releases are printed and distributed each year.



A recent group of foreign trainees attending a class on "Elements of Agricultural Estimating".

During the past biennium it has been impossible to maintain a full complement of properly trained statisticians. This has been due to increased demand for statisticians by private industry and other governmental agencies which offer more attractive salaries. This has meant spreading our efforts thinly over the whole field of agricultural statistics without being able to concentrate on many of the more deserving phases. If our currently requested budget is approved by the General Assembly, we feel confident that we can do a better job of rendering a vital service to our great agriculture economy during the ensuing biennium.

With the reinstatement of the Farm Census Statistician and the addition of one new statistician as requested in our proposed budget, the following accomplishments can be realized:

1. A definite speed up in completing and releasing the annual Farm Census summary by as much as one to two months.
2. Development and publication of county estimates of livestock and poultry numbers and values, in addition to the county estimates of principal crops now being published.
3. Expedite the release and distribution of the "Annual Statistics" publication with more complete coverage of data.
4. Relieve the tremendous workload brought on by increasing demands for the services of the Statistics Division, thus allowing more time and effort to adequately fulfill our obligations to the public.

ACREAGE, YIELD, PRODUCTION AND VALUE OF
PRINCIPAL CROPS IN NORTH CAROLINA: 1950-1951

CROP	Unit	Acreage Harvested		Yield Per Acre		Production		Value of Production	
		1950	1951	1950	1951	1950	1951	1950	1951
		(Thousand Acres)				(Thousands)		(Thousands)	
Corn, all	Bu.	2,248	2,181	33.0	31.0	74,184	67,611	\$112,760	\$111,558
Wheat	Bu.	356	381	15.0	23.0	5,340	8,763	11,588	18,402
Oats	Bu.	410	402	28.5	35.5	11,685	14,271	10,516	12,844
Barley	Bu.	35	35	25.5	36.0	892	1,260	1,177	1,701
Rye	Bu.	16	15	12.5	14.0	200	210	438	462
Sorghums, all	Bu.	42	50						
Cotton, lint	Lbs.	580	690	149	376	181*	542*	37,158	104,884
Cottonseed	Tons					75	228	6,225	15,778
Tobacco:									
Flue-cured	Lbs.	640	738	1,341	1,325	858,140	977,640	477,508	522,982
Burley	Lbs.	10.5	12.2	1,700	1,750	17,850	21,350	9,175	11,572
All	Lbs.	650.5	750.2	1,347	1,332	875,990	998,990	486,683	534,554
Irish Potatoes	Bu.	62	49	167	141	10,354	6,909	8,180	8,844
Sweet Potatoes	Bu.	62	40	110	94	6,820	3,760	13,367	11,280
Hay, all	Tons	1,173	1,214	1.06	1.01	1,249	1,225	35,971	37,362
Soybeans, for beans	Bu.	297	300	16.0	16.5	4,752	4,950	11,737	13,180
Cowpeas, for peas	Bu.	18	19	5.5	5.0	99	95	446	446
Peanuts, picked and threshed	Lbs.	232	237	1,090	1,330	252,880	315,210	31,863	37,825
Apples, com'l	Bu.					1,856	1,269	3,155	2,221
Peaches, all	Bu.					324	1,806	1,442	3,341
Pears	Bu.					73	154	146	277
Grapes	Tons					3	3.2	495	400
Pecans	Lbs.					1,640	2,435	525	614

* Bates of 500 pounds gross weight.

JANUARY 1 INVENTORY OF LIVESTOCK AND POULTRY
ON NORTH CAROLINA FARMS

	Number		Value Per Head		Total Value	
	1951	1952	1951	1952	1951	1952
All Cattle and Calves	737	796	120.00	140.00	88,440	111,440
Cows and heifers:						
2-years-old and over kept for milk	372	376	154.00	180.00	57,288	67,680
Heifers 1-2-years-old kept for milk cows	80	86				
Heifer calves kept for milk cows	93	105				
Other cattle, mainly for beef	192	229				
Hogs and pigs	1,189	1,308	27.10	27.30	32,222	35,708
All sheep and lambs	41	43	22.40	27.00	918	1,161
Horses and colts	86	84	85.00	80.00	7,310	6,720
Mules and colts	248	233	164.00	149.00	40,672	34,717
All chickens	12,394	13,319	1.30	1.45	16,112	19,313
All turkeys	42	57	6.50	7.40	273	422



CECIL D. THOMAS

TEST FARMS DIVISION

CECIL D. THOMAS

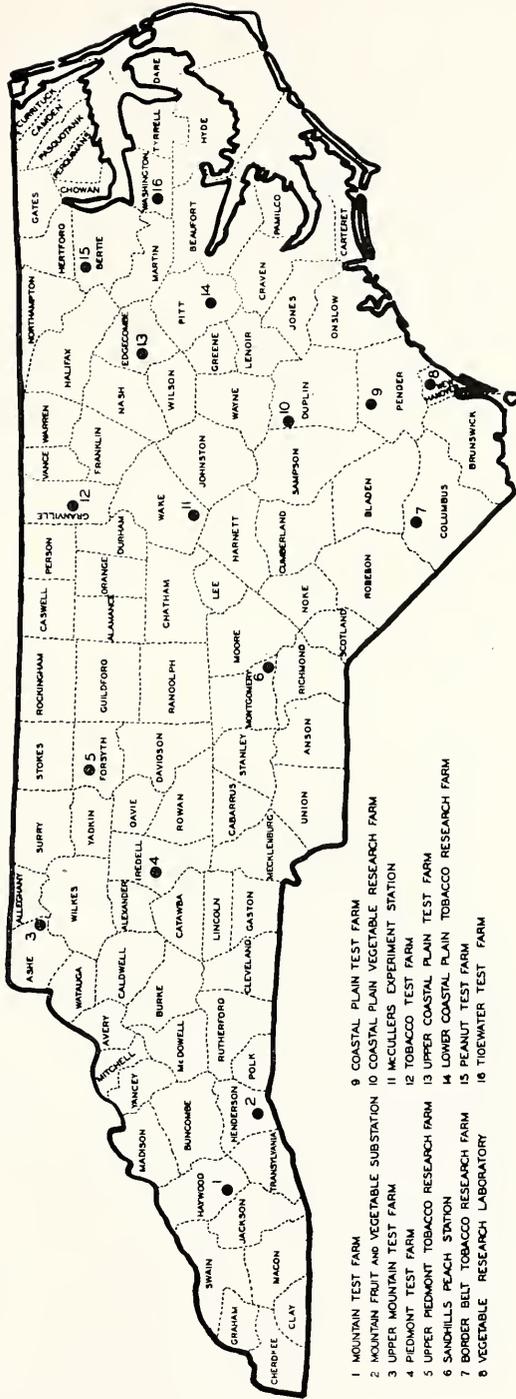
Director

The Test Farms Division supervises the operations of eight Department of Agriculture Test Farms and eight Research Farms budgeted in the Agricultural Experiment Station of State College. This supervisory role requires considerable attention to budget management; assistance with purchasing supplies and materials; help with selecting, purchasing and maintaining equipment; advice on buildings and improvement problems; work with personnel problems; general coordination of activities at each farm; and help with numerous other problems incident to farm operations in general and research farm operations in particular. The Division now has a trained agricultural engineer to assist the farms with matters pertaining to machinery and equipment, buildings and improvements, drainage, irrigation, and other things of the same general nature.

The Peanut Test Farm in Bertie County was established during the past biennium, and with this addition, total land in the eight Test Farms amounts to 4,538 acres. Of this total there are 1,110 acres of crop land and 900 acres of improved pasture. During the year 1951, intensive experimental plots occupied 375 acres of land and, in addition, 550 acres were used for experimental work of a less intensive nature, such as drainage, grazing, fire lane studies, etc. The total inventory value of property on all eight Test Farms, including land, buildings, machinery and equipment, livestock and supplies, amounts to \$1,349,037.

Research activities on the farms are directed by the Agricultural Experiment Station at State College. The United States Department of Agriculture is an active participant in the experimental program, although assistance from this agency is channeled to a large degree through the North Carolina Experiment Station. The Tennessee Valley Authority takes part in certain experimental projects at the Mountain Test Farm at Waynesville. For a part of the biennium, the Southeastern Aromatic Tobacco Company contributed to Research with Turkish Tobacco at the Upper Mountain Test Farm. A number of commercial concerns join in specific phases of research by working through appropriate departments at State College.

LOCATIONS OF DEPARTMENT OF AGRICULTURE TEST FARMS AND AGRICULTURAL EXPERIMENT
STATION RESEARCH FARMS

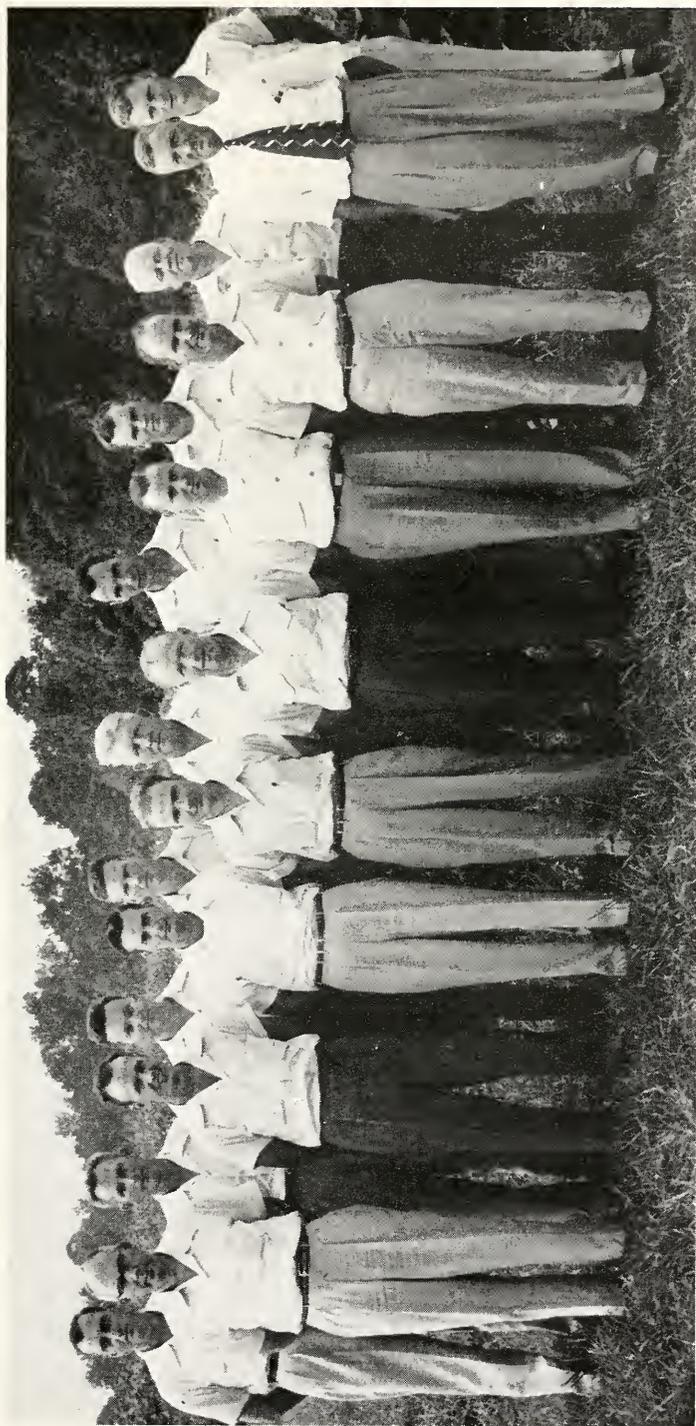


The North Carolina Department of Agriculture has the responsibility of managing the test farms, supplying operating personnel and labor, and furnishing supplies and materials, machinery and equipment and other facilities required. This joint responsibility serves to strengthen the work of participating agencies and provides a strong research program.

For a number of years, much has been done to improve facilities on the farms. Considerable land clearing on the newer units and pasture improvement have resulted in a better base for both crops and livestock research. Drainage has been improved on a number of the farms. Attention to the conditions of living quarters for personnel is resulting in better satisfied workers and greater efficiency. Facilities for research such as crop-drying units, irrigation systems, tobacco curing barns, and specialized machinery and equipment have received attention; and improvements in these lines are paying dividends in speeding up the research program.

There are yet many needed improvements to physical facilities on the farms. A satisfactory level has not yet been reached in providing suitable dwellings for workers. Machinery storage and crops storage are still needed in many locations. Additional drainage work will be required on several farms. Facilities for irrigation are urgently needed at several locations, and it is very important that consideration be given to supplying these needs.

The program of mechanization and maintenance of equipment on all farms has progressed very well. However, mechanization has been accomplished to a large extent by leasing many items of equipment. The point has been reached now where it seems advisable to purchase machinery and equipment outright rather than continue the rental plan. In the first place, it appears to be more economical to own the equipment. Also, by following a plan of buying all machinery, a better combination of tractors on a given farm can be obtained by using tractors from several manufacturers. With a good maintenance program in effect, supervised by the Division's agricultural engineer, it seems certain the wise course of action would be to own all machinery and equipment. Funds should be provided during the next biennium for buying all equipment now on lease, or its equivalent. In addition, sufficient funds should be allocated for replacing many old items of equipment owned by the farms. Such action would place the mechanization program on a good operating level.



Assistant Directors in Charge of the Department's eight test farms and the Experiment Station's eight research farms, photographed at a recent meeting of test farm personnel with Cecil D. Thomas, Director, and Jack Traywick, Administrative Assistant of the Test Farms Division.

COASTAL PLAIN TEST FARM — WILLARD, N. C.

J. W. SUMNER, *Ass't Director in Charge*

The Coastal Plain Test Farm, established in 1905, is located one mile north of Willard and two miles south of Wallace along the Atlantic Coast Line Railroad in Pender County. Its elevation is 51 feet above sea level, and it has an average annual rainfall of 46 inches.

The farm's 411.5 acres of Norfolk sandy loam are divided into 139 acres of pasture which is used for the pasturage for dairy cows and plots for co-operative dairy-forage crop research; 38 acres for field plots and other research; 30 acres in roads, lanes, and buildings; 87 acres of woodland; and 118 acres in general crops.

At the beginning of the biennium there were 48 buildings on the farm. These range from small poultry buildings to the large dairy barns, and include eight dwellings for station personnel. These buildings had a total inventory valuation of \$127,745 on December 31, 1951. An old mule barn, the first building constructed on the farm in 1905, was torn down during the biennium and was replaced by a small pole type mule barn and a fertilizer storage building. The superintendent's house was remodeled, giving two bedrooms and a bath downstairs.

Twenty-four acres of newly cleared land have been seeded to Laidino clover and fescue. Nine and one half acres of land were seeded to *Sericea Lespedeza* on land unsuited for row cropping to be used for hay. Approximately 1,000 feet of tile drainage were put in the experimental grape vineyard.

The farm has progressed steadily toward mechanization during the biennium, the mule population having been reduced to two. The farm now operates four tractors, ranging from a Farmall Cub to a Farmall M. Other equipment includes a silage field chopper and ensilage blower, pick-up hay baler, wood saw, two mowing machines, hay loader, side delivery hay rake, combine, and necessary plowing and cultivating attachments.

At the end of the biennium the staff consisted of the superintendent, foreman, poultryman, herdsman, and secretary. There are six laborers' families living on the farm; and in addition to these, seven full-time laborers work in the dairy and poultry departments and do general farm work. Additional temporary labor is secured during strawberry and grape-picking time and other rush seasons.

The farm activities involve carrying out the research program; conducting general farming operations and public relations activities, such as holding field days, giving instruction to groups of veterans, and dealing with farmers and other visitors of many types. The re-

search program is conducted by the North Carolina Agricultural Experiment Station with the United States Department of Agriculture co-operating. The four principal lines of research are: Dairy and forage crop, poultry, horticulture, and agronomy.

The dairy and forage crop research is a co-operative project between the North Carolina Department of Agriculture, the N. C. Agricultural Experiment Station, and the U. S. Department of Agriculture, Bureau of Dairy Industry. The study of pasture production and maintenance with a view to determining the best rotation and management in providing ample, constant, year around pasturage for the herd is carried out in this field of research. Another phase of dairy research relates to breeding for higher production. The production and quality of animals has greatly improved under this program, and the value of the use of proven sires has been steadily demonstrated. Our herd production has been increased both as to quantity of milk and amount of butterfat in same.

Poultry research is classified under two general projects—the first being a breeding project and the second being the performance and egg quality of poultry hatched at various seasons of the year. The breeding project relates to the production of a superior strain of Rhode Island Red chickens. The objective is to produce a strain with greater hatchability of eggs and livability of chicks, early feathering of broilers, early sexual maturity, larger egg size, and greater egg production. In carrying out this work, 1,000 pullets were used each year from 12 families. Egg production has increased from approximately 100 to 200 eggs with some hens producing as many as 300 eggs per year. The objectives of the second project are to determine if hatching chicks in seasons of the year other than the natural season (spring) is economically advisable under prevailing climatic conditions; to study market quality of eggs produced during summer months by pullets hatched in various groups; and to investigate the usefulness of egg cellars for summer storage.

Strawberry research, a horticultural project, has been continued during the biennium and new selections have been made and tested. Selections previously made and introduced have continued to demonstrate their worth; they serve as the principal commercial varieties grown in the southeastern part of the State. The use of these varieties has been spreading through the country. Research work with grapes is still being done but on a much smaller scale.

Agronomy research consists primarily of testing corn hybrids produced from the State Experiment Station's breeding work, soybeans originating from the soybean breeding program; and testing of all new productions from other states.

Dairy and poultry projects call for a considerable amount of general farming work in the production of hay, feed and ensilage. We are endeavoring to produce the needs of the dairy for hay and ensilage and of the poultry plant for scratch grain, which involves the growing of corn, wheat, and oats.

The farm serves the general public by selling high grade bull calves from the herd at a price based upon the age of the calf, the production of the dam, and on a level the farmer and dairyman can afford. Through this plan fine Jersey bull calves have been distributed over the area, and investigations show a buildup in the quality and production of dairy stock through the territory.

Annual sales of cows, which are ideal for family cows, commercial cows, or for breeding purposes, were held to make room for young stock coming on. This is necessary in carrying on the objectives of the breeding project which requires us to get records on three lactation periods of every heifer coming into the herd.

The poultry plant serves the public by providing hatching eggs, baby chicks and cockerels, and occasionally pullets as they may be needed by poultrymen of the section for starting and augmenting their flocks. The farm plays its part in the co-operative development of a large poultry industry in the southeastern part of the State.

The farm has done a great deal in an educational nature. Special consideration has been given to classes of vocational agricultural students, veterans' agricultural classes and to 4-H and FFA boys who meet for instruction in judging dairy cattle and poultry. In addition to these special meetings and classes, many farmers and other interested individuals make visits in securing agricultural information. In cases when the information is not readily at hand, the party is referred to a specialist or division of the agricultural service which can give him the assistance he needs. Attempts are made to bring these specialists together with the farmers by holding a series of field days each year, each devoted to a particular subject such as dairying, poultry and agronomy.

Much correspondence is handled by the farm, giving information in response to inquiries from farmers and others about agricultural matters. Farm personnel participates in various types of agricultural and public meetings, and for the benefit of individual callers the farm provides information verbally, by demonstration and through the meetings mentioned above.

MOUNTAIN TEST FARM — WAYNESVILLE, N. C.

M. R. WHISENHUNT, *Ass't Director in Charge*

The Mountain Test Farm, located two miles southeast of Waynesville, in Haywood County, was established in 1944. The farm, consisting of 388 acres, is representative of conditions found generally in the mountain area. The average elevation is 2,800 feet and the following soil types are present: Hiwassee, Hayesville, Clifton, Halewood, and Masada. All of these are typical of the mountain area. The average annual rainfall is 45 inches.

Land classification is as follows: Crop land, 90 acres; permanent pasture, 180 acres; woodland, 90.5 acres; and land used for buildings, roads, etc., 28 acres. Land devoted to research projects includes: Agronomy, 33 acres; dairy, 31 acres; poultry, 5 acres; and horticulture, 7 acres.

During this biennium a superintendent's dwelling and three garage and storage buildings were constructed. Several buildings were painted. Line fencing was completed in the pasture area and several acres were cleared and seeded. Seven acres of woodland were cleared for an apple orchard site. Pine seedlings were planted on five acres of idle steep land.

Mechanized equipment is used to a great extent on this farm and some of the major items are three tractors, two trucks, a field forage



Forage harvester in operation at the Mountain Test Farm.

harvester, and various other planting, cultivating and harvesting implements.

At present there are seven farm families living on the farm. These include the foreman, dairyman, assistant dairyman, poultryman, and three general farm workers. Three to six additional temporary workers are used as the work requires.

The agencies co-operating in the research program at this station are: North Carolina Department of Agriculture, North Carolina Agricultural Experiment Station, United States Department of Agriculture, and Tennessee Valley Authority.

The Dairy Department is carrying on research in calf-feeding trials, irrigation of pastures, calf-grazing studies, breeding work, cow-feeding trials, and land utilization. Part of this work is in co-operation with Tennessee Valley Authority and the Agronomy Department.

The Agronomy Department has work in forage and pasture crops, corn, soybeans, small grain, and burley tobacco. This department and the Tennessee Valley Authority have a joint program for the study of water on a watershed basis. Two such areas are located on this farm, and three are on off-station locations. The USDA is co-operating with burley tobacco research which includes breeding, fertilization, and management studies.

The Horticulture Department has selected a site for an apple orchard which has been cleared and will be planted during the next biennium. The Poultry Department is doing work in breeding of hybrids and is running out-of-season hatching experiments with emphasis on broiler and hatching egg production. The facilities on the farm not used for research work are devoted to general field crops which are used for the dairy and poultry.

In addition to research work, this station makes an effort to demonstrate better practices for farmers of this area to study and observe. Various products such as tobacco plants, bulls and heifers from our dairy herd are released to farmers as they become available.

The facilities are available at all times for use by people of this area. Some of the uses are as follows: Veterans' training classes visit the station periodically to study work being done on the farm; FFA and 4-H Club members use the livestock for training judging teams; our barns and livestock are used for judging contests; and each group of 4-H Club members visits the farm during their week's stay at Camp Schaub, which is located at this station.

Department field days are held each year to offer farmers of the area an opportunity to observe and learn of the results of research work. The following field-days are held: Livestock and Forage Field

Day, Tobacco Field Day, Poultry Field Day, and Corn Field Day. Also, interested individuals and groups call and visit this station regularly for information and to see the work in progress.

County and area meetings pertaining to work at this station are attended by the Assistant Director in Charge of this station. Talks on the work of this station are given to clubs, classes, civic groups, and other interested groups throughout the area.

PEANUT TEST FARM—LEWISTON, N. C.

CLYDE Z. McSWAIN, JR., *Ass't Director in Charge*

The Peanut Test Farm, located in Bertie County at the northern edge of Lewiston, was established in 1952. The newest of the research farms has an elevation of 65 feet above sea level. The average annual rainfall for this area is 46 inches. The total acreage for the farm is 366 with approximately 80 acres cleared. The soils vary from well drained down through the poorly drained types, representing, as a whole, the peanut growing areas of North Carolina.

The research program for the 1952 crop year utilized 21 acres for peanut work and one acre for sweet potatoes. The balance of the crop land was planted to general crop corn in order that the fields



Peanut rotation experiment.

might be brought to the uniform level needed for plot work. The research work was carried on by the following departments: Agronomy, Agricultural Engineering, Plant Pathology and Entomology.

The woodland on the farm was heavily cut by a previous owner, leaving small pine saplings and a mixed hardwood undergrowth. There is, however, a small well-stocked area of loblolly pine of pole size.

The original buildings on the farm were an old dwelling, a storage barn, and a tobacco barn. During the 1952 crop year a four-room laborer's dwelling was built and is used at present for the farm office. A shed was added to the barn to provide storage for farm equipment. The equipment consists of two tractors, cultivators, planters, bottom plow, rotary hoe, mower, lime spreader, farm wagon, crop duster, disk harrow and other small pieces of equipment.

Plans for the next biennium call for extensive work in land clearing and drainage. Since some of the best land on the farm is located in the woodland, it is imperative that the clearing take place as soon as possible in order that the farm may be used to the best of its capabilities. A complete drainage plan for the entire farm was worked out by the Soil Conservation Service showing a need for both tile and open ditch drainage. Also, the plan will indicate the woodland area that will be best suited for crop land from the drainage viewpoint.

Equipment and buildings must be added to keep in step with the expanding research work. Shop equipment, laboratory equipment along with additional farm equipment will be purchased during the next biennium. A machinery storage and shop building, utility building with office and laboratory space, laborers' dwellings and superintendent's residence are to be added along with various storage and research buildings.

Although the farm has been in operation a short time, the research work is followed with interest by all of the farmers in the area. Many visits are made by individuals and organized groups to see and hear about the latest work being done by the research specialists.

PIEDMONT TEST FARM—STATESVILLE, N. C.

J. W. HENDRICKS, *Assistant Director in Charge and Agent, USDA*

The Piedmont Test Farm, established in 1903, is located in Iredell County, one mile west of Statesville, on Highway No. 90. The elevation is 950 feet above sea level. The climate is mild, with an average annual temperature of 61 degrees during the past 10 years, and an average annual rainfall of 46.38 inches.

The farm contains a total of 352 acres, 219 acres being State-owned and 133 Federal-owned. There are several soil types with Cecil clay and sandy loam predominating. At present 141 acres are devoted to general crops, 48 acres are in field crops and other research work, 12 acres in woodland, and 112 acres in permanent and rotation pasture.

The buildings on the farm include office, headhouse, two greenhouses, storage and dry house, shop, cotton storage, cotton gin and seed storage, foreman's cottage, two barns—one sheep and one cattle—and a new mule barn which was built in 1951, a combination granary, fertilizer, and small grain storage, seed cleaning building, and two pavilions used for storing farm implements. In addition, there are a superintendent's home and five tenant houses, all of which are old, inadequate, poorly constructed, and not worthy of expenditures necessary to put them in livable condition. During the past two years some essential repair work was done on the barns and other out buildings, and most of them were painted.

Realizing that a good pasture is a livestock farmer's greatest asset, the management has endeavored to increase the farm's pasture program and has developed some of the finest pastures to be found in this section. Not only does the farm have an outstanding blue grass, white clover, and bermuda sod, but during the past few years 70 acres have been planted in Ladino and orchard grass.

The farm is rapidly changing to mechanized equipment. However, there is some need yet for a limited amount of horse-drawn equipment, particularly in some of the smaller fields and plot work. The farm is fairly well equipped with machinery to carry on the type of work now being conducted.

There are six families living on the farm who furnish most of the labor for operations. In addition, some part-time workers are employed during the planting and harvesting seasons.

The research program is a co-operative endeavor in which the North Carolina Agricultural Experiment Station, the United States Department of Agriculture, and the North Carolina Department of Agriculture participate. It is the function of the Piedmont Test Farm to furnish facilities including land, fertilizer, and labor for the preparation of seedbed, cultivation, and harvesting.

The research program is under the direction of the North Carolina Agricultural Experiment Station, which outlines projects, supervises planting and harvesting, and compiles results. The research work is devoted to livestock and crops.

The livestock program consists primarily of grazing small grain (oats and barley) with sheep to determine the effect on yield by seed-

ing earlier than usual, using a heavier application of fertilizer, and a heavier rate of seeding. A breeding flock of 45 ewes is carried, and with lambs and yearlings the flock totals 85. Surplus rams and ewes are sold for breeding.

Plans have been completed for a winter grazing project and 25 steers have been added for this purpose. For the past two years steers have been purchased in August and carried through the winter primarily on permanent pastures, supplemented from January 15 to March 1 with the temporary grazing of small grain and 1,000 pounds of hay per animal. The results of this work are most encouraging, both with reference to total grain in live weight and the quality and grade of beef produced.

Research work with crops consists of studies of alfalfa and clover varieties, corn hybrids, cotton breeding, flax varieties, lespedeza, small grain (breeding, variety, testing, and diseases), soybeans, Sesame, and sweet potatoes. Considerable work also is being done on soil fertility, and weed control is the subject of special studies.

Available land is being used as far as the budget will permit in growing small grains for increasing seed production and in producing feed for livestock.

During the past year the farm co-operated with the Markets Division of the North Carolina Department of Agriculture in assembling and distributing 75 sheep to farmers.

The farm's facilities are available to the public at all times for group meetings, educational tours, and picnics. Annual field meetings include the study of small grains, corn, cotton, pastures, and legumes. Attendance at special meetings during the fiscal year 1951-52 was about 2,000.

Some 25 special groups such as county groups, veterans classes, vocational agriculture classes, 4-H Clubs, FFA, high school and college classes, fertilizer groups, and others visited the farm during the same period. Various individuals visiting the farm average about 2,000 annually. During the past biennium the farm has been honored in having as special guests agricultural representatives from China, Peru, Brazil, Germany, France, Belgium, Norway, Sweden, Denmark, Holland, Japan, Italy, Canada, India, Yugoslavia, and the Philippine Islands.

Visits and meetings with farmers and other agricultural groups off the farm numbered 160 during the fiscal year 1951-52.

TIDEWATER TEST FARM — PLYMOUTH, N. C.

J. L. REA, JR., *Ass't Director in Charge*

The Tidewater Test Farm, established in 1943, is located five miles east of Plymouth on Highway No. 64 in Washington County and has an elevation of 15 feet above sea level. The farm consists of an area of 1,995 acres, 495 acres being used in the main station with 1,500 acres of rough woodland that can be developed for future use. The main soil types are Peat, Bladen, Portsmouth, Hyde and Coxville. All soils on the station have been mapped in detail since the station was established.

The cleared land consists of 375 acres used for experimental work, general crops, and pastures. The land use is as follows: Agronomy, 30 acres; horticulture, 7 acres; drainage research, 45 acres; nutrition studies (sheep), 24 acres; pasture, 36 acres; experimental cattle pasture, 24 acres; range research pastures, 20 acres; fire lane studies, five acres; and 120 acres of woodland pastures.

During the past biennium a new seven-room brick dwelling was built for the superintendent's residence, and one modern four-room laborer's dwelling was built. This gives the station five dwellings for laborers. One small feed barn and two garages have been built from materials salvaged from old buildings that have been taken down. Ample barns, implement sheds and other necessary buildings have been constructed during the past few years to meet the immediate needs of the station in a physical way.

Seventy acres of land were cleared in 1950-1952, and 38 acres of this were fenced and seeded to pastures. Fifty-six acres have been drained by the use of open ditches; and two fields, consisting of 48 acres, were tile-drained. Three canals, each one-fourth mile long, have been dug to improve the drainage on the land used for experimental work in agronomy.

For the past several years the station has been adding mechanized equipment as fast as funds would permit. As many labor-saving machines as practical have been added, including: One new truck, one rubber-tired wagon, two tractors, one tractor-mounted field sprayer, one tooth harrow, and one lime spreader.

There are three permanent white laborers, in addition to the foreman, herdsman, and superintendent, living on the station. Four part-time colored laborers with one living on the farm are employed. Some temporary laborers to handle special jobs are employed as the situation requires.

The research work on the station is carried on under a co-operative arrangement between the N. C. Agricultural Experiment Station and the USDA. The Test Farm furnishes all labor, fertilizer, land and equipment. The Experiment Station supplies the technicians to see that the projects are properly laid out and to gather scientific data.

The main projects deal with crops such as corn, soybeans, Irish potatoes, forage crops, pastures, rotation studies, and various phases of drainage work. A number of studies that pertain to crops and livestock are carried on, the main work with livestock being with beef cattle and sheep. The beef cattle work is with pastures and wintering trials with feeding corn cobs and hay.

An extensive, long-term sheep project is underway in which phosphated feeds and pastures are being compared with non-phosphated pastures and feeds. This is a very complicated project that has required a great deal of labor, land, and equipment. The results will be slow due to the fact that several generations of sheep will have to be studied.

Very little general farming is carried on at the station other than to utilize the land that is being held for future research work. The land available for general farming is used to produce feed and forage.

Some certified seeds, particularly soybeans, are produced for distribution to interested farmers. Purebred Hampshire rams are sold each year in the eastern part of the State. A few cross bred hogs have been distributed to farmers to try out. All of the grain, seeds, and livestock not needed for experimental purposes are disposed of to the best advantage possible. Some small lots of seeds are cleaned and other public services rendered when such activities do not conflict with station work. Assistance is also given in locating farms for those interested in beef and dairy cattle.

During the past two years the Tidewater Test Farm was visited yearly by 4-H Clubs and the veteran agriculture classes from various parts of Eastern North Carolina. The Future Farmers of America livestock judging classes have made their yearly visits. The District Soil Conservation Service and the District Federal Farmers Home Administration have visited the station with excellent attendance. Also, local newspaper reporters have shown an interest in station activities and have requested climatological data for publication.

The superintendent devotes a great deal of time in tours of the farm, lecturing to classes, giving advice and information to visitors and making public talks on agriculture. His time is almost completely taken on Saturday afternoons, Sundays, holidays, and many evenings with individual visitors wishing to tour the farm or secure information



Experimental corn cribs at the Tidewater Test Farm help find answers to storage problems.

on general farming, research, livestock and drainage. The public is watching with interest the drainage experiment conducted on the farm for the past six years.

Due to weather conditions and other interferences the annual Field Day was not held in 1951; however, a Field Day was held on May 19, 1950 for the study of varieties, disease control and cultural practices for Irish potatoes, and pasture and grazing experiments.

TOBACCO TEST FARM — OXFORD, N. C.

J. M. CARR, *Ass't Director in Charge and Agronomist USDA*

The Tobacco Test Farm, consisting of 330 acres, is located about one mile west of Oxford, the County seat of Granville County. This station was established in 1912 on the original tract of 250 acres, which lies at an elevation of approximately 500 feet above sea level. In 1941 an additional 80 acres was purchased. The soils are principally of the Enon, Colfax and Durham series. There is considerable low wet land unsuited for row crops but excellent for pastures.

Annual rainfall for the period July 1, 1950, to June 30, 1951, was 38.85 inches. For the same period 1951-52, the rainfall amounted to 44.49 inches. The mean annual rainfall for the 31-year period 1921-52 is 44.12 inches.

Land use on this farm varies some from year to year but is approximately as follows: Research plots, 50 acres; field crops other than tobacco, much of which is in rotation with tobacco, 85 acres; improved pasture, 38 acres; woodland, 132 acres; and roads, building locations, gardens, etc., 25 acres. In addition, a five-acre field, located seven miles away, is used for black shank breeding work and operated with farm personnel and equipment.

Buildings include a brick office and laboratory and a greenhouse and insectary which are federally-owned and maintained. State-owned buildings on the farm include 10 dwellings, 16 curing barns of various types and sizes, one mule barn, one cow barn, two packhouses, one large engineering machine shop and laboratory, one machinery shed, one tractor storage house and numerous small outbuildings.

Improvements during the biennium included the construction of one laborer's cottage, the preparation and seeding of 20 acres of improved pasture and fencing of 12 acres. Materials are on hand for the extension of a six-inch cast iron water main to furnish fire protection to a majority of the buildings on the station.

The Tobacco Test Farm is operated largely by tractor power. Formerly all tractors and much of the equipment were leased. A program of equipment purchase is now in progress and purchases of leased equipment are being made as rapidly as funds will allow. With the exception of a few pieces, the farm has on hand either through lease or ownership adequate machinery for efficient operation. A permanent labor force of seven laborers and one foreman is kept throughout the year. Other seasonal labor is recruited from families living on the farm and in the town of Oxford. One stenographer-clerk II and one stenographer-clerk I are employed full time.

Funds expended by the North Carolina Department of Agriculture are to provide facilities, management and labor for the research program and to co-ordinate the work of the research agencies operating at this farm.

The N. C. Experiment Station, State College, Raleigh, and the Division of Tobacco, Medicinal and Special Crops of the Bureau of Plant Industry, Soils and Agricultural Engineering, United States Department of Agriculture, are co-operating in the agronomy and pathology programs. These programs are devoted to studies of the nutrition of the tobacco plant and the development of tobacco varieties resistant to diseases, principally black shank and Granville wilt.

Research on the engineering features of curing tobacco is being carried on by the Engineering Department of N. C. State College and the Division of Agricultural Engineering, Bureau of Plant Industry,



Tobacco variety seed beds.

Soils and Agricultural Engineering of the U. S. Department of Agriculture. This program concerns barn construction, heating units, curing procedure and fundamental studies of the tobacco leaf during the process of curing.

The Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture is doing research on the effectiveness of new insecticides for insect kill and the problem of residue on the cured leaf. One federal entomologist devotes full time to the study of the green peach aphid, which seems to be potentially a serious pest.

Duke University of Durham, is co-operating in limited research with Turkish tobacco and is concerned principally with curing problems and the development of Turkish varieties resistant to black shank and Granville wilt.

In addition to tobacco research, the Tobacco Farm furnishes land, supplies and labor for use by specialists from the North Carolina Experiment Station in the development of Granville wilt resistant tomatoes and the testing of corn hybrids.

Tillable land not used for tobacco or crops in rotation with tobacco is planted to corn, small grains, and hay for feeding livestock.

Wet and marginal areas of sufficient size for economical fencing are being put into permanent improved pasture for the production of beef. Six Hereford females are being used as foundation stock for a beef herd. This herd now totals 12 females of all sizes. Two Berkshire sows are kept for producing breeding stock to be sold to farmers. Surplus hogs are sold at auction.

The farm maintains tobacco seed cleaning equipment as a public service to farmers. During the biennium covered by this report more than 1,100 pounds of tobacco seed were cleaned for 517 growers. Officials of the station are called on quite frequently to identify troubles with tobacco, principally diseased plants. During the early growing season this service is almost a full-time job for one man.

Just before harvest begins each year a series of farmer field days are conducted by specialists of the N. C. State College Extension Service. In the summer of 1951 approximately 2,500 attended these tours. In 1952 the attendance was approximately 53 groups with a total of 1,621 persons. Three groups with 70 persons visited the station before the tours began. Individual farmers and small groups visit the station daily. Out-of-State agriculturists, classes of North Carolina agricultural colleges and foreign agricultural students and specialists also visit the station frequently. Many of the foreign agricultural students and specialists spend from a few days to a full summer under the sponsorship of the Mutual Security Agency of the United States Department of Agriculture and Land Grant Colleges.

UPPER COASTAL PLAIN TEST FARM— ROCKY MOUNT, N. C.

R. E. CURRIN, JR., *Ass't Director in Charge*

Consisting of 441.9 acres, the Upper Coastal Plain Test Farm is in Edgecombe County, six miles southeast of Rocky Mount. The farm is 100 feet above sea level and has an average rainfall of 45 inches. Soils on the farm are representative of that area, including the Marlboro, Rustin, Dunbar, Coxville, and Norfolk series. Utilization of the total acreage is as follows: Cropland, 246; permanent pastures, 7; rotation pastures, 34; idle land, 5; woodland, roads, building sites, etc., 149. Of the cropland, the following acreages are devoted to research: Agronomy, 92.07; agricultural engineering, 26.1; entomology, 20.3; plant pathology, 7.4; and swine studies 18.1. In addition 100.98 acres of corn is grown to take care of swine production.

Major improvements during the two-year period included the completion of a crops drying building, which is being used for research

studies in peanut and peanut hay drying; the addition of a shed to the tobacco packhouse to allow more space for storing tobacco and three new tenant dwellings, making a total of five new tenant dwellings constructed during the last four years. Necessary repairs were made to other buildings, and swine shelters were built to take care of the enlarged hog project.

Among the major farm equipment items are four tractors, two trucks, two crop-dusters, one tractor sprayer, peanut-picker, hay-baler, and numerous small items including planters, distributors, and tillage implements. In recent years tractor power has replaced all but two teams of mules.

Seven regular workers live on the farm, and in peak seasons additional labor is secured from the laborers' families.

Developed and supervised by the Agricultural Experiment Station, the research program consists of numerous crop experiments and also swine studies.

Agronomy projects include variety and hybrid tests; experiments on residual effect of corn stover; peanut and soybean breeding, row-spacing, and disease studies, and several rotation and fertilization studies.

The Agricultural Engineering Department is conducting experiments on harvesting, weed control, cultivation practices, and peanut-drying.



Green peanuts being picked for drying research at the Upper Coastal Plain Test Farm.

Research by Plant Pathology includes peanuts nematode studies; disease control in peanuts, cotton, and soybeans, and work with sweet potatoes.

The Entomology Department is studying insect control and effects on cotton, corn, peanuts, tobacco, and soybeans.

In addition to supplying facilities for research studies the farm performs additional services to the community by selling hogs to farmers so they can improve their herds; serving as a laboratory for 4-H Clubs and vocational agriculture groups; welcoming individual visitors in search of answers to specific problems, and holding separate organized field meetings each year covering tobacco, swine, peanuts, corn and soybean research work.

In June, 1952, the 50th anniversary of the farm was celebrated by hundreds of friends. The program included speakers, entertainment, a dinner, and an organized field tour.

UPPER MOUNTAIN TEST FARM— LAUREL SPRINGS, N. C.

DANA F. TUGMAN, *Ass't Director in Charge*

The Upper Mountain Test Farm is located two miles west of Laurel Springs in Ashe County. The elevation is 3,300 feet and the average annual rainfall is 52 inches. The farm was established in 1944 on an original tract of 412.5 acres. An 8.2 acre tract adjoining the farm was purchased in 1950, making a total of 420.7 acres, of which 125 acres are in permanent pasture, 72.2 acres in cropland, 78.5 acres in woodland and 145 acres devoted to field plots and grazing research. The principal soil series are Watauga silt loam, Watauga stony silt loam, Clifton stony loam and Tate gravelly loam.

Major buildings on the farm include a beef cattle barn, sheep barn, three 70-ton silos, burley tobacco curing barn, Turkish tobacco curing barn, implement shed, general purpose barn, fertilizer storage house, office building with assembly room and apple and potato storage facilities in the basement, superintendent's dwelling, herdsman's dwelling, foreman's dwelling, and four laborers' dwellings.

Farm machinery and equipment consist of two wheel tractors and one crawler tractor, pick-up hay baler, side delivery hay rake, lime and fertilizer distributor, manure spreader, hay drier, one 1½-ton truck and one half-ton truck, bush and bog disc, tandem disc, power loader, orchard sprayer and numerous essential small tools.

The labor force consists of the farm foreman, herdsman and four laborers. Additional labor is required to assist in tobacco harvesting

and apple picking and occasionally during other rush seasons. At present the herdsman and four laborers reside on the farm.

During the past biennium the research program at this farm involved beef cattle, sheep, burley tobacco, Turkish tobacco, corn, pastures and forage crops, potatoes and tomatoes. The work in all fields of research is directed by the North Carolina Agricultural Experiment Station, North Carolina State College. The Bureau of Plant Industry, Soils and Agricultural Engineering of the USDA co-operate in tobacco research. The Southeastern Aromatic Tobacco Company was a co-operator in Turkish tobacco research; however, this program was discontinued during the past fiscal year. The North Carolina Crop Improvement Association co-operates in the corn program.

Animal husbandry research included beef cattle feeding trials to determine the comparative evaluation of various feedstuffs which livestock farmers might have at their disposal. Beef cattle grazing experiments were also conducted in an effort to determine the carrying capacity of certain pasture mixtures. A program of grading up through the use of selected purebred bulls has been in progress since this farm was established. Work with sheep consisted of a program to determine the comparative value of purebred, crossbred and native ewes with respect to their efficiency in the production of commercial lambs and wool. An experiment to compare early versus late lambing was also conducted. The results of this work are published in American Industry Report No. 13.

Burley tobacco research involved a comparison of the production of burley varieties with respect to yield and quality, organic versus mineral nitrogen source, and management tests involving the feasibility of priming and topping. Turkish tobacco research, which has now been discontinued at this station, involved spacing, nitrogen source and curing.

Horticulture research consisted of an effort to develop a variety of tomatoes with late blight resistance. Over 900 varieties and lines of tomatoes are included in this project which is still underway.

The corn program, conducted jointly with the North Carolina Crop Improvement Association, consists of the testing of hybrids and open pollinated varieties for yield and quality and the production of experimental lines for observation. Forage crop and pasture research involved tests of various pasture mixtures consisting of Ladino clover and companion plants of orchard grass, Kentucky 31 fescue, Alta fescue, N. C. fescue, Brome grass, timothy, birdsfoot trefoil and big trefoil. A 105-acre tract of Ladino clover and orchard grass is subdivided into 16 plots for grazing research and to study pasture man-

agement problems. The alfalfa trials included the following varieties: Kansas, California, Buffalo, Atlantic, Hardiston, Argentina, and Williamsburg.

This station produces potato seed stock to be used in experimental work at vegetable stations. Several breeding lines and varieties are produced here for observation in an effort to find more desirable varieties of Irish potatoes with a high yielding ability and disease resistance.

An apple orchard of 350 trees is maintained and orchard management studies are made. The function of the orchard, however, has been largely demonstrational rather than experimental.

General farming activities are concerned chiefly with the production of winter feed for livestock. The present livestock population of the farm consists of 114 grade Hereford cattle and 92 head of sheep. A constant herd of 40 breeding cows and a breeding flock of 48 ewes is maintained. All tillable land that is not used for research and permanent pasture is devoted to the production of silage and hay crops. At the present time approximately 20 acres are in alfalfa and 20 acres in Ladino clover and grass for hay and silage. Ten acres are planted to corn for the production of silage and feed grain. All general farming operations are performed in such a manner as to demonstrate recommended practices and proper methods to farmers in this area.

The farm performs many service features. It is a source of tobacco plants for farmers in the area after the farm requirements have been met. Ewe and ram lambs are sold to the farmers in the area, and beef cattle are offered them when it is desirable to reduce the size of the farm herd.

The facilities here are used by the Division of Markets as a Distribution point for western ewes and purebred rams, by the Ashe County Guernsey Breeders for their annual sale, by the 4-H Club for Sheep Shearing Schools and State contests, and by Local County Agents and vocational agriculture teachers for training livestock judging teams. The assembly room is used by county extension workers for regular monthly meetings in the community and for Home Demonstration Club meetings and Boy Scout meetings.

A Corn and Tobacco Field Day is held each year for farmers to observe the work being done here. Approximately 400 farmers attended each of the meetings held during the past biennium. Approximately 1,500 Veterans from surrounding counties and from Virginia have visited the farm. Also, it has been visited by many organized tours, including the local county farm tour and the animal industry students on tour from N. C. State College. In addition to the



Noon hour break in a field meeting at the Upper Mountain Test Farm.

organized groups, around 150 people have visited the farm individually or in small groups during the past two years to observe the work being done here or to seek advice.

The personnel of the farm participate in community and county-wide agricultural activities and assume positions of community leadership. The farm co-operates and assists in every way possible with the county extension workers, vocational agriculture teachers and civic organizations in promoting worthwhile programs.



DR. H. J. ROLLINS

VETERINARY DIVISION

DR. H. J. ROLLINS

State Veterinarian

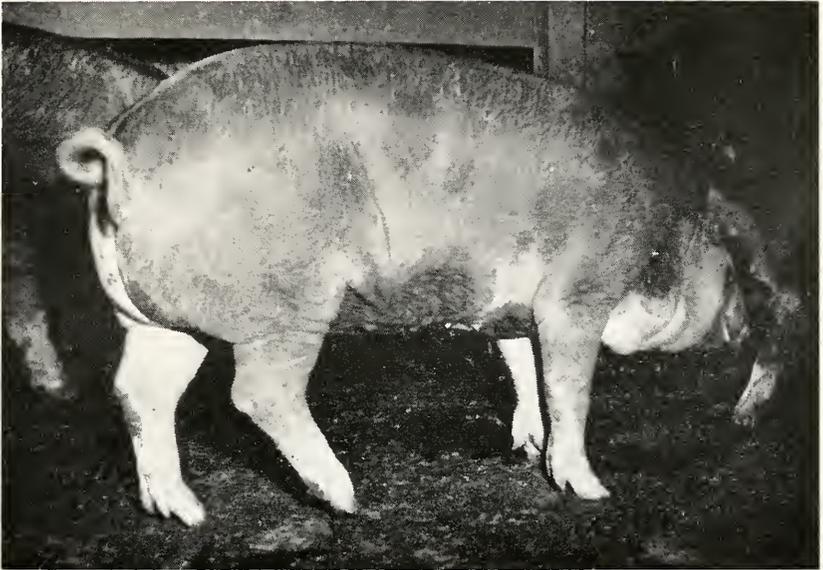
The Veterinary Division is confronted primarily with the problem of control and eradication of infectious diseases of livestock and poultry. Attention has been directed repeatedly to the importance of maintaining health in livestock. The economical production of foods of animal origin, including meat, milk and eggs, depends directly and continually upon the ability to keep livestock healthy. The animal-human health factor is also of first importance because many infectious diseases affecting domestic animals are transmissible to the human family and probably an equal number of diseases of mankind find intermediate hosts in animal species. It becomes more obvious year after year that supplies of animal products must be maintained in proper ratio to the increased population in order that all people may have suitable and adequate diets. The accumulation of larger and larger numbers of livestock and poultry increases the problem of disease control as well as the appropriation of adequate funds for veterinary field and laboratory personnel.

The animal health civil defense program has added new duties and responsibilities during the biennium. The state veterinarian in co-operation with the federal inspector in charge have held meetings with the four local Veterinary Medical Associations located in the State. The local practicing veterinarians fully realize that they are the first line of defense in the control and eradication of infectious diseases of livestock and poultry and they have agreed to co-operate with the State and Federal disease control agencies.

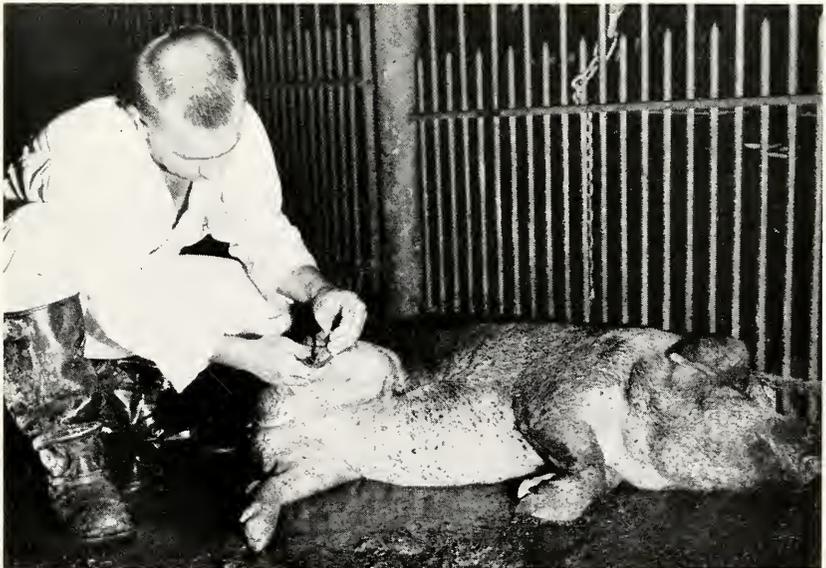
Healthy animals are just as much a part of national defense as armed forces and their equipment of guns, ships and planes. Widespread outbreaks of diseases would cause heavy losses in the number of livestock and poultry and would seriously disrupt the livestock economy and become a national disaster.

ANTHRAX

The importation of foreign raw bone meal contaminated with anthrax spores caused a serious outbreak of anthrax in several hundred counties in the midwestern and other states in the early part of



Lameness observed in the early stages of vesicular exanthema.



Vesicles on the feet which cause lameness.

1952. Anthrax was not diagnosed in North Carolina during this outbreak.

The Commissioner of Agriculture promulgated rules and regulations prohibiting the use of raw bone meal in animal feeds, including mineral feeds and fertilizers, unless the bone meal has been adequately heat treated to destroy anthrax spores. There are no known methods of sterilizing soil when contaminated with anthrax spores.

VESICULAR EXANTHEMA

Vesicular exanthema, a virus disease of swine, occurred in a number of midwestern states in June, 1952, and was spreading rapidly to other states at the close of this biennium. The State and federal regulatory officials are seriously concerned with this outbreak because the lesions of vesicular exanthema are identical with those of foot and mouth disease in swine. Animal inoculation and laboratory diagnosis are necessary to distinguish vesicular exanthema from foot and mouth disease. The disease cannot be eradicated except by limiting the movement of swine and prohibiting the feeding of raw garbage.

The widespread outbreaks of anthrax and vesicular exanthema definitely show that the present method of control and eradication of infectious diseases of livestock is not adequate should this country be subjected to biological warfare. Additional trained personnel and equipment are needed.

ANAPLASMOSIS

Anaplasmosis is one of the serious diseases of cattle in North Carolina. It is caused by a microparasite which invades red blood cells, destroying a large number of them and causing the animal to become anemic.

Recovered animals remain permanent carriers. The key to the problem of control and eradication of anaplasmosis is the carrier animal. Some progress has been made in the development of the complement fixation test, but at present it still leaves too many carrier animals undetected. The disease is spread from infected to healthy animals by ticks, horseflies, mosquitoes and other biting insects, as well as by unclean surgical procedures.

Research workers need adequate funds to set up a program for the study of this disease on a reasonable basis. Thus far, an exact therapeutic agent for treatment of the disease in the acute form and during the carrier stage has not been found.

BRUCELLOSIS

The brucellosis control and eradication program is conducted by the Veterinary Division, co-operating with the United States Bureau of Animal Industry and the accredited practicing veterinarians of North Carolina.

The Board of Agriculture adopted a regulation June 20, 1951, providing that brucellosis reactors be permanently removed from dairy herds producing graded fluid milk, effective July 1, 1952. This regulation will remove one source of the spread of this costly disease that has not been provided heretofore. A high percentage of the reactors found during the period covered by this report resulted from questionable and illegal importation of both dairy and beef cattle. Test and slaughter of reactors have given excellent results in cleaning up herds infected with brucellosis. The animal-human health problem is ever present when reactors are not slaughtered. The vaccination of adult cattle with brucella vaccine is not a sound disease control policy and should not be permitted except in unusual and rare instances, and then the retaining of reactors should be prohibited. The official calfhood vaccination is between the ages of four and eight months and is limited to a small percentage of the herds. The reaction titer set up with Strain 19 in either calves or adults cannot be distinguished from the reaction titer produced by actual brucellosis infection.

There was an increase of 123,114 blood samples tested in the laboratory in this biennium over the previous one. The percentage of brucellosis infection found continues to show a slight decline in each succeeding year.

We plan to use the milk ring test as the new diagnostic method to detect brucellosis in dairy herds more and more each year. When used at intervals of six months, this test is now recognized and accepted as part of the brucellosis eradication program.

SUMMARY OF BANG'S TESTING

	Herds Tested	Cattle Tested	No. Reactors	Percentage of Infection
July 1, 1950 to June 30, 1951	27,055	247,870	1631	.66 of 1%
July 1, 1951 to June 30, 1952	27,539	268,985	1713	.64 of 1%
Total Indemnity Paid				
July 1, 1950 to June 30, 1951			\$14,305.34	Federal
			14,305.34	State

			\$28,610.68	
July 1, 1951 to June 30, 1952			\$12,680.49	Federal
			12,680.49	State

			\$25,360.98	

Summary Calfhood Vaccination

	No. Calves Vaccinated
July 1, 1950 to June 30, 1951	1708
July 1, 1951 to June 30, 1952	1680

TUBERCULOSIS

The tuberculosis control program is carried on in North Carolina through co-operation of the Veterinary Division and United States Bureau of Animal Industry, with practitioners participating in the program. The incidence of the infection is very low. The annual tuberculin test of cattle is necessary to keep down the spread of this disease. In the early part of 1952, twenty-one tubercular cattle were found in one herd of 47 dairy cows. If the tubercular carrier in this herd had been detected earlier there would have been less spread of the disease.

SUMMARY OF TUBERCULAR TESTING

	Herds Tested	Cattle Tested	No. Reactors	
July 1, 1950 to June 30, 1951	7,131	90,834	4	
July 1, 1951 to June 30, 1952	6,872	90,522	23	
Total Indemnity Paid				
July 1, 1950 to June 30, 1951			\$ 62.50	
			62.50	

			\$125.00	
July 1, 1951 to June 30, 1952			\$268.87	
			268.87	

			\$537.74	

MASTITIS

A thorough study of mastitis indicates that this disease cannot be controlled by such methods as are used in the control of tuberculosis and brucellosis. Sanitation, good management and medicinal agents now available are necessary for the proper control of this disease. A high percentage of this infection is due to injury which can be reduced by good management. Mastitis in a dairy herd causes serious economic loss from both lowered production and numerous herd replacements.

DISEASE OF HORSES AND MULES

The population of horses and mules on North Carolina farms continues to decrease, resulting in a decline in the infectious diseases of these animals.

Equine encephalomyelitis, which affects horses and mules and is also transmissible to man, has not been very prevalent during the biennium, but some cases have been reported. The disease is caused by a virus and is usually transmitted by biting insects. A satisfactory vaccine is being used for the prevention of this disease. Equine encephalomyelitis is more prevalent in coastal counties of North Carolina than in other sections of the State.

HOG CHOLERA AND OTHER SWINE DISEASES

Hog cholera remains by far the most important disease of swine and numerous outbreaks have been reported. The mass movement of swine, the feeding of raw garbage and the use of virulent virus are major factors in the spread of hog cholera. The use of modified live virus hog cholera vaccine has given both good and bad results. The hazards of field use need further study before this product can be recommended or condemned. When used on healthy hogs the results, in most instances, have been satisfactory. Its use on hogs exposed to hog cholera, hogs in poor physical condition and hogs with some other infectious disease, is not recommended. The use of a liberal dose of anti-hog cholera serum with this new virus should give better protection.

Quite a number of herds have been infected with intestinal disorders caused by salmonella organisms; also erysipelas, swine plague and some other diseases. There are serious nutritional and parasitic problems that must be solved if the swine industry is to grow and flourish in this State.

The purebred swine producers have inaugurated a brucellosis control program in some areas. Swine brucellosis is highly pathogenic for man as well as causing a serious economic loss in swine production. The purebred producers should adopt a policy of obtaining herd replacements from brucellosis-free herds.

In the control of brucellosis in swine it is necessary to test the entire herd, because swine infected with *brucella suis* do not produce agglutinins in uniform amounts and testing of a few individuals in the herd is no assurance that the disease is not present.

RABIES

This Division operates under the rabies law, as amended. The requirements of this law are being carried out by the county governments and health officers. The State Board of Health has employed a public health veterinarian to advise and assist the rabies control program throughout the state.

The new modified live virus avian rabies vaccine has not been released for use in this State.

BREEDING IMPROVEMENT AND PULLORUM DISEASE ERADICATION WORK

Although pullorum disease is no longer considered the number one poultry disease in the state, its insidious nature demands continuous testing of hatchery supply flocks, good sanitation, and management on farms and in hatcheries and the utmost care on the part of the chick-buying public.

There continues to be an increasing demand for good hatching eggs produced in the western part of this State. Although a large volume of these mountain eggs are hatched in the State, the majority are exported to the southeastern states.

The hatching egg export business is the main reason for the increase in pullorum testing during the past season. The stained antigen rapid whole blood method of testing was used for chicken testing, and all turkeys were tested by the tube method. "U. S. Pullorum Passed" and "U. S. Pullorum Clean" are the only pullorum classes recognized in the State.

SUMMARY

	Chickens and Turkeys		Hatchery Capacity	
	1950-51	1951-52	1950-51	1951-52
No. Hatcheries in National Plan	213	211	11,650,000	11,824,000
No. Hatcheries not in the Plan	5	5	210,364	211,440
No. Turkey Hatcheries	9	13	214,050	256,450
Hatchery Egg Dealers ..	10	15		

PULLORUM TESTING

	Chickens		Turkeys	
	1950-51	1951-52	1950-51	1951-52
No. flocks tested	2,879	3,383	38	52
No. birds tested	1,341,876	1,928,947	19,384	36,750
Per cent positive	0.104	0.03	0.28	0.24
No. Samples tested (retests included)	1,620,190	2,143,412	22,505	41,201
No. Pullorum Clean Flocks	2,346	2,983	20	36
No. Pullorum Clean Birds	1,132,180	1,346,506	7,714	28,970

POULTRY DISEASES

Newcastle, leucosis, fowl typhoid, coccidiosis, bronchitis and other poultry diseases continue to cause economic loss in poultry flocks.

Chronic air sac disease, a new poultry killer, has caused serious loss in a number of flocks since the beginning of 1952. Marketing of recovered birds is delayed several weeks and often the carcasses are of poor quality.

The Federal government has appropriated a considerable sum of money for a research program on air sac disease of poultry.

POULTRY DIAGNOSTIC LABORATORY

The Waynesville Poultry Diagnostic Laboratory was equipped in the fall of 1950 and started operating in November. Western North Carolina has a large number of hatchery flocks and the laboratory service is essential to the control and eradication of poultry diseases in that area.

PUBLIC LIVESTOCK AUCTION MARKETS

There are 58 public livestock auction markets in North Carolina. It has been impossible to inspect many of these markets as frequently as necessary because sufficient personnel is not available. The sale days of most of these markets are confined to Tuesday, Wednesday and Thursday and additional personnel is needed immediately to inspect these markets as required by law. The poultry specialists were used as inspectors at some of these markets but this has been curtailed due to the tremendous increase and demands for pullorum testing and flock inspection. The public livestock auction markets present a huge disease control problem and should be adequately inspected as required by law.

DIAGNOSTIC AND RESEARCH LABORATORY

The appropriation of funds for building a diagnostic and research laboratory for large animals is one of the outstanding achievements of the biennium. At the present time the state does not have adequate diagnostic equipment and personnel. The new diagnostic laboratory should be complete and in operation by the summer of 1953. The appropriation of adequate funds to secure qualified personnel is most essential. The tremendous increase in the numbers and value of the livestock in North Carolina creates additional animal health hazards. The new laboratory will supply a long needed diagnostic service that has not been available heretofore.

WAREHOUSE DIVISION

A. B. FAIRLEY

Superintendent of Warehouses



A. B. FAIRLEY

During the 1950-1952 biennium the demand for licensed storage for grain has increased steadily. To take care of this demand the State Warehouse System issued regulations covering grain warehouses, elevators and bins. Two warehouses have now been licensed for storage of grain and other applications have been received. With new storage facilities being erected in all parts of the State, the number of licensed warehouses should have a rapid growth within the next two years. Storage in these modern plants should prove of great benefit to grain producers, handlers and processors.

The Warehouse System, during this biennium, has had licensed for storage of cotton, 88 warehouses with a capacity of 550,000 bales; for storage of peanuts it has had licensed five warehouses, and for lespedeza, four warehouses. The cotton warehouses have handled around 500,000 bales during each year of the biennium.

Payments of interest and principal of loans on warehouses have been promptly met and loans have been made on new warehouses at Concord, Roanoke Rapids and Seaboard.

FINANCIAL STATEMENT OF THE WAREHOUSE SYSTEM

June 30, 1950

Cash on Hand Principal Fund	Cash on Hand Supervision Fund	Loans First Mtges.	Invested in Government Bonds
\$49,326.07	\$43,209.69	\$134,630.00	\$550,000.00

June 30, 1952

\$9,234.63	\$38,985.96	\$187,021.44	\$550,000.00
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C. D. BAUCUM

DIVISION OF WEIGHTS AND MEASURES

C. D. BAUCUM

Director

The purpose of the Weights and Measures Division is "to protect the purchasers and sellers of any commodity and to provide one standard of weight, measure, length and surface which shall be used throughout the State." (Chapter 81 G.S.) I am happy to report that our records show that more than 95 per cent of our merchants are honest men

and are trying to give correct weight or measure in every sale.

There are five subdivisions in the Weights and Measures Division of this Department, namely, Weights and Measures, Gasoline and Oil Inspection, Liquefied Petroleum Gas Inspection, Tobacco Curer Inspection, and Concrete Block Inspection.

During the past two years our inspectors have made 111,961 visits to places of business in the State in carrying out the mandates of the law. These visits include inspection of 50,126 scales, 116 measures, 150,376 packages, 1,179 deliveries, 185,456 pumps, and 6,882 meters. Included also are the taking and analyzing of 51,328 samples of gasoline and 13,624 samples of kerosene, the inspection of 7,794 tobacco barns, and the inspection of 1,372 liquefied petroleum gas installations. These totals are exclusive of special investigations requested by affected citizens.

There has been a gradual change to prepackaged merchandising during the past biennium which explains why such a large number of packages have been check-weighed. There is a constantly growing demand for the testing of large capacity scales, but thus far our two heavy duty scale-testing outfits have been able to meet the demand within a reasonable time.

It is gratifying to report that the quality of the petroleum products offered for sale in this State is far better than the minimum State specifications, and that the inspection service has just about completely eliminated the accidental mixture of gasoline with kerosene. In addition to our central laboratory, where complete analyses are made, we have 12 portable laboratories which run distillation tests at the filling stations and grocery stores. Our most recent service has been the equipping and putting into service of three portable testing units for

checking the accuracy of meters used in local deliveries of gasoline, kerosene and fuel oil.

The responsibility for the handling and storing of liquefied petroleum gas and its inspection for quality, quantity and safety was transferred to this division without any appropriation. Consequently, our activity in this field has been limited.

The enforcement of the law dealing with the reduction of fire hazards in tobacco barns is becoming quite popular and the farmers are making more and more requests for inspections. This is a seasonal inspection running for about two months, and we definitely need about twice as many inspectors as we now have.

In the enforcement of the law relating to concrete building blocks, the Division depends on commercial laboratories for load-bearing tests. It is most gratifying, however, to report that since this law was passed the masonry units offered for sale in this State have had a load-bearing strength far in excess of minimum requirements.

Our inspection service has been considerably handicapped during the past biennium by a large turnover in personnel. Nevertheless, we have taken care of all requests, but at the expense of routine inspections.



During the period covered by this report 139,824 packages were reweighed for accuracy.



The average life of a scale is ten years. Thus ten per cent will wear out or become obsolete annually. In testing 44,039 scales during the past two years, 4,179, or 9.5 per cent, were found inaccurate.



One of the Division's two heavy-duty scale testing units which test for accuracy over 3,600 such scales at coal yards, mills, gins, junk yards, livestock markets and grain elevators.



Accuracy of pharmaceutical scales is extremely important. Checking such scales in the 800 drug stores of this state is one of the services performed by the Weights and Measures Division.



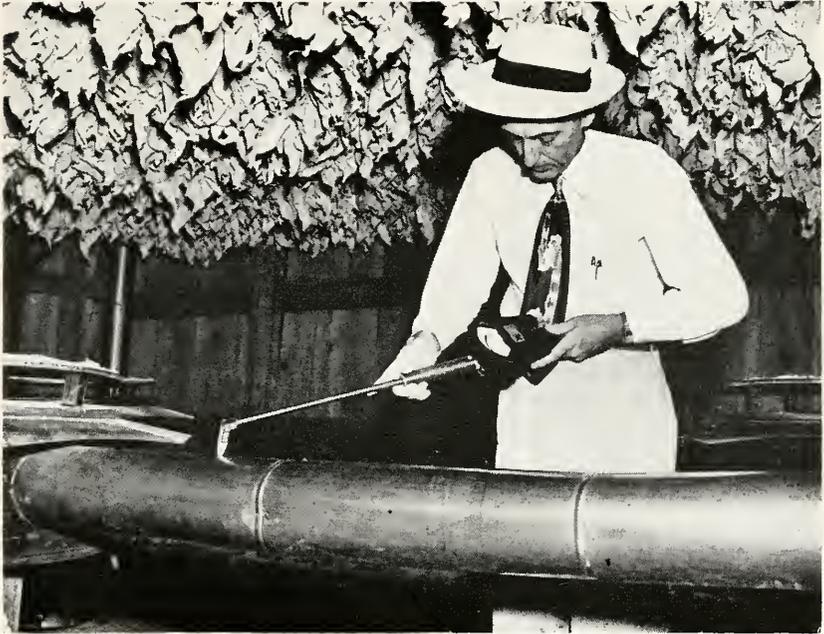
Practically all the cotton produced in this State is weighed on this type scale. The Weights and Measures Division endeavors to test annually the scales of this type used at 900 cotton gins.



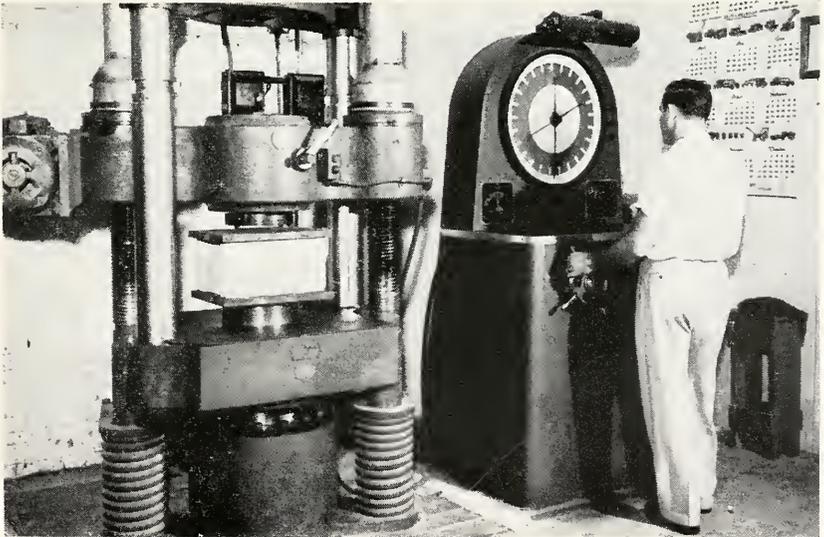
Scales in tobacco auction warehouses are tested before and during the entire auction season. There are 307 warehouses in the State.



We made 2,574 visits to the tobacco auction warehouses during the past biennium, and reweighed 10,552 baskets with a total weight of 1,622,426 pounds. The total of all errors found, including shrinkage due to moisture content, was a fraction over four-tenths of one per cent (0.407%).



Testing a tobacco curer for fire hazard. During the past two years we have inspected 7,794 new installations.



Testing the load bearing strength of concrete masonry units. The machine shown in this picture will develop a load of 300,000 pounds.



One of the 185,456 gasoline and kerosene pumps inspected during the past two years.



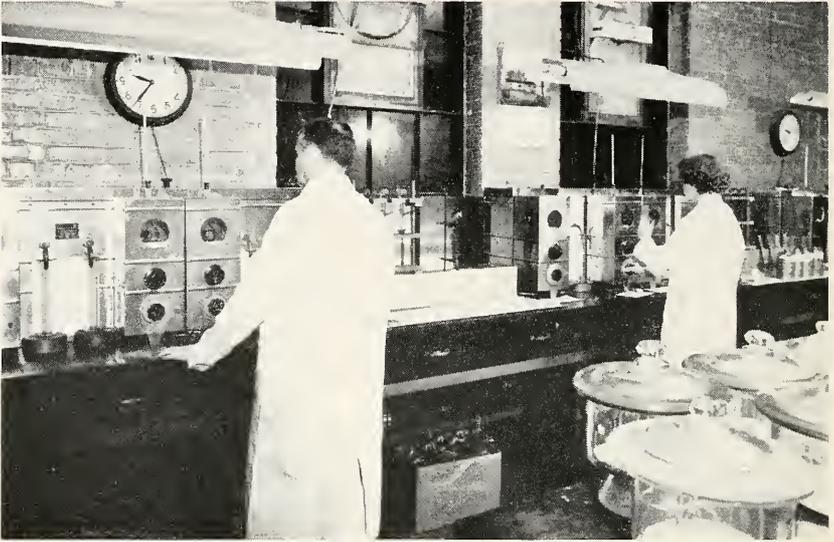
These twelve portable laboratories ran distillation tests on 18,197 samples of gasoline and oil during the time covered by this report.



Inspector is shown taking a sample of kerosene out of an underground storage tank to be tested for flash point. Out of 11,541 such samples only 130 failed to meet the minimum requirement.



A sample of each brand of gasoline sold in this State is taken weekly. This assures all dealers and distributors that the quality is as registered with the Department. Pictured at left is an inspector taking a sample from a one million gallon storage tank. Approximately eighty million gallons of gasoline and kerosene are stored in this State in tanks like that shown in the close-up at right.



In the Division's central laboratory, distillation tests were run on 26,235 samples of gasoline and 24,890 tests for gum.



At the Division's one volumetric calibrating station 1,635 tank trucks were calibrated and sealed during the past two years.



Testing the accuracy of meters on local delivery trucks. The Weights and Measures Division has three vehicles like that pictured above, each having a 100-gallon sealed liquid measure inside.



Liquid petroleum gas is the most dangerous of all motor fuels and measures for accuracy must be accomplished while the liquid is under 200 pounds pressure or greater. Thus the equipment used must be very strong and heavy. There are 255 dealers in North Carolina.





