

OCTOBER, 1935

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THE UNIVERSITY OF
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RECORD



RESEARCH IN PROGRESS
OCTOBER, 1934—OCTOBER, 1935

GRADUATE SCHOOL SERIES No. 29

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FOREWORD

The present issue of RESEARCH IN PROGRESS is the fifteenth volume of this publication. It contains, according to the plan of presentation followed during the last several years, the record and summary analysis of the investigations accomplished and published and those in process of completion by graduate students and faculty of the University of North Carolina during the calendar year ending October 1, 1935.

W. W. PIERSON, *Dean*

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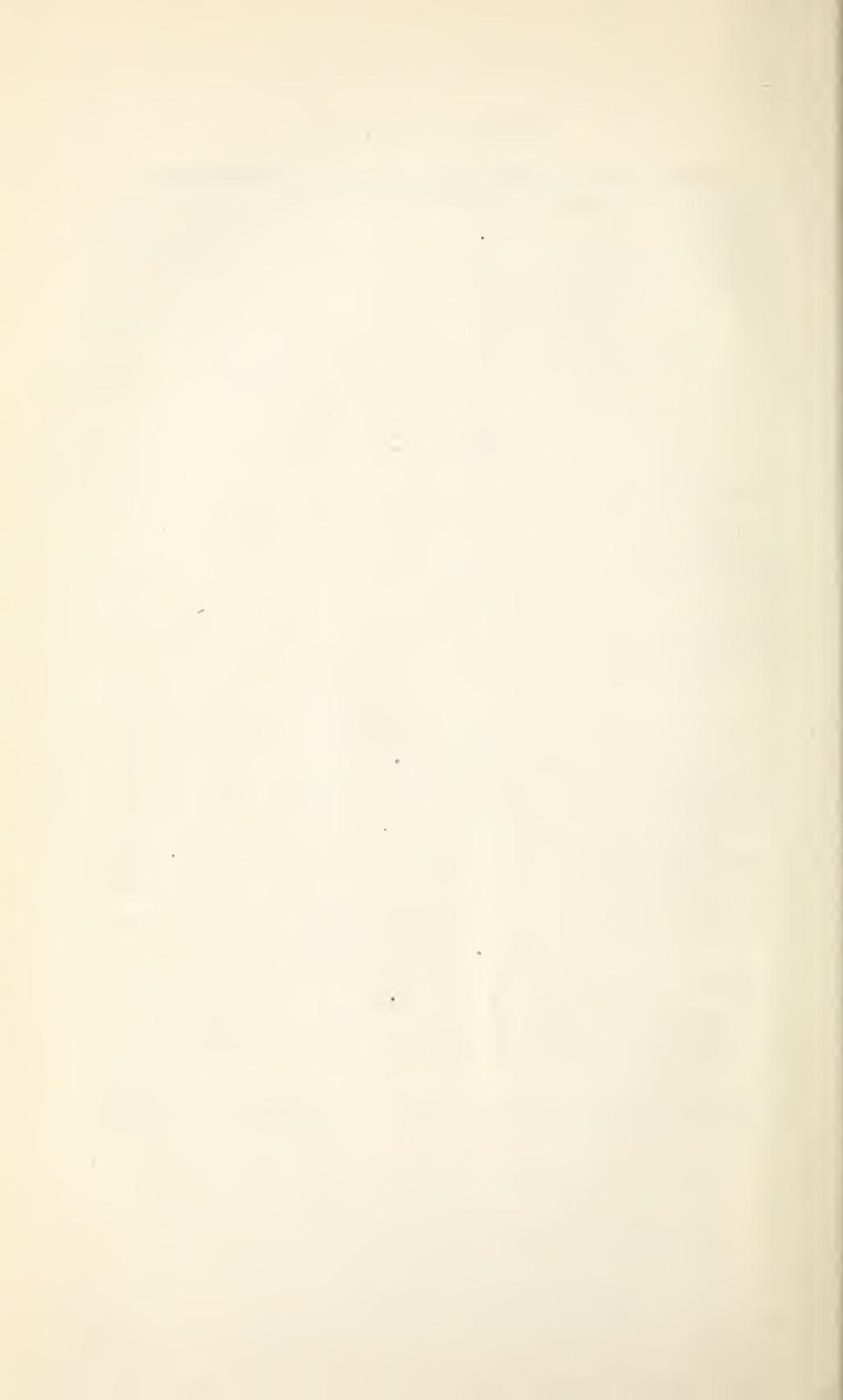
RESEARCH IN PROGRESS

APPROPRIATIONS GRANTED FROM THE SMITH RESEARCH FUND

PROJECT NO.	APPLICANT	SUBJECT	AMOUNT
249	Gwynn, J. Minor.....	For travel expenses and for copying certain records from the minutes of Boards of Trustees and faculties of various universities.....	\$100.00
250	Noblin, Stuart.....	For travel expenses to Washington for work on thesis.....	15.40
251	Moore, Maurice A.....	For travel expenses to Harvard and Yale Universities' Libraries in connection with his doctoral dissertation.....	50.00
252	Hayes, Francis C.....	For the purchase of books to be used in a research project "An Historical Dictionary of Spanish Proverbs".....	75.00
253	Hudson, A. P.....	For aid in publishing a book of "Folk Songs of Mississippi and their Background".....	200.00
254	Downs, R. B.....	For aid in purchasing a film projector for use of faculty and graduate students.....	87.50
255	Williams, L. L.....	For traveling expenses to various fish hatching stations, for work on doctoral dissertation.....	125.00
256	Leavitt, S. E.....	For purchase of filing cards and cabinet for a title index to the Spanish play collection in the Library.....	40.00
257	Congleton, J. E.....	For aid in traveling expenses to the British Museum for study essential to his doctor's degree.....	100.00
258	McLeod, W. M.....	For photostating of a manuscript of Richard de Fournival.....	8.00
259	Arnold, Fred H.....	For travel expenses to Washington for work on dissertation.....	50.00
260	MacNider, Wm. deB.	For the making of seven camera lucida pen and ink drawings, to illustrate two scientific papers; and for expenses to Washington.....	85.50
261	McGeachy, J. A.....	For photostats of a Munich manuscript of Medieval History.....	5.00
262	Hayes, Francis C.....	To continue his work on An Historical Dictionary of Spanish Proverbs.....	50.00
263	Hayes, Francis C.....	For consulting certain manuscript works in Spain and in the British Museum, and for necessary copying and photostating.....	50.00
264	Brown, D. A.....	For travel expenses to the Library of Congress for work on doctoral dissertation.....	25.00
265	McFerrin, J. B.....	For travel expenses to several points in Tennessee on a study of the operation of Caldwell and Company.....	50.00
266	Russell, J. C.....	For the purchase of rotographs in connection with manuscripts of the Chronicles ascribed to Peter of Ickham.....	40.00
267	Eliason, Mary.....	For travel expenses to Harvard in connection with her doctoral research.....	50.00
268	Williams, L. L.....	For travel expenses and maintenance at various fish hatcheries in connection with his doctoral research.....	50.00
269	Cox, E. H.....	For travel to Washington and for photostats in connection with his doctoral research.....	25.00
270	Heath, Milton S.....	For travel and subsistence to Washington in a study of the Southern Railway System.....	35.00
271	Weaver, W. R.....	For aid on travel expenses to Spain, in connection with his doctoral research.....	100.00
272	Brown, W. A.....	For travel to Harvard, Ann Arbor, and Washington for work on doctoral dissertation.....	75.00
273	Smith, G. Wallace.....	For travel to Michigan to complete doctoral dissertation.....	50.00
274	London, Lonnie F.....	For photofilms and photostats needed for his study of the life of G. E. Badger.....	40.00
275	Harland, J. P.....	To secure photographs to be made for him in Greece this summer.....	25.00
276	Moore, M. A., Jr.....	For travel expenses to Harvard, Yale, Columbia, and Washington Libraries, for work on doctoral dissertation.....	50.00
277	Hood, Robin.....	For travel expenses to Washington for work on dissertation.....	25.00
278	Frazer, Keener C.....	For photostating and copying of materials needed in preparation of a biography of Senator Morgan, and for travel expenses in connection with his study.....	75.00
279	Thurman, Beverley.....	For photostats of manuscript of the <i>Sidrach</i> , in preparation of doctoral dissertation.....	50.00

APPROPRIATIONS FROM THE ROCKEFELLER FUND FOR RESEARCH IN
 PURE SCIENCE, 1934-1935

APPLICANT	SUBJECT	AMOUNT
R. E. Coker.....	For technical services in study of influence of temperature on forms of copepods and cladocera.....	\$ 300.00
	For purchase of a thermometer, glassware, and other miscellaneous apparatus for his study of copepods and cladocera.....	100.00
	For technical assistance in maintenance of cultures in preparation of copepods and cladocera for examination and for measurements and sketching....	250.00
J. N. Couch.....	For help in the publication of his monograph on Septobasidium, provided the amount paid to the University of North Carolina Press be not more than half the actual cost of the work.....	600.00
	To pay for part-time assistance in experimental work on Septobasidium, Dictyuchus, and other fungi.....	50.00
W. F. Prouty.....	For continuance of study of the "Carolina Bays".....	365.00
	For technical services in study of fossils from Silurian deposits of eastern Tennessee.....	150.00
J. W. Huddle.....	For study of the Chattanooga shale of Tennessee and Virginia, New Albany shale of Kentucky, and Ohio shale of Ohio.....	200.00
Gerald R. MacCarthy	For further geophysical investigations of the coastal plain of the Carolinas.....	200.00
	To help pay for illustrations of an article on Eolian Sands in the <i>American Journal of Science</i>	15.00
Otto Stuhlman.....	To pay research assistant for work in spectroscopic investigations.....	360.00
A. S. Wheeler.....	To pay for services of Dr. Joseph LeConte in carrying forward studies of quinoline derivatives of p-cymene.....	300.00
	For expert assistance in preparing material for study of bromo-derivatives of 1.5-Dihydroxynaphthalene..	80.00
E. K. Plyler.....	To pay an assistant at the rate of \$50 per month to help in his work on infrared absorption.....	300.00
W. C. George.....	To employ an assistant for two months to help complete two manuscripts.....	200.00
J. F. Dashiell and A. G. Bayroff.....	For purchase of instruments and materials in investigations of a new technique in study of animal learning.....	210.40
J. M. Valentine.....	For binocular microscope and other equipment for study of carabid beetles.....	234.50
T. F. Hickerson.....	For purchase of a rebuilt Monroe calculating machine	130.00
H. M. Burlage.....	For purchase of a duplex screen for testing fineness of drug particles.....	210.00
E. W. McChesney.....	For purchase of materials to carry out studies on the cadmium salts of the alpha-amino acids.....	100.00
R. W. Bost.....	To pay for a translation of a chapter in a Russian book, Tobacco Chemistry, by Smuck, which is in line with Dr. Bost's research on the chemical compounds obtained when tobacco is destructively distilled.....	114.00
A. E. Ruark.....	For purchase of the necessary parts for a Wilson cloud chamber for study of radio-active and cosmic ray effects.....	250.00
W. C. Coker and H. R. Totten.....	For aid in botanical explorations of the southeastern states in preparation for their shrub book.....	175.00
	TOTAL.....	\$4,893.90



P

PART I

RESEARCH IN PROGRESS

DEPARTMENT OF ANATOMY

W. C. GEORGE has completed during the year:

The Role of Blood Cells in Excretion in Ascidians. Read before the Elisha Mitchell Scientific Society, October 9, 1934.

Some species of ascidians have closed renal vesicles into which the end products of purine metabolism are excreted and stored during the life time of each individual. Others do not have renal vesicles but have vacuolated renal cells of lymphoid and connective tissue origin. These cells take purine wastes out of the body fluids and store them in their vacuoles in the form of granules or concretions. The cells circulate in the blood or may be localized in the tissues.

The Function and Fate of the Lymphocytes. Read before the Mecklenburg County (N. C.) Medical Society, Charlotte, January 22, 1935. Published in *Southern Medicine and Surgery*, XCVII: 122-126. 1935.

Although two and one-half times as many lymphocytes disappear from the circulation each day as there are present at any one time, the number in the blood normally remains constant. The new lymphocytes come from division of pre-existing lymphocytes or from differentiation of connective tissue cells.

In some lower animals it has been shown that many parts, and in some cases it appears all parts, of a new organism may arise through differentiation of lymphoid cells. And even in the mammals it has been shown that lymphocytes may transform into a wide variety of specialized cell types. It is argued that the chief function of the lymphocytes is to serve as a circulating supply of embryonic tissue capable of differentiating into various specialized cells when the needs of the body and the right stimuli evoke their potentialities.

Contact as a Stimulus to Localized Growth. Read before the North Carolina Academy of Science, May, 1935. (To be printed in the *Journal of the Elisha Mitchell Scientific Society*.)

Proof that localized pressure on the cambium causes localized growth in plants is seen in various types of phenomena. Examples are the ridges developed where separate tree trunks or approximately parallel limbs of the same tree have been in contact for several years; the growth of wood over planks placed as seats between trees or over stones pressed against tree trunks; enlargements where tree trunks or limbs have been bound by vines. A case of the latter type permitted of quantitative study. It was a sweet gum sapling that had been bound by a honeysuckle vine throughout a zone

78 cm. in length. The average bulk in the region of stimulation was 44% greater than in the trunk below and 60% greater than in the trunk above; the average weight was increased 55% over that of the trunk below and 118% over that of the trunk just above.

In animals, too, appearance suggests that pressure may be an important stimulus in certain regions of the embryo. Examples are the active proliferation of cells in the nephrogenic cord where the metanephric evagination of the mesonephric duct presses into it; the origin of the mesoderm from the line of fusion of the lips of the blastopore. In the field of abnormal development there are certain teratomas and parasitic fetuses that tend to occur along lines where fusions took place in embryonic development. In view of their tendency to occur along lines of fusion and in view of the proliferative stimulus exerted by contact, we can not ignore the possibility that some of these teratological structures may be the result of a sort of abortive reproduction through a process of budding such as is common in many lower animals.

DEPARTMENT OF BOTANY

W. C. COKER has published:

A Remarkable New Rhododendron. *Journal of the Elisha Mitchell Scientific Society*, LI: 189-190, pl. 53. 1935.

W. C. COKER and H. R. TOTTEN are continuing work on their book, *The Shrubs of the Southeastern States*. Collecting trips are being made at frequent intervals and the results incorporated into the departmental herbarium. MR. T. G. HARBISON is rendering valuable assistance in this work. Many drawings of the shrubs have been made by several artists, notably MRS. CECIL JOHNSON, MRS. H. M. BURLAGE, and MRS. LESTER WILSON.

JOHN N. COUCH has published:

New or Little Known *Chytridiales*. *Mycologia*, XXVII: 160-175, with 64 text figs. 1935.

A New *Saprophytic* Species of *Lagenidium*, with Notes on Other Forms. *Mycologia*, XXVII: 376-387, with 40 text figs. 1935.

Septobasidium in the United States. *Journal of the Elisha Mitchell Scientific Society*, LI: 1-77, pls. 1-44. 1935.

This genus hitherto regarded as tropical or subtropical and of rare occurrence has been found to be quite abundant in the southeastern states, the writer adding twenty-six species to the nine already known to occur in the United States. Of these twenty-six species, six have been described before from other parts of the world, while the remaining twenty are described for the first time. Tables showing the distribution of species by states, by host trees, and by host insects are given. Some species of *Septobasidium* cause

considerable damage to their host plants, details of which are described under each species. New observations are described under several species on the fungus-insect relationship.

Structure of *Septobasidium* in Relation to the Association with Scale Insects. *Proceedings of the Sixth International Botanical Congress*, pp. 154-156. Amsterdam. 1935.

PROFESSOR COUCH has had accepted for publication:

An Incompletely Known Chytrid: *Mitochytridium ramosum*. To appear in *Journal of the Elisha Mitchell Scientific Society*.

He has directed the following studies:

D. H. LATHAM. *Achlya recurva* from North Carolina. *Journal of the Elisha Mitchell Scientific Society*, LI: 183-187, pl. 52. 1935.

W. R. HATCH. Sexuality of *Allomyces arbuscula*. *Journal of the Elisha Mitchell Scientific Society*, IL: 163-170, pl. 17. 1933.

PROFESSOR COUCH is continuing his studies on *Septobasidium* and the lower fungi.

The following theses have been accepted by the Department during the year, the degrees to be granted in June, 1936.

VERA MILLSAPS. (Doctoral dissertation.) The Structure and Development of the Seed of *Paulownia tomentosa* Steud. and *Cynoglossum amabile* Stapf and Drumm.

EDNA METZ WELLS. (Master's thesis.) The Structure and Development of the Seed in *Cimicifuga racemosa*.

DEPARTMENT OF CHEMISTRY

EDWARD MACK, JR. has the following research in progress:

A study of the properties of oil films on a water surface; also the structure and elastic behavior of certain highly polymerized rubber-like materials.

Permeability of Cellulosic Membranes to Water and Certain Organic Liquids. (With SHERMAN E. SMITH, in a post-doctorate Dupont Cellophane project.)

Transpiration of Gases and Liquids through Porous Copper. (With HOWARD A. TANNER, progress on doctoral dissertation.)

The zinc may be distilled out of thin sheets of brass, in a vacuum furnace at a suitable temperature, leaving behind a sheet of "porous" copper. The pores are too small to be seen microscopically; but such a sheet acts as a molecule-sieve, passing small molecules but stopping large ones.

Viscosity of Vapors and Size and Shape of Certain Organic Molecules. (With NORWOOD L. SIMMONS, JR., progress on doctoral dissertation.)

From the viscosity data, obtained over a considerable temperature range by the oscillating disk method, for a number of different volatile organic substances, the Sutherland constants and collision areas of the molecules are being calculated. By a supplementary "shadow-graphic" treatment of the molecule models, the shapes of the molecules are inferred.

A. S. WHEELER has directed the following research:

G. C. KYKER. (Progress on doctoral dissertation.) A Study of the Formation and Properties of the Halogenated Cymidines.

p-Cymene has been nitrated to give 2,6-dinitro-p-cymene. The latter was selectively reduced with ammonium sulfide to give amino nitro p-cymene. By means of the Sandmeyer Reaction the amino group was replaced by the various halogens, which upon reduction gave the corresponding halogen derivative of the amine. Considerable study has been made on improving the yields in the various steps in the procedure and in the purification of the dinitro derivative. The properties of the halogenated cymidines are now under investigation.

J. N. LECONTE. (Post-doctoral research). Orientation Studies of Certain Halogen Derivatives of Nitro-p-Cymene.

The purpose of this investigation was to locate the position of the chlorine atom in the compound obtained by chlorinating nitro-p-cymene. Further details will be given later.

FRANK K. CAMERON has published:

A. T. CLIFFORD and F. K. CAMERON. Dark Field Study of Fibres. *Industrial and Engineering Chemistry*, XXVI: 1209-1213. 1935.

A critical examination of the use of the Spierer lens leads to the conclusion that it contributes little to a knowledge of the micelle.

W. H. BASKERVILLE and F. K. CAMERON. Ferric Oxide and Aqueous Sulfuric Acid at 25° C. *Journal of Physical Chemistry*, XXXIX: 769-779. 1935.

Isotherms were obtained for liquid solutions in equilibrium with a series of solid solutions and the definite compounds $\text{Fe}_2\text{O}_3 \cdot 2.5 \text{SO}_3 \cdot 7 \text{H}_2\text{O}$, $\text{Fe}_2\text{O}_3 \cdot 3 \text{SO}_3 \cdot 8 \text{H}_2\text{O}$, $\text{Fe}_2\text{O}_3 \cdot 3 \text{SO}_3 \cdot 9 \text{H}_2\text{O}$, and $\text{Fe}_2\text{O}_3 \cdot 4 \text{SO}_3 \cdot 9 \text{H}_2\text{O}$. The systems in equilibrium with $\text{Fe}_2\text{O}_3 \cdot 3 \text{SO}_3 \cdot 8 \text{H}_2\text{O}$ are meta-stable. Transition points were obtained by interpolation. There are no congruent points.

PROFESSOR CAMERON has directed the following research:

E. O. HUFFMAN. (Progress on doctoral dissertation.) Fusion of Alunite with Mixtures of Sulfates and Coal. Recovery of the Values by Leaching and Precipitation.

Potassium sulphate proved the most satisfactory and an industrial process, based on its use, was developed. The investigation was made possible by a grant of \$1,000 from Claude Bedford, Esq., of Philadelphia, Pa.

A. R. MACORMAC. (Progress on doctoral dissertation.) Recovery of a Merchantable Cotton Seed Oil by Solvents from Whole Cotton and Preparation of Alpha-Cellulose from the Residue.

Waxes and coloring matters can be removed from the oil, extracted by benzene or other solvent. Pulping the residue requires less alkali and bleach than the woods commercially used. The investigation is being continued.

C. C. HUDSON. (Master's thesis.) The System Ferric Sulfate-Ferrous Sulfate and Water.

Owing to hydrolysis of ferric sulfate, the system is one of four components. By having present an approximately constant but relatively small excess of sulfuric acid, it may be conveniently treated as three-component. Two isotherms exist at 25° C, one corresponding to a series of solid solutions, the other ferrous sulfate hepta hydrate, $\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$. There is no evidence for the existence of a ferrous-ferric alum corresponding to the ferrous aluminum alum described by Occleshaw.

J. E. HUNTER. (Master's thesis.) The System Ferric Sulfate, Ammonium Sulfate and Aqueous Sulfuric Acid.

This was studied as a three-component system, keeping the excess of sulfuric acid low and approximately constant. At 25° C. three isotherms were determined, corresponding to solid phases, respectively, of anhydrous ammonium sulfate, ammonium-ferric alum and a series of basic ferric sulfates. The alum is not stable above 36° C. The compositions of the constant solutions at transition points were determined by interpolation.

D. A. PICKLER. (Master's thesis.) Ferric and Potassium Sulphates in Aqueous Solution.

The ferric potassium alum was found to be unstable above 17° C. At 25° C. water containing a small excess of sulfuric acid dissolves potassium sulfate and ferric sulfate so that the solutions can be conveniently considered as belonging to a three-component system. Three isotherms were found, one corresponding to potassium sulfate, another to a definite compound with the probable composition $\text{Fe}_2(\text{SO}_4)_3 \cdot 2.25 \text{K}_2\text{SO}_4 \cdot 10 \text{H}_2\text{O}$, and the third to a series of basic ferric sulfates. Addition of H_2SO_4 progressively increased the solubility of both ferric sulfate and potassium sulfate, the latter in greater percentage.

E. O. HUFFMAN and F. K. CAMERON. Utilization of Alunite through Fusion with Alkali Sulfides. (A paper read at the ninetieth meeting of the American Chemical Society, August 22, 1935, San Francisco, Cal.)

A study of the temperatures and proportions of reagents for optimum results, using sodium sulfate as a raw material, and the crystallization path in

recovery of the values. A corresponding study when potassium sulfate is used showed many technical and economic advantages over other known processes.

F. H. EDMISTER is engaged in the study of the solubility of calcium sulfate in aluminum sulfate solutions.

H. D. CROCKFORD has published the following:

With T. B. DOUGLAS. A Note on the Calculation of Heat of Reaction from Values of the Equilibrium Constant at Two Temperatures. *Journal of the American Chemical Society*, LVII: 97. 1935.

With E. C. POWELL, JR. Solubility Studies in the Systems: Benzene-p-Nitrotoluene and Benzene-o-Nitrotoluene. *Journal of the Elisha Mitchell Scientific Society*, LI: 1: 143. 1935.

With D. J. BRAWLEY. In Coöperation with the U. S. Naval Research Laboratory. The Solubility of Lead Sulphate in Water and Aqueous Solutions of Sulphuric Acid. *Journal of the American Chemical Society*, LVI: 2600. 1934.

PROFESSOR CROCKFORD has directed the following research:

H. O. FARR, JR. (Doctoral dissertation.) The Activity Coefficients of Lead Chloride in Aqueous Solutions of Barium Nitrate. An Investigation Concerning the Debye-Hückel Ion-size Parameter.

The activity coefficients of lead chloride have been determined at 25° by means of E. M. F. measurements in aqueous solutions of barium nitrate. Three series of determinations were made: with a constant ratio of barium nitrate and lead chloride, with a constant molality of lead chloride, and with a constant molality of barium nitrate. From the data obtained the "a" parameter values in the Debye-Hückel equation were obtained in the various solutions by means of the extended equation of La Mer, Gronwall, and Grieff. The individual "a" values for the individual salts were obtained graphically from the data. From the latter were calculated the "a" for the various solutions used by means of the theoretical equation of Crockford and Thomas. The values so obtained were found to be in excellent agreement with those obtained experimentally. It was also found that with constant ratio of molality constant "a" values were obtained as predicted from theoretical considerations.

J. C. LOFTIN. (Progress on doctoral dissertation.) Conductance Measurements in Aqueous Solutions at Various Frequencies.

N. L. SIMMONS. (Progress on doctoral dissertation.) The Photochemical Formation of Bismuth Trihydride.

E. C. POWELL, JR. (Progress on master's thesis.) Solubility Relationships in the Systems: $\text{CaCl}_2\text{-CaBr}_2\text{-H}_2\text{O}$ and $\text{AlCl}_3\text{-CaCl}_2\text{-H}_2\text{O}$.

WOODFORD G. SINK. (Progress on master's thesis.) (In coöperation

with the U. S. Naval Research Laboratory.) The Gassing Voltage-Gravity-Temperature Relationships in Lead-Acid Storage Cells.

P. M. NICHOLAS. (Master's thesis.) The Photochemical Decomposition of Carbon Disulphide.

The photochemical decomposition of liquid carbon disulphide has been investigated over the range 2900-3600 Å. The main decomposition products obtained were: a reddish-brown powder of the formula $(CS)_x$, a brown solid of the probable composition $(C_3S_2)_x$, and a dark red liquid of the probable composition C_3S_2 .

S. A. WIDEMAN. (Master's thesis.) The Indicator, Cymyl Orange.

A study of the indicator, cymyl orange, by means of a hydrogen-ion colorimeter shows that it has a useful range from 2.2 to 4.5 pH. Its color change is from pink to yellow, and the action takes place with the formation of a "zwitterion." The pK at 29° at the point of half conversion is 3.21.

PROFESSOR CROCKFORD has coöperated in the following researches:

(With J. A. ADDLESTONE, in coöperation with the Department of Chemistry of the Virginia Polytechnic Institute.) The Solubility of Lead Sulphate in Sulphuric Acid Solutions at High Concentrations. The results of this work have been accepted for publication in the *Journal of Physical Chemistry*.

(With A. G. LANG, in coöperation with the Department of Botany of North Carolina State College.) A Potentiometric Study of the Hydrogen-ion Concentrations and the Oxidation-reduction Potentials of Certain Biological Hardening and Staining Media.

H. D. CROCKFORD continued his research work with the U. S. Naval Research Laboratory, Washington, D. C. During the summers of 1934 and 1935 studies were conducted on the heat balance relationships in submarine storage cells. During the scholastic year a Fellowship financed by the Navy Department enabled the gassing voltage-gravity-temperature relationships to be studied in the Department of Chemistry. The results are given in certain reports to the Bureau of Engineering, United States Navy Department.

RALPH W. BOST has published during the year:

(With M. W. CONN.) A Study of the Action of Sodium Sulfide on Polymethylene Halides and the Formation of "Polythiophanes." *Journal of the Elisha Mitchell Scientific Society*, L: 182. 1934.

(With M. W. CONN.) n-Propyl Sulfide. *Organic Syntheses*, XV: 72. John Wiley and Sons. 1935.

(With FRANK NICHOLSON.) A Color Test for the Identification of Mono-, Di-, and Tri-Nitro Compounds. *Industrial and Engineering Chemistry*, Analytical Edition, VII: 190. 1935.

(With DAN FORE, JR.) The Chemical Composition of the China Berry (*Melia Azedarach*). *Journal of the Elisha Mitchell Scientific Society*, LI: 134. 1935.

(With B. O. COSBY.) Sulfur Studies VII. The Preparation and Properties of Some New Thioketones. *Journal of the American Chemical Society*, LVII: 1404. 1935.

PROFESSOR BOST has directed the following research:

W. F. HUNTER JR. (Master's thesis.) The Destructive Distillation of Peanut Hulls.

Commercial by-product peanut hulls were destructively distilled in an electrically heated retort. The charcoal showed possibilities of being valuable as an absorbent material. The non-condensable gas was quite inflammable. The liquid-solid distillate has been shown to contain the following compounds: Acetone, ethyl n-propyl ketone, methyl n-butyl ketone, formic acid, acetic acid, ethyl alcohol, and butyric acid esters. Evidence, though not conclusive, has been found to show the presence of methyl alcohol, allyl alcohol, sec-butyl alcohol, phenolic bodies and aldehyde resins.

W. R. JOHNSTON. (Master's thesis.) The Chemistry of Tobacco Tar.

The literature on the chemistry of tobacco was reviewed from 1899 to the present time, and the various phases of the chemistry of tobacco and tobacco smoke were considered in the review.

Tobacco tar was prepared by the destructive distillation of tobacco and the identity of the following compounds contained in the tar was established: gamma picoline, pyrrole, quinoline and nicotine. It was concluded that isoquinoline, acids of unknown composition, and unsaturated hydrocarbons were also present.

A. L. ALEXANDER. (Progress on doctoral dissertation.) Chemical Compounds Obtained from the Destructive Distillation of Tobacco.

The dry tobacco leaves were finely crushed and heated in a specially constructed iron retort which was electrically heated. 9036 grams of tobacco gave 6056 grams of volatile matter and 2980 grams of charcoal. A liquid distillate began to appear at 160° and reached a maximum at 220-230°. Most of the volatile matter was driven off at 300°. The distillate has been further divided into five fractions which are now being investigated.

R. H. BELCHER. (Progress on doctoral dissertation.) The Separation and Identification of Sulfides, Sulfoxides, and Sulfones.

The alkyl, alkyl-aryl, and aryl sulfides have been studied with various inorganic reagents in different solvents. The type of the solvent determines the nature of the derivative. A color test has been devised for identification of each of the above classes. Individual members may then be identified by the salts of certain heavy metals.

DAN FORE, JR. (Progress on doctoral dissertation.) A Study of the Action of Reducing Agents on Organic Disulfides.

This study was undertaken to devise a better method for the detection and analysis of organic disulfides. By selecting the proper reducing agent a method has been worked out whereby the disulfide is reduced almost quantitatively to the mercaptan, and the latter is then identified by means of its 2,4-dinitro phenyl ether. A quantitative method is now being investigated which gives very promising results. More complete details will be given later.

FRANK NICHOLSON. (Progress on master's thesis.) The Action of 2, 4-Dinitrochlorobenzene on Sodium Phenolates.

2,4-Dinitrochlorobenzene reacts readily with sodium phenolates in alcoholic media to give the corresponding 2,4-dinitrophenyl ether. Approximately forty phenols have been studied. Except in the case of polyhydric and negatively substituted phenols the reaction proceeds smoothly. The crystalline structure is well defined and the melting points are sharp.

W. W. WILLIAMS. (Progress on doctoral dissertation.) A Study of the Formation and Properties of Alkyl Sulfonic Acids.

The alkyl sulfonic acids from C_1 through C_{10} are being investigated in this problem. Thus far the sulfite-bromide method seems the most promising method of synthesis as far as yields and purity of products are concerned. The acids have been made in quantity and their chemical properties are now under investigation.

J. H. WOOD. (Progress on doctoral dissertation.) The Mechanism of Thioaldehyde Formation.

The action of hydrogen sulfide on benzaldehyde in the presence of various catalysts at different temperatures has been studied. Several products have been isolated from the reaction mixture; however, the yield of thioaldehyde is very small. The relative instability of the latter presents a serious problem in its isolation. Attempts have been made to introduce stabilizing groups into the thioaldehyde. These have met with fair success.

DEPARTMENT OF CLASSICS

G. A. HARRER has published:

Eutropius VII, 19, 1 and Suetonius, *Vespasian* IV, 1. *The Classical Journal*, XXX: 491-493. 1935.

PROFESSOR HARRER is continuing his studies in Roman Inscriptions, and in particular:

A Roll of Leading Men in the Roman Republic.

The Copying of Military Diplomas.

J. PENROSE HARLAND has during the past summer completed a Study of the Burials and Pottery found by him at Tsoungiza, the prehistoric site at Nemea.

He has also continued to assemble material for a work on the Helladic (Bronze Age) Civilization.

HENRY B. DEWING has published:

Procopius, The Anecdota or Secret History, VI: London: William Heinemann; Cambridge: The Harvard University Press. 1935. (The Loeb Classical Library.)

PROFESSOR DEWING has in preparation:

Procopius, The Buildings. This edition and translation will form the seventh and last volume of the works of Procopius which Professor Dewing has been producing for the Loeb Classical Library. Procopius was legal adviser to Belisarius, the great military leader under Justinian, Roman Emperor at Constantinople in the sixth century, and he wrote a very extensive history of the reign which is today the basic authority for the period.

The following studies have been undertaken by candidates for advanced degrees:

B. W. DAVIS. A Study of the Political and Personal Relationships Between Cicero and Pompey. (For the master's degree.)

MARY DIGGS. A Study of the Literary Background of Aulus Gellius Based on a Consideration of the Writers to Whom he Refers. (For the doctor's degree.)

JEWEL GODWIN. Cultural Interests of Pliny the Younger. (For the master's degree.)

ANNE M. OWEN. A Comparison of Certain Features in the *Culex* and *Aeneid* VI. For the master's degree.)

ALBERT I. SUSKIN. A Study of Livy's Methods of Arranging and Presenting his Materials. (For the doctor's degree.)

DEPARTMENT OF ECONOMICS AND COMMERCE

E. E. PEACOCK has in progress:

An article dealing with the influence of management and accounting. This article is to be published in an accounting periodical in New York City.

A textbook on Principles of Accounting.

E. W. ZIMMERMAN has published:

Wood Industries. *Encyclopaedia of the Social Sciences*. New York: Macmillan. 1934.

He has in progress:

An Organismic Theory of International Trade.

PROFESSOR ZIMMERMAN is directing the following research:

FRED A. ARNOLD. (Progress on doctoral dissertation.) The Agricultural Adjustment Act as Applied to Cotton: An Example of Crop Control.

M. O. PHILLIPS. (Progress on doctoral dissertation.) The Place of the Tramp Steamer in World Shipping.

R. J. M. HOBBS has in progress:

Case Materials Dealing with the Constitutional and Legal Aspects of Government Control of Business.

The cases used are principally decisions of the United States Supreme Court on due process of law, equal protection of the laws, police powers of the state, taxation emergency powers, anti-trust laws, public utilities, regulation of security issues and labor legislation.

JOHN B. WOOSLEY has published:

A review of Goldschmidt, R. W., The Changing Structure of American Banking. *American Economic Review*, XXIV: 4: 740-41. 1934.

A review of Rodkey, R. D., Legal Reserves in American Banking. *American Economic Review*, XXV: 2: 361-62. 1935.

He has in progress:

The State Taxation of Banks, which is being published by the University of North Carolina Press.

PROFESSOR WOOSLEY is directing the following research:

JAMES FLOYD FLETCHER. (Progress on master's thesis.) A Financial History of the Carolina Light and Power Company.

B. B. HOLDER. (Progress on doctoral dissertation.) The State Bank of North Carolina.

JOHN BERRY McFERRIN. (Progress on doctoral dissertation.) An Analysis of the Financial, Economic and Political Operations of Caldwell and Company.

LYLES GLENN McNAIRY. (Progress on doctoral dissertation.) The Influence of Competitive Changes in State and Federal Banking Codes on American Banking.

H. D. WOLF was on leave of absence for the fall quarter, 1934, during which time he served as executive secretary for the North Carolina Commission on Unemployment Insurance. In this capacity he directed the study of unemployment in North Carolina, which was financed by the F. E. R. A., and wrote the Commission's Report.

PROFESSOR WOLF is directing the following research:

H. M. DOUTY. (Progress on doctoral dissertation.) The North Carolina Industrial Worker, 1880-1930.

ROBIN HOOD. (Progress on doctoral dissertation.) Labor Standards and Labor Conditions in the South.

ROBIN HOOD. A Bibliography of Southern Labor.

JOHN J. OWENS. (Progress on master's thesis.) Labor Legislation in South Carolina since the Civil War.

G. T. SCHWENNING has published:

British Dismissal Gratuities. *Social Forces*, March, 1935.

He has in progress:

Dismissal Legislation in Latin American Countries, which will be published in an early number of *The American Federationist*.

Occupational Disease. An unpublished report prepared for the North Carolina Industrial Commission at its request.

Further study of the dismissal wage in other countries is in process.

PROFESSOR SCHWENNING is directing the following research:

E. H. ANDERSON. (Progress on doctoral dissertation.) A Synthesis of the Theories of Administrative Control Organization.

D. H. BUCHANAN has published:

The Development of Capitalistic Enterprise in India. New York: Macmillan, 1934.

This book describes indigenous Indian economy and traces the changes which have come with the spread there of the factory system during the past century. It pays particular attention to the plantation industries, cottage industry, and to several more modernized developments, such as cotton and jute manufacturing, coal mining, and steel manufacture. It also deals with such questions as business leadership and finance, the labor problem, and the economic results of British rule.

A review of Darling, M. L., *Wisdom and Waste in the Punjab*. *American Economic Review*, XXV: 2. 1935.

He has in progress:

Studies in Japanese industry and trade.

MALCOLM D. TAYLOR has published:

Progress in Marketing Research. *The National Marketing Review*, I: 1: 87-93. 1935.

This is a survey of the research work in marketing and in progress in universities and colleges, in government bureaus, and in private research organizations throughout the United States. This study is being continued. A summary of it will be published in the fall issue of *The National Marketing Review*.

PROFESSOR TAYLOR is directing the following research:

CHARLES M. ANDERSON. (Progress on doctoral dissertation.) The Marketing of Funeral Supplies.

NIHAT FERIT YAPAR. (Progress on master's thesis.) Wastes in Marketing and Methods of Reducing Them.

M. S. HEATH is continuing his research in Southern Transportation History.

PROFESSOR HEATH is directing the following research:

R. S. WINSLOW. (Progress on doctoral dissertation.) The Effects of the Genetic and Pragmatic Approaches upon the Trend in Economic Theory.

F. S. WILDER. (Progress on doctoral dissertation.) Some Class Variations in Standards of Living in North Carolina.

M. K. HORNE, JR. (Progress on doctoral dissertation.) Some Aspects of the Volume of Savings in the South.

E. M. BERNSTEIN has published:

Money and the Economic System. Chapel Hill: University of North Carolina Press. 1935.

A discussion of the relationship between money and the economic system, with special consideration given to price movements, theories of the value of money, current monetary problems, and monetary management.

He has in progress:

Public Expenditure and Depression.

This paper will contain a review of the proposal to vary public expenditure to mitigate the hardships of depression, a theoretical consideration of the relationship of money to prices and income, an analysis of the effect of public expenditure on prices, income, and employment under various conditions, a

statistical test of the effect of public expenditure on prices, income, and employment from 1933 to 1935, and a consideration of the objections to public expenditure as an instrument of monetary policy.

Recent Regulation of Utility Rates.

This book will contain a study of the problem of rate regulation during periods of changing prices and economic conditions. Particular attention is given to the manner in which commissions and courts valued the property of public utilities and determined the rate of return, and the distribution of rates from 1915 to 1935. A chapter is devoted to utilities and depression.

J. G. EVANS has published:

Basic Economics. Chapel Hill: University of North Carolina Press. 1934.

Capitalism—An Obsolete Tool. *Social Forces*, March, 1935.

He has in progress:

The Position of Chicago in the Freight Rate Structure.

Economics as a Social Science.

DUDLEY J. COWDEN has in progress, in collaboration with F. E. CROXTON, of Columbia University, a textbook on Statistical Methods for Use in the Social Sciences.

H. M. DOUTY has published:

Early Labor Organization in North Carolina, 1880-1900. *South Atlantic Quarterly*, July, 1935.

DEPARTMENT OF EDUCATION

EDGAR W. KNIGHT has published during the year:

Some Early Discussions of the College Curriculum. *The South Atlantic Quarterly*, XXXIV: 1. 1935.

Some Recent Changes in the College Curriculum. *The South Atlantic Quarterly*, XXXIV: 3. 1935.

Modern Education and the Past. *Elementary School Journal*, XXXVI: 2: 147-148. 1935.

PROFESSOR KNIGHT has also completed the study on Undergraduate Work and the University of North Carolina, a report on recent tendencies and present problems in undergraduate work in some American institutions of higher learning. This study has not yet been published.

J. MINOR GWYNN has completed the following study, which has been accepted as a doctoral dissertation by Yale University:

Changes in the College Curriculum, 1890-1934.

This study presents the historical development of the Modern Period of curriculum change in the Arts Divisions of six universities: Columbia, Johns Hopkins, North Carolina, Pennsylvania, Virginia, and Yale. It traces the dates, the type, and the reasons for the changes. The official unpublished records of faculty and charter boards were used to supplement and check the public announcements, reports, and documents.

The Modern Period inherited from the past certain problems: Classical domination of the curriculum; general vs. specialized education with the growing demand for a shorter period for both; lack of articulation with the public secondary school; proper provision for growing graduate work; and the demand of new subjects and courses for admission to the curriculum due to the stimulation of scientific, mechanic, and professional education in the post-Civil War period and to the increase in the existing body of knowledge.

Additions to the courses have been large, but the changes in the basic degree programs have been slow. No organized, systematic scheme of curriculum revision has been operative. Each institution has proceeded to modify its programs of study and offerings as its own circumstances, conditions, and leaders force it. Two distinct divisions of the Modern Period are discernible: (1) The Rise of the Elective System, 1890-1919; and (2) The Curriculum Since the World War, 1919-1934. The first was particularly marked by: the losing fight of the classicists for control; the decline in the amount of work *prescribed* for graduation; the institution, abolishment, and reinstitution of parallel four-year degree courses (Ph.B., S.B., etc.), special and partial courses; the beginning of attempts to control the elective system by the setting up of Groups, Majors and Minors, and Honors Courses; and the Development of "Combined" Courses. In the second period three movements have been significant: the change in the conception of the student with the attempt rather to center the curriculum around him than to fit him to the subject-matter; the reexamination and clarification of the functions of the liberal arts division, with a study of the educational process; the sharp division between the lower and upper college years.

Certain factors operating through the whole period were: the changing conception of a liberal education from a narrow range of prescribed studies (The Classics, Mathematics, and English) in the Freshman and Sophomore years with some distribution achieved in the Junior and Senior years by means of elective courses to a broader base of prescribed subject-matter (Comprehensive Courses) in the first two years with elective concentration in a narrow range in the last two years; economic and sociological changes in American life; the public secondary school and its curriculum; the growth of other schools and divisions of the university; the direct and indirect influence of endowed chairs, departments, and schools—all of these resulting in the admission to the curriculum of a great number of new subjects and in a large growth in the old.

The faculties were the main sources of change, and departmental subject-matter alterations were under their complete control; many additions were made in such offerings, but relatively few subtractions or omissions occurred.

A revised program of studies or a new four-year curriculum leading to a degree frequently took years for its evolution. During the period only at Pennsylvania, Virginia, and Yale did the charter bodies exercise their prerogative to take direct action to change the program of studies or the departmental offerings.

HUGO GIDUZ has published in the *High School Journal*, March, 1935, and in *North Carolina Education*, April, 1935, *Students' Accomplishment in French* (Students of French Entering the University of North Carolina).

This is a statistical study of all the students entering the University during the past four years who took the placement tests given by the French department. The study shows that students entering from Northern schools are superior to those entering from North Carolina schools. It also shows the superiority of students coming from the better schools in North Carolina over those coming from the poorer ones, the rating of the schools depending on their classification.

The following doctoral dissertations were accepted by the Department during the year:

ELWOOD CORTELYOU HUNTER. *An Analysis of the Qualities Associated with Leadership Among College Students.* (Under the direction of A. M. JORDAN.)

In this investigation an attempt is made to identify and analyze the qualities possessed by recognized college student leaders and to study the diversities and similarities with typical non-leaders of the same educational status. Three techniques are employed in the selection of the leadership group: student ratings, faculty ratings, and leadership records. For the purpose of studying diverse types of leadership ability various sub-groups are chosen from both the experimental and control groups. The qualities studied for all groups include physical characteristics, background, intelligence, scholarship, vocational interests, social attitudes, interest maturity, neurotic tendency, self-sufficiency, introversion-extroversion, and dominance-submission.

The study reveals that college student leaders at one institution are significantly younger, lighter, and have a smaller number of physical defects than non-leaders. The typical leader is a member of some social fraternity. A significantly larger proportion of Episcopalians than of other denominations is found among the leaders. The proportion of leaders' parents belonging to the professional class is definitely larger than that found among non-leaders' parents. Also, the proportion of parents of leaders who attended college is more than twice that of parents of non-leaders. Leaders show a more restricted vocational interest than non-leaders; the interest ratings of the former in law and journalism are substantially higher than that of the latter group. Leaders engage less than non-leaders in self-help activities.

Leaders make significantly higher mental test scores, higher grades, and have a substantially larger vocabulary than non-leaders. Furthermore, leaders are from 16 to 25% more mature in vocational interests than non-leaders.

Leaders show significantly stronger personality patterns: they are more self-sufficient, and more dominant in face-to-face situations than non-leaders. Leaders tend to be more liberal and progressive in general attitudes than are non-leaders. This is found to be especially marked with regard to the Negro. Moreover, leaders are more pacifistic than non-leaders. Also, the former surpasses the latter in showing more sympathy for labor than for capital.

The implications are that educational programs should be more concerned with the discovery of potential leadership ability and with more specific leadership training in order that the most capable individuals will gravitate to positions of leadership.

HERBERT KIMMEL. *The Training of Teachers in North Carolina as a Function of the State.* (Under the direction of E. W. KNIGHT.)

Opposition to taxation for school purposes and the belief that education was a function of the Church delayed the establishment of a public school system in North Carolina until 1839. Consequently, the State did not attempt to assume any responsibility for the training of its teachers prior to that time.

In 1850 the general assembly gave Normal College authority to issue certificates to its graduates and in 1852 granted the institution a new charter which made the governor and the state superintendent *ex officio* president and secretary, respectively, of the board of trustees. The general assembly gave the institution a grant of \$10,000 from the Literary Fund. Due to a "defective organization" made by its normal course, the training of teachers was abandoned shortly afterwards and the institution surrendered its state charter.

State Superintendent Wiley attempted to utilize the certification laws then in force in the training of teachers. He believed that this plan would take into account better than any other "the original purpose of the law establishing a system of common schools and the actual condition of popular intelligence in the State." To him the solution of the problem was not to be found in the establishment of normal schools. They would train too few and cost too much.

Agitation and indecision marked the early part of the period from 1866 to 1890. By the end of that period, however, fourteen normal schools had been established—nine for white and five for colored teachers. The former failed to train as many teachers as the State needed; therefore the legislature of 1889 discontinued these schools and substituted for them the teachers' institute.

The teachers' institute in turn was discontinued when the appropriation for it was applied to the support of the Normal and Industrial School, the first of the four teacher-training institutions to be founded between 1891 and 1907. It was during this time that the University of North Carolina developed a department of pedagogy which later became a school of education. During this period also the number of colored normal schools was increased from five to seven and then reduced to three.

The inability of teachers to attend the teacher-training institutions of the State resulted in the establishment of county institutes and summer schools.

And, finally, what was destined to be one of the most important steps in the raising of the qualifications of the teachers of the State was the establishment of a state board of examiners and institute conductors in 1917. Local certification now gave way to state certification, resulting in greater uniformity. And to this uniformity more than to anything else was due the increase in professional standards and standards of scholarship for teachers.

JOHN HILLARY ANDREW WORKMAN. *The Administrative Reorganization of North Carolina Public Schools.* (Under the direction of **GEORGE HOWARD.**)

The purpose of this study was to examine the legal status of the present state school organization in North Carolina in order to ascertain the state administrative arrangements and the relationship of subordinate agencies with a view to proposing a plan to meet the modern principles of school organization and administration as authorized and recommended by specialists in the field of school administration.

This study undertook, first, to formulate a list of fundamental major and minor principles covering the entire state school organization and to support these by the leading authorities in the field of school administration. Second, to evaluate the present North Carolina school system in terms of the principles set up, in order to ascertain to what extent the present system complies with the principles. Third, to propose a plan of state school organization for North Carolina that will meet the principles established.

It was found that the North Carolina school system has many conflicts in the powers of the constitutional and legislative governing boards of its organization, and that there is much difficulty in determining where authority lies for the operation of the school system. The proposed plan for the reorganization offers a solution in which there is a fixed responsibility and the flow of authority is clearly defined. It offers, also, a more economical and efficient plan for local organization through larger units of administrative management. It makes provisions whereby the personnel can be selected on merit and suitability by those best qualified to know the requirements of the different positions. It suggests a means of obtaining better classroom results through organization and supervision.

Charts and tables are given to illustrate the complexity and the cost of the present system and to show the clearness and the cost of the general control of the proposed organization.

The following master's theses were prepared during the year under the direction of the Department:

EDWARD S. CHRISTENBURY. *A Comparative Study of the Activities Performed by Experienced Teachers and the Training Provided for Student Teachers in the Training School of Appalachian State Teachers College.* (Under the direction of **ROY W. MORRISON.**)

The purpose of this study was to appraise the work of the training school with regard to the function of training teachers to perform certain activities,

in order that more specific and more appropriate training in the practice of teaching might be provided.

In making the study three hundred teaching activities were selected and arranged in questionnaires. These were rated by three representative groups of graduates (graduates of 1932, 1933, and 1934) of the training school according to the following criteria: Frequency of Performance, Difficulty, Importance, Job Versus School, and Emphasis Received in Training.

A correlation ($.356 \pm .064$) between the 1932 graduates' Importance and Emphasis rankings indicated that the training school in 1932 was emphasizing few activities in accordance with their Importance ranking. Further comparisons show no improvement between 1932 and 1934.

It appears that most activities concerned primarily with classroom instruction are being sufficiently emphasized, but that other activities important in the work of the teacher are neglected.

CHARLES WALKER DAVIS. Historical Background and Present Conditions in the Roanoke Rapids Junior-Senior High School. (Under the direction of WILLIAM E. DRAKE.)

The purpose of this study was accomplished by tracing, from the beginning, the economic and social development of the community, the growth of the schools, and the legislation affecting school growth through 1927. A more detailed study was made covering the past five years dealing with legislation, administration, properties, indebtedness, support, student body, teachers, program of studies, and the reactions of the former graduates to the general school program.

The development of the schools from the beginning until they were chartered in 1907 was slow. Since then the growth in buildings, equipment, student body, faculty, and program offered has been in keeping with the industrial, social, and general economic progress of the community.

A carefully planned program of personal counseling and guidance seems to be a need.

GROVER CLEVELAND GASKIN. Inequalities of School Support in the Schools of Lexington County. (Under the direction of GEORGE HOWARD.)

In this study an analysis was made of school enrollment and school taxes in Lexington County, South Carolina. Educational opportunities were contrasted in the sixty different school districts, showing inequality of wealth back of each pupil. Inequalities of educational opportunity were noted because of this inequality of wealth.

Sources of data include the books of the County Superintendent of Education, Auditor, and Treasurer.

A plan of correcting existing inequalities is presented whereby all wealth of the county will be taxed as a unit. Changes in the school organization of the county are recommended.

MONTIE McCRIMMON MUSE. An Experiment in the Classification of the First Grade Children of the Statesville City Schools for Reading. (Under the direction of GEORGE HOWARD.)

The purpose of this experiment was to determine objectively the difference in the progress made in reading by the first grade children in the Statesville City Schools who were taught by the same method but who were classified by three different methods.

1. On the basis of the Betts' Ready to Read Tests. 2. On the basis of the Detroit First Grade Intelligence Test. 3. Heterogeneous group.

Progress was interpreted to mean the progress made in reading during the school year 1934-35 as measured by the combined scores on the Gates Primary Reading Tests Types I, II, and III, Form II. The experiment showed that the pupils classified on the basis of the Betts' Ready to Read Test made more progress than either the children classified on the basis of the Detroit Intelligence Test, or heterogeneously; they also made more progress than the whole group combined. The heterogeneous group made more progress than either the Detroit Intelligence group, or the whole group combined. The experiment showed that it was best to classify the First Grade children of the Statesville City Schools on the basis of the Betts' Ready to Read Test.

WILLIAM GLENN PARKER. The Saint Pauls (North Carolina) Public Schools: A Survey. (Under the direction of GEORGE HOWARD.)

The St. Pauls school was studied in three phases: plant, faculty, and students. The plant was studied as to condition, adequacy, and needs. The faculty was considered as to education, experience, and native residence. The students were studied as a whole and also according to four groups—farm, textile, business-professional and miscellaneous—into which they were classified on the basis of the occupation of their parents.

It was found that one building needed repairs, another was unsafe structurally. Some of the classes had to be sent to a bank building because of lack of classrooms.

Of the 27 teachers, 17 had A certificates. Fourteen lived in Robeson or adjoining counties. Two of the three out-of-state teachers had B-Normal certificates.

Of an enrollment of 1059 pupils, 474 were over age and 25 were under age. More than a third of all the first graders, and a fourth of the Mill School enrollment, were repeating a grade. Practically no relation was observed between attendance and grade repeating. The farm children had the highest percentage of repeaters, and the textile children the shortest stay in school. On the whole, the lowest achievement scores were made on word meaning and spelling. The high school seniors scored above the state medians on every subject in the North Carolina School Senior Examination. Their least advantage was in general science. The seniors had had practically all their science under a teacher who had not had four years of college work.

Detailed recommendations were made as to plant, faculty, and students.

JANIE CARROLL RICE. Some of the Educational and Social Gains and Losses to Children Who Start to School at Different Ages. (Under the direction of W. J. McKEE.)

An experimental study was made of three different chronological age-groups of beginning pupils. The groups were equated as to intelligence quotients, informational reading readiness, school environment, and type of instruction. At the end of one and two years, respectively, gains and losses in reading achievement, as measured by the Gates and Metropolitan reading tests, and social adjustment, as measured by chosen citizenship traits, were computed. The oldest group gained most in reading achievement; the youngest in social adjustment. However, the process of correlation showed that an insignificant relationship existed between chronological age and reading achievement.

In order to determine a better basis than chronological age for admission to the first grade, the correlations between reading achievement and intelligence quotients, mental ages and Sangren scores (taken separately and collectively) were computed. A significant relationship was shown to exist in each instance. Their predictive value was slightly raised when combined. Mental age was found to be the best single criterion for admission to the first grade.

GEORGE LIPPARD SAWYER. A Study of the Relationship Between Courses in Educational Psychology at Appalachian State Teachers' College and Teachers' Activities Performed by Graduates of the College. (Under the direction of ROY W. MORRISON.)

Three hundred teachers' activities were rated on 5 Criteria (Frequency of Performance, Difficulty of Learning, Importance, Need for Study, and Emphasis in Educational Psychology Courses) by three groups of twenty Appalachian Graduates. Decile ratings from the Emphasis Criterion and cumulative ratings from the first four Criteria for General Importance were computed. Decile ratings of twenty-six Psychology Instructors (Commonwealth Teacher Training Study) on activities highest and lowest in topical value were correlated with Importance ratings on the same activities by the graduates, showing close correspondence in judgment on topical value of the activities.

Correlations made between Importance and Emphasis ratings by the graduates for Functional Value of Educational Psychology Courses were too low and showed need for further study of the problem, a truer philosophy of education, better selection of subject matter, better placement of courses, or more emphasis placed in Educational Psychology Courses on the study of teachers' activities.

SCHOOL OF ENGINEERING

T. F. HICKERSON has written during the year:

Highway Planning for Greater Safety. *The Carolina Engineer*, III: 4: 1935.

This paper was also presented at the annual meeting of the North Carolina Section of the American Society of Civil Engineers held at Durham, N. C., in April, 1935.

Highway Surveying and Planning, the second edition, revised and enlarged, of *Highway Curves and Earthwork*, published in 1926 by McGraw-Hill Book Co., New York.

As the title would indicate, the second edition is broadened in scope to include many new features of planning and design not fully treated in the first edition. Special consideration is given to planning for greater safety, in view of the casualties occurring daily throughout the country. In classifying the causes of highway and street accidents, the blame may be generally attached to the driver, or the vehicle, or the condition of the highway. Although statistics show that the great majority of the accidents are due to the first two of the foregoing causes, it is none the less an obligation for the engineer to aim to effect every reasonable feature of design that promotes the greatest comfort and safety for all those who use the highway. So long as motor vehicles are being manufactured with great speed capacities and in greater quantities for both passenger and freight transportation, the highway engineer will be expected to keep pace with these developments and, within the limits set by the funds at his disposal, he must not only design and construct highways sufficiently spacious to accommodate present traffic and its normal future increase without undue traffic delay, but he must also safeguard them against every hazard that high-powered, high-speed motor vehicles can create in the hands of incompetent or reckless drivers. To this end, a careful treatment has been given to the following design features: highway intersections, railroad intersections, separated roadways, visibility on curves, alignment, grades, superelevation, shoulders and roadside safeguards, widths of pavements and bridges.

PROFESSOR HICKERSON is completing for early publication (January, 1936) *Statically Indeterminate Frameworks*, the second edition, revised and enlarged, of *Structural Frameworks*, published in June, 1934, by the University of North Carolina Press.

This new book will contain all the material of the first edition with slight modifications, and in addition, extensions to include a more comprehensive treatment of statically indeterminate structures. The subject of beam deflections involving restraining influences is presented in a novel manner. Also, there is included a new treatment of structures subjected to sidesway. Numerous illustrative examples are added. Then tall Building Frames are analyzed by a new method which is slightly approximate, but simple of application, and much more exact than the so-called Portal Method now in vogue. A new chapter is devoted to A-Frames and Arches, where direct methods for determining the degree-of-fixation at the ends of continuous and restrained arches on elastic piers are explained for the first time. Tables for designing reinforced concrete rectangular beams and T-beams have been added; also a table giving carry-over coefficients for every hundredth value of the fixation factor.

PROFESSOR HICKERSON also has under way (in collaboration with T. P. NOE) the preparation of a book (about half completed) dealing with the Elements of Mechanics and Strength of Materials.

G. WALLACE SMITH is continuing a study pertaining to the analysis of stresses in building frames, particularly the bending moments induced in wind bents of tall buildings.

An original method of determining the bending moments in the members of multiple framed structures and its application to the investigation of the effects of column shortening.

R. M. TRIMBLE and T. P. NOE, JR., have under way the following project:

A Study of Riveted Connections.

Using the Huggenberger Tensometer, the bending deformation of an angle under the action of a known bending moment was determined. The experimental values obtained verified a theoretical expression derived for this case. The experimental study is being extended to include typical riveted beam connections with the view of determining the restraining effect of such connections.

The Carolina Steel and Iron Co., of Greensboro, North Carolina, has cooperated in these tests by supplying the specimens used.

A. McLAREN WHITE has published:

Pressure Drop and Loading Velocities in Packed Towers. *Transactions of the American Institute of Chemical Engineering*, XXXI: 390-408. 1935.

A New Type of Tower Filling Material. *Science*, LXXXI: 596-597. 1935.

PROFESSOR WHITE is continuing work in the field of tower filling materials, and the behavior of packed towers under varying conditions. He is also continuing his investigations in the field of mixing and stirring.

COLIN CARMICHAEL is studying gas film coefficients of heat transfer from internal combustion engine cylinders. Work on a gasoline engine has been completed and research is continuing on a Deisel engine.

He is investigating, with J. A. MACLEAN, the possibility of utilizing the average cylinder pressure as an index to internal combustion engine performance.

C. W. BORGMANN has the following research in progress:

The influence of the cation on the rate of corrosion of iron. The effect of solution concentration, length of test, and temperature on the rate of corrosion is under investigation for the chlorides of metals electronegative to iron.

The determination of the influence of various factors on the reproducibility of results in corrosion testing.

The development of an apparatus for the measurement of the rate of corrosion at constant temperature and pressure. The amount of oxygen used by the corrosion process will be replenished by an electrolytic cell, and the quantity of electricity needed to accomplish this will serve as a direct measure of the corrosion.

T. P. NOE, JR., has derived formulas, involving the Hickerson Fixation Factors, to be used in the analysis of various types of arched frames. Tables are being prepared to facilitate the use of the general equations.

RAYMOND F. STAINBACK is continuing experiments on model transmissions lines in which it is attempted to duplicate the effects of corona losses by means of low-voltage neon lamps on the model.

Speed regulations of motors, and voltage regulation of generators, are being effected by thyatron control. Characteristics of such automatic regulators are being studied for the purpose of improvement in regulation and more practical apparatus for controlling speed and voltage.

J. C. GEYER and W. A. PERRY are engaged in a Survey of Textile Waste Treatment and Recovery.

A summary of the literature and information collected during the survey of the field of liquid waste disposal and recovery in the textile industries, in which is discussed the nature of the problem, the methods in use at present for treating textile wastes, and the possibilities for the reduction of wastes and the recovery of by-products as a part of the disposal plan. The present and proposed laws are set forth and the governmental boards for control of stream pollution discussed.

Past and present research will be summarized and suggestions made as to the type of future studies which might be worth while. A complete bibliography and a handbook of valuable information on various phases of the problem will be appended.

The following master's theses were accepted during the year by the School:

Tsu YUAN Koo. A Study of Behavior and Efficiency of Rapid Sand Filtration. (Under the direction of JOHN C. GEYER.)

A filter of 2 ft. diameter and 10 ft. height was used for an experimental study of behavior and efficiency of rapid sand filtration. Two sands of effective sizes .48 mm. and .60 mm. with filtration rates 2 to 3 gal. per sq. ft. per. min. were studied for efficiencies in removing turbidity, residual alum, and bacteria at various depths in the bed. Different expansions within the bed during washing were measured, and sinking of mud-balls into the expanding bed was studied.

Results indicate: (1) Fine and colloidal substances in the applied water have more effect on clogging of the filter than larger flocs. (2) With the same kind of applied water, the clogging rate varies directly with 1.4th power of the filtration rate and inversely with the square of the effective size of sand. (3) Sand below 6" depth in the bed is also effective in purification. (4) Increasing either filtration rate or sand size reduces purification efficiency more in the upper portions of the bed than in the lower. (5) Mud-balls begin to sink into the expanding bed during washing if mixed with 14% sand, and sink to the gravel if mixed with 41% sand.

WILLIAM MERRIMON MCKINNEY. Load Coefficients for Beams of Variable Sections. (Under the direction of T. F. HICKERSON.)

For analysis of structures it is often necessary to know the moment at the end of a loaded beam for designing purposes. Using the slope-deflection formula in a modified form it is possible to express the moment in terms of a coefficient. These load coefficients have been computed to a high degree of accuracy from exact mathematical formulas derived by calculus processes. They are independent of similar results computed by Strassner and later by Evans, but in general agreement therewith. The values are given for beams with symmetrical parabolic haunches, symmetrical straight haunches, and one straight haunch. The tables, being useful in that they are labor saving, have involved a great deal of time for computations.

JAMES ROBERT MARVIN. The Calculation of Third-Harmonic Currents in Three-Phase Transformer Networks. (Under the direction of W. J. MILLER.)

Triple-frequency currents and voltages set up in three-phase transformer networks by the curved magnetic characteristic of the iron used in the transformers cause unwanted inductive interference in nearby telephone circuits and may set up undesirable conditions of abnormal voltage and instability in the transmission network. It is therefore desirable to be able to predict the amount of triple-frequency current or voltage to be expected under a given set of circumstances.

An instrument has been developed for separating from a complex wave the third-harmonic component and measuring it. A method for determining the triple-frequency saturation curve for a bank of transformers is developed and the application of this curve to the solution of third-harmonic circuits is explained.

A simple, three-phase network has been set up and the measured values of triple-frequency currents are compared with values computed by using the experimentally determined saturation curves of the transformers involved.

EDWIN WEEMS WINKLER. Operation of Induction Motors on Unbalanced Voltages. (Under the direction of W. J. MILLER.)

This thesis is an investigation of the performance of the three-phase squirrel cage induction motor when operating on unbalanced line voltages. Theoretical equations are developed by which the performance of the machine may be determined for a given condition of load and voltage unbalance. Using values

of load and unbalanced line voltages obtained in test as a basis for calculations, the equations are applied to determine the performance of the motor. Comparison of the calculated results with the test results show that the equations may be used to predetermine the motor performance with the desired accuracy.

DEPARTMENT OF ENGLISH

For the current year, GEORGE R. COFFMAN is continuing his studies concerning the literature and thought of the second half of the fourteenth century in English, with special reference to Gower.

PROFESSOR COFFMAN has published:

A Note on the Miller's Prologue, *Modern Language Notes*, L: 311-312. 1935.

Review of E. K. Chambers' *The English Folk Play*, *Speculum*, X: 203-205. 1935.

He has edited Volume XXXII of *Studies in Philology*.

He is directing the following research:

MARY ELIASON. The Third Estate in Chaucer, *Piers Plowman*, and *The Towneley Plays*. (Progress on doctoral dissertation.)

J. W. McCAIN. A Study of John Heywood's Vocabulary in certain Cultural Relationships. (Progress on doctoral dissertation.)

W. F. McNEIR. The Influence of Narrative Technique on the Elizabethan Drama. (Progress on doctoral dissertation.)

GEORGE C. TAYLOR has the following research in progress:

Another Source for *The Winter's Tale*.

Influences of Du Bartas on English Literature.

Relations between Jonson and Shakespeare.

PROFESSOR TAYLOR is directing the following doctoral dissertations:

C. K. BOROUGHS. The English Chronicles.

E. H. COX. Relations of the Middle English Religious Lyric and English Religious Lyric Poetry from 1525 to 1625.

JAMES HOWELL. Rogues and Vagabonds in Elizabethan Drama.

W. J. OLIVE. Burlesque Elements in Elizabethan Drama.

WILLIAM FLINT THRALL has published during the year:

The Faerie Queen, "First Part"—in *Variorum. Studies in Philology*, XXXII: 2: 245-258. 1935.

Y. Z. CHANG has completed two articles for publication in the near future:

Who and What Were the Cathayans?

Milton's Cathay and China.

While in Nanking, PROFESSOR CHANG served as editor of the *Literary Supplement* of the *China Daily News*, 1934-1935.

A. C. HOWELL acted as Assistant Editor of *Studies in Philology* during the current year.

He is engaged in a study of the humor of Sir Thomas Browne.

DOUGALD MACMILLAN has continued his studies in eighteenth-century drama at the Huntington Library, preparing for publication a calendar of performances at the Theatre Royal Drury Lane, 1747-1776. During the year 1935-36, as a Visiting Scholar at the Huntington Library, he will compile a catalogue of the Larpent Collection of Manuscript Plays. In October, 1934, as Carnegie Endowment Lecturer to the British Universities, he lectured on David Garrick's adaptations of Shakespeare at the University College, Southampton, and at the University College, Exeter, England.

ARTHUR PALMER HUDSON, under the auspices of a fellowship in the humanities granted by the General Education Board, has completed a book, *Humor in the Old, Deep South*, on certain aspects (chiefly humorous) of life in the lower Mississippi Valley, 1540-1860, to be published by The Macmillan Company in the spring of 1936.

As chairman of the Committee on the Folksong, of the South Atlantic Modern Language Association, he is engaged in a survey of present activities and resources in the field of folksong study in the South. (See Aid to Folksong Scholarship, *South Atlantic Bulletin*, October, 1935, p. 2.)

PROFESSOR HUDSON has continued direction of the Ph.D. theses of C. L. PITTMAN, on Wordsworth and the Scientific Movement, and CARL PFEIFFER, on Landor in Relation to his Contemporaries.

RICHMOND P. BOND has published:

Chesterfield: Letters and Other Pieces, Doubleday, Doran & Company, 1935, pp. lvii, 321.

This edition includes a long introduction, a selected bibliography, and notes. One hundred letters have been chosen from Chesterfield's entire correspondence; four types (essay, speech, "character," poem) of his miscellaneous works are also represented.

PROFESSOR BOND has in preparation:

A study of Joseph Addison, a bibliography of English literature, 1660-1800, and studies in neo-classic criticism.

He is directing the following doctoral dissertations:

D. A. BROWN. George Crabbe as a Satirist.

MARY BUFFALO. The English Neo-Classic Theory of Satire.

J. E. CONGLETON. The English Neo-Classic Theory of the Pastoral.

LOUISE LANHAM. William Cowper and the English Evangelical Movement.

M. A. MOORE. Political Eulogy and Satire in English Poetry, 1714-1760.

E. C. MORGAN. The Public Career of Joseph Addison.

HENRY RANKIN. John Dyer: Studies in the Tendencies of Eighteenth Century English Poetry.

H. T. SWEDENBERG. The English Neo-Classic Theory of the Epic.

RAYMOND ADAMS has published:

Elizabeth Palmer Peabody, a biographical article for the *Dictionary of American Biography*, XIV: 335-336. 1934.

George Ripley, a biographical article for the *Dictionary of American Biography*, XV: 623-625. 1935.

Review of Crawford, B. V. (ed.) *Henry David Thoreau: Representative Selections*. *American Literature*, VII: 228-229. 1935.

With the assistance of a General Education Board fellowship grant for the academic year 1934-1935 he has advanced the writing of a definitive biography of Henry D. Thoreau.

He is engaged upon a volume of readings from the writings of the minor authors of American transcendentalism, to be published during 1936 by the American Book Company in the American Writers Series under the general editorship of Harry Hayden Clark.

For W. T. H. Howe he is editing two newly discovered essays by Henry D. Thoreau, to be published in the Freeland's Library Series.

ROBERT B. SHARPE has published:

The Real War of the Theatres: Shakespeare's Fellows in Rivalry with the Admiral's Men, 1594-1603 (Modern Language Association of America, Monograph V). Boston: D. C. Heath and Company. 1935

This study is the first chronological survey of the theatrical events of Queen Elizabeth's last decade, treating season by season the relations of stage and public happenings, especially with reference to the court factions. It clarifies the policies and specialties of the companies together with their influence on the literary as well as the stage qualities of the extant dramas of Shakespeare and his contemporaries during this period.

Title-Page Mottoes in the Poetomachia. *Studies in Philology*, XXXII: 2: 210-220. 1935.

He has in preparation:

A subject index of the articles on English drama, 1500-1642, in *Publications of the Modern Language Association*, Volumes I-L, for the fifty-year index which the Association plans to publish in the spring of 1936.

A study of the rivalries of Jonson, Chapman, and Dekker as dramatists.

He is directing the following research:

VALENCE TOWNSEND. "Fair Maid" Plays as a Jacobean Dramatic Type. (Progress on master's thesis.)

CLAUDE SEAWRIGHT. Money-Grabbing Villains as Important Characters from Jonson to Massinger. (Progress on master's thesis.)

The following doctoral dissertations were accepted by the Department during the year:

ARNOLD WILLIAMS. The Influence of the Genesis Commentary on the Genesis Material of Sir Walter Raleigh and Sir Thomas Browne. (Under the direction of G. C. TAYLOR.)

It is well known that Milton's *Paradise Lost* is but one of a class of works written in the late Renaissance and dealing with themes from the first three chapters of Genesis. However, it has not been sufficiently recognized that adequate source study, particularly of Milton, must proceed from this fact. This study, therefore, attempts to find probable sources for Genesis material by taking, not one of the major writers in the *genre*, but two minor prose writers, Raleigh and Browne, because these two indicate their sources where Milton does not. These indications are not to be taken at face value. If they could be, one would have to suppose that Raleigh and Browne read a great mass of material, an untenable supposition, since both were only incidentally interested in Genesis material.

The study then postulates an intermediary, a hand book or compilation, from which, with small trouble, authors could get all the Genesis material they needed. This intermediary exists in the Genesis commentaries. In the sixteenth and early seventeenth centuries many of these were produced. The number of titles and the frequency of editions prove their popularity. Raleigh cites certain of them; Browne had several in his library. The best of the Genesis commentaries, such as Pererius' *Commentariorum et Dissertationem in Genesin* (1590?) and Mersenne's *Quaestiones in Genesin* (1623) are extensive compilations and syntheses of Genesis material from many sources.

The study shows by detailed analysis of the Genesis material in Raleigh and Browne that both authors leaned heavily on the commentaries. Their authori-

ties are those cited by the commentaries. Direct verbal borrowings are provable in a number of instances. Raleigh relied principally on Pererius, Browne on Pererius and Mersenne.

Finally, the study advances the hypothesis that the Genesis commentary, as a convenient compilation in an accessible form, is an important source for Genesis material and deserves a full study in relation to the whole *genre*.

SADIE FRANKLIN JENKINS. *The Treatment of Tyranny in Elizabethan English History Plays.* (Under the direction of G. C. TAYLOR.)

It has been the purpose of this study to examine the Elizabethan plays on subjects from English history with particular attention to their treatment of the theme of tyranny, the degree to which dramatists reflect an interest in the subject, as well as the nature of the expressions to be found.

The first three chapters present basic material essential to the understanding of the subject. Chapter I is a brief discussion of prevailing attitudes toward the problems of kingship as expressed in the works of various political thinkers writing from a theoretical or pseudo-theoretical point of view, the emphasis being on contemporary attitudes toward the unjust ruler and the rights of subjects suffering under oppression. In a treatment fuller than any the writer has found available, Chapter II presents findings from a study of the problem in various contemporary English chronicles, prose and verse, important as dramatic source material. Chapter III is an investigation of conventional treatments of the tyrant in the drama with emphasis both on the native tradition and the Senecan type. The remaining chapters and the Appendix, forming the main body of the thesis, are concerned with tyranny in the English history plays, Chapters IV, V (Shakespeare), and VI being devoted to an analysis of individual plays, and Chapter VII to a summarizing treatment.

The conclusions reached in this study may be briefly summarized as follows: the writers of the English history plays in general view with distrust any deviation from the paternalistic ideal of kingship. They are at one with theoreticians and chroniclers in regarding a weak or inefficient monarch as a danger to the state. The fall of such a ruler, moreover, is usually regarded as inevitable. The strongest sentiment of opposition, however, is reserved for the willful oppressor, ruling with or without title. He represents a disrupting force in the state and as such meets with a sure punishment either by human or by divine means. Passive resistance to the commands of an oppressive king is nearly always approved. Active resistance to a lawful sovereign is only rarely approved, even when the sovereign is an oppressive ruler; for rebellion is regarded as at best a possible forerunner of anarchy, to which even the rule of an unjust king is to be preferred. But when a tyrant is also a usurper he is regarded as beyond the protection of the law and may be punished by force, whether by deposition or by tyrannicide. This punishment usually is effected by the will of God through the people as represented in a lawful magistracy. For the most part there is small assertion of the democratic ideal.

Underlying the attitude toward the tyrant is usually to be found an emphasis on the necessity for the peace and security of the state, a condition endangered by misrule as by rebellion.

The following master's theses were accepted during the year by the department:

CECIL ABERNETHY. *Courtesy-Book Subjects and Ideas in the Comedies of John Lyly.* (Under the direction of ROBERT B. SHARPE.)

It is the purpose of this thesis to show Lyly's use of the subjects and ideas to be found in the Italian and English courtesy-books of the sixteenth century. A prefatory study is made of the use of the same material by four playwrights immediately prior to Lyly, showing that he was not original in the dramatic utilization of this block of writing. Lyly's own courtesy-romance, the *Euphues*, is analyzed, and his adherence to the Italian philosophy of gentility, modified by the educational and humanistic tone of the English, is pointed out. A careful study of Lyly's eight comedies attempts to show that his ever-diminishing continuation of the material in the plays parallels his gradual diminution of the use of euphuism. The conclusion is drawn that the courtesy-book subjects became a part of his writing equipment, and passed into the realm of inherent style. A concluding chapter compares Lyly's and Shakespeare's use of the courtesy-book ideas, and makes the point that Shakespeare was only indirectly indebted to Lyly for incorporation of this atmospheric material, and that he surpassed Lyly in artistic absorption.

LOY YOUNG BRYANT. *The Pocahontas Theme in American Literature.* (Under the direction of GREGORY L. PAINE.)

This study is an attempt to present the growth and utilization of the Pocahontas story from its inception in the works of Captain John Smith, through the novels of John Davis, to subsequent novelists, dramatists, and poets of recent times, with emphasis upon the influence that the philosophy of primitivism and the noble savage idea exerted in popularizing the theme in the early nineteenth century. Seven novels, twenty-nine dramas, and thirty-five poems written throughout the past one hundred and thirty-two years prove that Pocahontas's rescue of John Smith and her other acts of preservation have been extensively used and that they are still a vital source of literary material.

MARJORIE CRAIG. *Survivals of the Chivalric Tournament in Southern Life and Literature.* (Under the direction of ARTHUR PALMER HUDSON.)

The chivalric tournament came into England from France around 1135; it existed in four main forms—the tournament proper, the joust, riding at the quintain, and riding at the ring; and, according to the evidence of history and literature, in spite of serious obstacles, it lasted, with only a few interruptions, down to the twentieth century. Four theories of its origin in the South are presented, the two most tenable being the example of the Eglinton Tournament in Scotland (1839) and the influence of Sir Walter Scott; but, whatever the origin, we have records of tournaments of the past in ten Southern states. Nine treatments of the sport in Southern literature are given; they range through symbolic, burlesque, and romanticized interpretations down to factual accounts based on first-hand evidence and historical data. Tournaments are today held mainly in Maryland, the Virginias, and the Carolinas. The per-

sistence of the Southern tournament is explained on the grounds of its inherent drama, its social significance, and its tradition.

ROSALIE CONN ELLIOTT. *Character Writing and Its Influence on the Drama of Ben Jonson.* (Under the direction of ROBERT B. SHARPE.)

The purposes in writing this thesis were: (1) to discuss the development of character writing from its first meager beginnings in mediaeval literature to the first part of the seventeenth century, when it burst forth full grown as a complete literary form in itself; (2) to show that, although the development of the form in England influenced Ben Jonson, it is chiefly to Theophrastus that he is indebted for method; (3) that, due to the temper of his mind, his interests in types and character writing was a natural one; (4) that he drew his types, not only from contemporary London, but also from the writers of Attic and Roman comedy, especially from Menander, Plautus and Terence, who were in a measure themselves influenced by the characters of Theophrastus; and (5) to illustrate Jonson's use of the Theophrastian method in creating the characters of his comedies.

EARL HORACE HARTSELL. *Wordsworth's Problem of Loss and Recompense.* (Under the direction of ARTHUR PALMER HUDSON.)

The purpose of this study is a consideration of the changes in Wordsworth's belief in the "abundant recompense," not as a matter of abstract philosophy, but in terms of human experience. Wordsworth, a highly imaginative youth inclined to reverie, frequently experienced during his adolescence and young manhood the keen elation of vaguely ambitious day-dreaming. Financial independence for himself and his sister, successful achievement in some vocation, and public recognition of that achievement were elements of his dreams. After a period of indecisive career-planning he centered his hopes, always with reservations and misgivings, upon the vocation of poet. Convinced that poetry was the natural product of specially nurtured, joyful minds, he attempted to rationalize his choice of a career in many of his philosophical poems. Beginning with the popular Hartleian psychology as a framework, he was forced to introduce modifications when his personal achievement failed to keep pace with the formula. Before 1805 the attempt to find happiness in a vocation made painful for him by diversity of aim and lack of success resulted in the formulation of a belief in duty, not as a moral principle, but as a means to an end. In the meantime his obsession with the beatitude of his own childhood, a result of his prolonged work on *The Prelude*, and the self-imposed limitations of his principles of poetic composition, caused him to look more and more to the past for his inspiration and joy. Thus a new element of division was introduced. This "spiritual senility" combined with the old uncertainties of aim to defeat his highest achievement.

CORNELIA ISMAE HILDEBRAND. *Medieval Romance Motifs in the English Drama of the Renaissance.* (Under the direction of ROBERT B. SHARPE.)

The relationships between the English drama of the Renaissance and the mediæval romances may be seen through a study of the popularity of romance themes indicated by the titles of the non-extant plays of the period; the popularity of the romances among publishers; the denunciations of the romances and heroic dramas by contemporary critics; the extant dramas using some definite romance story; those employing a vaguer use of the romance motifs, and the dramatic satires of romance material. The conclusion reached in this thesis is that Elizabethan heroic drama, and through it the heroic drama of the Restoration, owes a great debt to the mediæval romances.

ROBERT DOUGLAS HUME. *Edward Alleyn, Elizabethan Actor: With Particular Attention to his Rôles and Style of Playing.* (Under the direction of ROBERT B. SHARPE.)

This thesis is a study of Edward Alleyn's life, with particular emphasis upon his mode of acting, and the rôles which he played. The various phases of this versatile man's life are set forth and discussed; and they are related in such a manner as to point out their connections with his acting career. His professional reputation, together with contemporary criticism of him as an actor, is reflected upon and interpreted. His style of playing is considered with relation to the acting of his day, and with due regard for the aesthetic side of the art of the theatre. His parts in various plays are taken up; and other rôles in which he may have been seen, basing such assumptions upon direct and indirect evidence, are tentatively ascribed to him.

MARTHA DABNEY JONES. *The Record of Milton's Disillusionment as Found in His Writings, with Special Reference to the Major Poetry.* (Under the direction of G. C. TAYLOR.)

Because of Milton's idealistic nature and because of the changing times through which he lived, he had many disillusionments to suffer. Some of his youthful illusions—his ideals of the greatness of the English nation, the perfectibility of man, and the noble character of woman—were gradually destroyed; others—his ideals of liberty, of education, and of glory—became radically changed.

As his disillusionment deepened, Milton's early self-confidence and faith in the individual were replaced by an increasing dependence on God. These parallel processes gradually modified the Renaissance breadth of his early ideals, and brought him at the same time from essential paganism to vital, though unorthodox, Christianity.

LURLINE HICKS McCAIN. *Linguistic History and Semantic Values of Representative Words in the "Prologue" of the *Canterbury Tales*.* (Under the direction of E. E. ERICSON.)

This study is an attempt to show that (1) Chaucer's vocabulary was not essentially different from those of his contemporaries, owing to the similarity of the impacts on the various languages, and the processes of simplification to which they were subjected; (2) Chaucer was not responsible for "Gallicizing" the English language; and (3) he shares with the universities and other fourteenth-century writers the credit for having standardized the East Midland

dialect as the English language. Using as a basis three hundred and thirty-one words, selected because of orthography, unfamiliarity in present usage, and semantic value, the general linguistic tendencies of the Chaucerian vocabulary have been remarked. In addition, the semantic histories of the representative words have been discussed at length, with especial attention to words obsolete in standard literary English.

ROSAMOND McCANLESS. Shakespeare's Use of the Unfaithful Wife Motif. (Under the direction of ROBERT B. SHARPE and G. C. TAYLOR.)

For this study all of Shakespeare's plays were examined and eleven were used: *The Comedy of Errors*, *Titus Andronicus*, *King Henry VI* (Parts I, II, and III), *The Tragedy of King Richard III*, *The Life and Death of King John*, *Hamlet*, *Othello*, *King Lear*, and *Troilus and Cressida*; with, whenever known, the sources of these plays; also, a number of Elizabethan dramas in which the unfaithful wife motif appears.

It was found that Shakespeare seems not to have been interested in the unfaithful wife motif and never makes it the theme of central interest. When using it, however, he differs sharply from his contemporaries. Avoiding the sensational, he never has theatrical exposures of guilt and scenes of confession and repentance. Shakespeare has humanized his erring wives until even characters like Tamora and Margaret of Anjou are superior to characters of similar type in the plays of his fellow dramatists. Unlike the majority of his contemporaries, he never allows his faithless wives to moralize or to become didactic.

OLIVE ELISABETH NEWELL. This Cunning Cardinal: a Study of Wolsey's Portrayal by Fletcher and Shakespeare in *King Henry the Eighth*. (Under the direction of ROBERT B. SHARPE.)

In their portrayal of Wolsey in *Henry VIII*, Shakespeare and Fletcher take full advantage of the materials in Holinshed's *Chronicles* for an evil characterization. This they have intensified by departures from the source which have general basis therein. The treatment of Wolsey's repentance, however, is sympathetic. Possible reasons for such a portrait may be found in Fletcher's disgust with the Church, in a contemporary condition in politics and religion which made close dependence advisable, and in Fletcher's memory of his father's fall from ecclesiastical power.

NEVILLE C. NORTH. William Byrd's *Journal*, his *Secret History*, and his *History of the Dividing Line*. (Under the direction of GREGORY L. PAINE.)

A study was made of William Byrd's *Journal* kept during the Virginia-North Carolina boundary line survey, his *Secret History*, and his *History of the Dividing Line*. The *Journal* was analyzed in connection with its relation to the two histories. An analysis was made of the material in the *Secret History* omitted from the *History of the Dividing Line* and of the additions to the latter, especially the Indian passages and Byrd's criticisms of North Carolina.

This study showed that the *Journal* contains many of the characteristics of the histories, that the omissions from the *History of the Dividing Line* are those passages which might detract from the prestige of Virginia; and that the additions to that history were evidently made with an eye to publication. The Indian passages were found to be, in the main, imitative and conventional; Byrd's criticisms of North Carolina were found to be, generally, justified.

SABRA LORÉ ROYALL. James Russell Lowell and *The Boston Miscellany*. (Under the direction of RAYMOND ADAMS.)

The province of this thesis is an investigation of the *Boston Miscellany*, a literary magazine, which was published in Boston from November, 1841, until February, 1843, with particular reference to the contributions of James Russell Lowell. The *Miscellany* was one of the first Boston magazines with a purely literary aim, and had prominent contributors such as Lowell, Poe, Thoreau, Story, Parsons, Hawthorne, and Whitman. The study of Lowell in connection with the *Boston Miscellany* gives us an interesting view of the man in the stage of apprenticeship. In this magazine Lowell was at work on the thing upon which he later gained his greatest success—literary criticism. The early criticism of the *Miscellany* was somewhat imitative and didactic, bearing witness of his youth and environment. Here, as in all his critical work, Lowell was frank and fearless, and showed the vast range of his reading.

JAMES KESTER SVENDSEN. Milton's Use of Personal Epithet: A Study of his Application of the Principle of Artistic Decorum. (Under the direction of G. C. TAYLOR.)

Chapter I is a consideration of the development of the principle of artistic decorum before it reached Milton, an evaluation from his writings of Milton's concept of the principle, and a review of significant criticism of his poetic interpretation of the concept. The separate identities of the Divine Persons as literary characters in *Paradise Lost* are established.

Chapter II is an analysis of Milton's use of personal epithets for the major characters in his poetry in relation to the principle of artistic decorum. Comment by critics of Milton's poetry upon individual epithets is included. The results of analysis of epithets for each person are summarized to show revelation of character and emphasis upon idea in Milton's use of epithet.

The conclusion, based upon general summary of results obtained in Chapter II, is that Milton gave to a literary convention, old long before it reached him, its most artistic interpretation.

ANNIE WILSON TERRY. Constance Fenimore Woolson as a Local Color Writer. (Under the direction of RAYMOND ADAMS.)

Constance Fenimore Woolson, a grandniece of James Fenimore Cooper, was a very popular American novelist and short story writer during the period 1870 and 1894, when so much work was done in the local color field. She was a pioneer writer in the Great Lakes region and in the Ohio German communities. She was also one of the first to write of the South after the war. Although she also wrote of Italy when she went abroad, the works for

which she is best known are those that have settings in America. Her ability to build up a local color tone and her interest in individual human types is shown by discussion of and quotations from her stories and novels that have American settings. Her two volumes of short stories, *Castle Nowhere* and *Rodman the Keeper*, and her five novels, *Anne*, *East Angels*, *Jupiter Lights*, *For the Major*, and *Horace Chase*, receive the most attention. The concluding chapter gives a short classification of character types and some general criticisms. It asserts the author's place as a superior member of the local color school to which she belongs, in spite of the opinions of certain modern critics.

ALTON WILLIAMS. *Water: a Play of a Pioneer Settlement in California*. (Under the direction of F. H. KOCH.)

Water is the story of the reconstruction of the West. The first settlers who came West squatted by the water holes and streams and constructed crude dams and canals to irrigate their lands. Stubbornly they resisted the improvements forced upon them by the new invasion. The resistance was not directed at the improvements alone, but was a selfish desire to keep the country as free of people as possible. The action of this play is built around a dominant character who refuses to allow others access to the water he claims.

DEPARTMENT OF GEOLOGY

WILLIAM F. PROUTY has published the following:

Origin of Folded Mountains. *Smithsonian Report for 1933*, 293-305. 1935.

Carolina Bays and Elliptical Lake Basins. *Journal of Geology*, XLIII: 200-207. February-March, 1935.

PROFESSOR PROUTY is continuing his studies concerning the origin of elliptical bays and lake basins in the Carolinas, and also the nature of the Silurian deposits of eastern Tennessee and the character of the marbles in the Norris Basin of the Tennessee Valley.

He is supervising the following research:

ROSS HORNBECK. Topographic and Geological Map of a Portion of Morgan Creek Basin.

PHILIP M. LEBARON. Origin and Nature of the Great Basic Ring Dike in Jackson County, North Carolina.

GERALD R. MACCARTHY has published during the year:

Eolian Sands: A Comparison. *American Journal of Science*, XXX: 81-95. 1935.

A study of the shape and size relations of a number of samples of eolian sand from various parts of the world, together with a comparison between eolian and beach sands. A possible method for distinguishing between beach and eolian sands is suggested.

What Lies Under the Coastal Plain? Read at the 33 Annual Meeting of the North Carolina Academy of Science. Abstract in *Journal of the Elisha Mitchell Scientific Society*, L: 50. 1934.

PROFESSOR MACCARTHY has in preparation a series of three papers dealing with the results of geophysical investigations on the Carolina Coastal Plain.

He is directing the following research:

W. R. JOHNSON. A Magnetic Survey of the North Carolina Coastal Plain.

H. W. STRALEY, III. A Magnetic Reconnaissance of the Southern Appalachians.

H. W. STRALEY, III, and W. R. JOHNSON. A Comparative Study of Electrical and Magnetic Methods of Locating Dikes.

JOHN W. HUDDLE has the following studies in progress:

Taxonomic study of Conodonts of the Chattanooga shale.

A reclassification of the Order *Conodonta* based on internal microscopic structures.

He is supervising the research of R. A. EDWARDS, a re-study of Cincinnatian Ostracods, and, in connection with a Ph.D. thesis, Cenozoic Ostracods of North and South Carolina.

SAMUEL T. EMORY has had accepted for publication in *Economic Geography*:

The Influence of Topography on the Location of Towns in the Piedmont of North and South Carolina.

Topography is studied as the chief factor in developing the striking alignment of towns along the central Piedmont of the two Carolinas and the less distinct alignments along the inter-stream divides.

IRVING L. MARTIN is completing his doctoral dissertation:

Petrographic and Micro-Paleontological Correlation of the Coastal Plain Formation of Eastern North Carolina.

H. W. STRALEY, III, (Graduate Assistant), has published the following papers:

Some Notes on the Nomenclature of Faults. *Journal of Geology*, XLII: 756. 1934.

Mineral Production in West Virginia. *Proceedings of the West Virginia Academy of Science*, VIII: 138. 1935.

An Attempt to Locate the Boundaries of the Durham Triassic

Basin with a Magnetometer. (With W. R. JOHNSON, JR.) *Transactions of the American Geophysical Union*, XVI: 176. 1935.

MR. STRALEY has had accepted for publication:

Some Notes on the Nomenclature of Folds. *Pan-American Geologist*.

The Terminology of the Tectonic Forms Assumed by Igneous Rocks. *Proceedings of the West Virginia Academy of Science*.

JAMES WICKLIFFE SMITH. Geographical Aspects of World Cotton. (Under the direction of S. T. EMORY.)

A study of the geographical distribution of world cotton and factors related to its growth and production, such as climate, soil, and topography. Emphasis is placed upon climatic conditions, as this has been found to be perhaps the most important of all factors affecting cotton culture.

Of especial interest are the reports received from the American Consuls General of India, China, Egypt, Russia, Brazil, and Mexico with respect to cotton cultivation and production of their respective countries. Through the assistance of these reports it has been possible to throw a different light upon cotton production in foreign countries. It is the contention of this paper that, regardless of contrary indications, cotton production in the United States will continue to hold its dominant position upon the world markets for an indefinite period of time.

The final chapter is devoted to the prospects, or potentialities, of each of the regions discussed, along with a rather brief survey of possible substitute fibres, principally Vistra and Snaifiocco of Germany and Italy, respectively.

DEPARTMENT OF GERMAN

A. E. ZUCKER has completed the following research:

In *The Dictionary of American Biography* articles on Robert Reitzel, Carl Heinrich Schnauffer, Alexander Schem, Ferdinand Solger, Gustave Struve, Bernhardt Stallo.

Louise Dumont's Model Theatre. *Germanic Review*, October, 1934.

(With P. DE F. HENDERSON.) "Camille" as the Translation of "La Dame aux Camelias." *Modern Language Notes*, November, 1934.

Two lectures on Carl Heinrich Schnauffer and Ferdinand Solger, respectively, delivered before the Society for the History of the Germans in Maryland, will appear in the publications of the Society in the course of this year.

Hettner, Ibsen, Coriolanus, Brand to be read before the section in Nineteenth Century German Literature of the Modern Language Association, December, 1935.

PROFESSOR ZUCKER is engaged on a history of the German stage at

the hand of intimate descriptions of typical performances from medieval times down to the present day.

E. C. METZENTHIN has continued during the year his comparison of Germanic manuscripts of the ninth century, A. D. For the completion of his work, additional research in Central European libraries will be necessary.

F. E. COENEN presented the following paper to the Germanic section of the North Carolina Education Association on March 28, 1935:

The influence of the Romance Literatures on German Literature during the Sixteenth Century, preceded by a brief historical sketch of these influences from the beginning of German Literature to 1500.

He extended this study to the middle of the Eighteenth Century.

He is engaged in the study of the treatment of the German emigrant in the novels of Gottfried Keller, Fontane, Freytag, Spielhagen, Rosegger, Otto Ludwig, Sealsfield, and others. This research is a continuation of the work begun under the direction of PROFESSOR A. WREDE of the University of Cologne, Germany.

W. P. FRIEDERICH has carried on the following research:

Julius Wilhelm Zinkgref and his Fellow Poets. *Germanic Review*, October, 1934.

A study of the transition of the German *Volkslied* of the Renaissance to the fashionable *Kunstlied* of the Baroque.

From Ethos to Pathos: The Development of the German Drama from Gryphius to Lohenstein. (Accepted for publication by the *Germanic Review*.)

Without carrying the parallelism too far, this article insists that the development of the German tragedy of the seventeenth century might *mutatis mutandis* be likened to the development of the Greek drama from Aeschylus to Euripides. Gryphius, representing the climax of Baroque and orthodox literature, deeply influenced by the horrors of the Thirty Years' War and the gory nature of Seneca's plays, wrote his religious dramas of proud martyrs and unflinching heroes because he wanted (as is shown particularly by his choruses) above all to teach and to preach. Lohenstein, influenced by French libertinism and rationalism, avoids in his plays Gryphius' *ethos* and rejoices in representing bloodthirsty tyrants, lascivious heroines, and atrocious butcheries for the sake of exaggerated sensationalism.

MR. FRIEDERICH has submitted for publication:

Gryphius and the Religious Tragedies of Corneille and Racine.

A comparison, *e.g.*, of Gryphius' *Katharina* and of Corneille's *Théodore*, shows better than all abstract essays the fundamental difference between Ger-

man Baroque and French classicism. Gryphius, the creator of the modern German drama, was clumsier in style, more gruesomely realistic in his Senecan scenes, more tortured by the ever-present problem of sin and salvation, more pessimistic in his whole *Weltanschauung*; Corneille, not less vigorous in his presentation of super-human heroes of highest personal will and integrity, is, however, more classical in style, cleverer in construction (chorus abolished), discreeter in his realistic scenes, emphasizing rather the *grâce divine* than the tortures. Racine, purely a classicist, showing psychological conflicts rather than blood, omits martyr-plays altogether. His two biblical dramas serve *ad majorem Dei gloriam* and their joyful end is in deep contrast with Gryphius' gloom and despair.

He has in preparation:

Common trends of German-Swiss and French-Swiss Literature of the Eighteenth Century in the Fight against the System and the Classicism of Versailles.

DEPARTMENT OF HISTORY

A. R. NEWSOME has almost ready for publication a volume, *The Presidential Election of 1824 in North Carolina*.

PROFESSOR NEWSOME has published:

National Support of Public Education. *North Carolina Education*, January, 1935.

He has read a paper, Recent Surveys of State and Local Archives in the United States, at a session of the American Historical Association in Washington, December 28, 1934.

MITCHELL B. GARRETT has completed his study entitled *The Estates General of 1789: the Problems of Composition and Organization*. It will come from the press of D. Appleton-Century Company late this fall.

PROFESSOR GARRETT has half completed a textbook which will probably bear the title, *An Introduction to the History of Continental Europe in Modern Times*.

L. C. MACKINNEY has had accepted for publication in an early number of *Isis*:

Dynimidia in Medieval Medical Literature.

He has also completed:

A study, from manuscript sources, of pharmaceutical handbooks. Medieval Medical Dictionaries and Lexicons. To appear in *Anniversary Essays in Honor of James Westfall Thompson*.

A survey of the alphabetically organized handbooks of Western Europe during the middle ages.

PROFESSOR MAC KINNEY has the following research in progress: *The Correspondence of Bishop Fulbert of Chartres*: a volume in the Columbia University "Records of Civilization" Series.

The volume will comprise an introductory survey of the life and writings of Bishop Fulbert, and a critical survey of the manuscript sources of his letters, followed by a translation of the letters, with critical notes.

Medical Science in France during the "Dark Ages."

Under the auspices of a grant-in-aid from the American Council of Learned Societies and a Kenan Traveling Professorship from the University of North Carolina, PROFESSOR MAC KINNEY will complete in the winter and spring quarters of 1936 his survey of early medical manuscripts in French libraries. As a result of this survey and of previous studies, he will write the above monograph on medicine in France during the period 500-1000, a period that is "peculiarly dark because of the insufficiency of modern knowledge of its achievements."

He has completed for early publication in *The South Atlantic Quarterly* an article, Post-morteming the Romans.

He is collaborating with W. E. CALDWELL on a college textbook, *Ancient and Medieval Civilization*, to be published in 1936.

HUGH T. LEFLER has published:

North Carolina History Told by Contemporaries. Chapel Hill: University of North Carolina Press. 1934.

A source book consisting of contemporary accounts illustrating the political, social, and economic development of North Carolina from Colonial beginnings to the present.

Hinton Rowan Helper: Advocate of a "White America." Charlottesville, Va.: The Historical Publishing Company. 1935.

A critical study of Helper in his writings, with particular emphasis on his advocacy of a "White America."

PROFESSOR LEFLER has in progress a study of the Educational and Religious Activities of the Society for the Propagation of the Gospel in the Southern Colonies. He has written for publication: "*Pig-Iron*" Kelley, *Preacher of Protection*, a study in the political and economic history of the United States 1860-1890, to be published in 1936 by the University of Pennsylvania Press.

HOWARD K. BEALE has published:

Forces That Control the Schools. *Harpers Magazine*, CLXIX: 603-615. October, 1934.

PROFESSOR BEALE has in press:

A History of Freedom in Teaching in the Schools, Charles Scribner's Sons, to appear early in 1936, as one volume of the report of the Commission on Social Studies in the Schools of the American Historical Association.

Freedom in Teaching in American Schools: an Analysis of the Contemporary Problem, Charles Scribner's Sons, to appear early in 1936, as one volume of the report of the Commission on Social Studies in the Schools of the American Historical Association.

Our Revolutionary Heritage of Freedom to Criticize, to appear in forthcoming issues of the *Classmate* and the *Epworth Highroad* published by the Methodist School Publications.

Gideon Welles, a sketch of the Secretary of the Navy under Lincoln and Johnson that is to appear in a forthcoming volume of the *Dictionary of American Biography*, Dumas Malone, editor.

With DEAN H. W. HOLMES of the Harvard School of Education, Superintendent F. W. BALLOU of the Schools of Washington, D. C., PROFESSOR MERLE E. CURTI of Smith College, and ROGER BALDWIN, Director of the American Civil Liberties Union, PROFESSOR BEALE is publishing:

Academic Freedom, in the October, 1935, issue of the *Harvard Teachers Record*.

This contains a rather full account of the conclusions of a public conference on academic freedom held July 22-25, 1935, by Harvard University in which the co-authors of this report were the participants.

He has in preparation:

Theodore Roosevelt, a Biography, being prepared for inclusion in the "American Political Leaders" Series edited by Allan Nevins and published by Dodd, Meade, and Company.

JOSIAH C. RUSSELL has published during the year:

Medical Writers of Thirteenth Century England. *Annals of Medical History*, New Series, VII: 327-340. 1935.

The Shorter Latin Poems of Henry of Avranches Relating to England, an edition in collaboration with J. P. HEIRONIMUS of the University of Wisconsin, under the auspices of the Mediaeval Academy of America.

He has had accepted for publication:

The Writers of Thirteenth Century England by the Institute of

Historical Research of the University of London. Social status at the Court of King John. To appear in *Speculum*.

He is preparing for publication the *Chronicles Attributed to Peter of Ickham* and in collaboration with H. L. HONEYMAN of Newcastle upon Tyne, England, a study of the life and architecture of Elias of Dereham.

C. H. PEGG has had accepted for publication in the near future:

Sentiments républicains dans la presse parisienne a partir du retour de Louis XVI jusqu'au rapport des sept committes. It will be published in *Annales historiques de la Révolution française*.

ROBERT D. MEADE has written:

Judah P. Benjamin and the American Civil War, a doctoral dissertation for the University of Chicago.

In writing this study an effort was made to avoid the repetition of already published material. The emphasis was laid upon the more neglected phases of Benjamin's multifold activities. A full treatment was given, for example, of his career as Confederate Secretary of War, while less space was devoted to the better known episodes of his work as Confederate Secretary of State.

MR. MEADE has published sketches of the following men in the two volumes last published of the Dictionary of American Biography: John Pelham, Lucius Eugene Polk, Leonidas Polk, Alfred Magill Randolph, George Wythe Randolph, John Stark Ravenscroft, and James Alexander Seddon.

He has written reports for the United States Government on proposed sites for national parks at Harrison's Landing, Va.; Big Bethel, Va.; Green Spring, Va.; along the line of Grant's advance from Spottsylvania, Va., to Petersburg, Va.; and from Petersburg to Appomattox, Va. He has also written various miscellaneous historical articles and reports for the United States Government.

The following doctoral dissertation was accepted by the Department during the year:

CHANDLER SHAW. A Study of Perugia in Prehistoric and Etruscan Times. (Under the direction of W. E. CALDWELL.)

This dissertation is a study of the industry, society, and art of the Perugian culture area from the earliest records of human habitation to the destruction of the city by the Romans in 40 B.C. Tens of thousands of prehistoric implements found within a few miles of Perugia testify that the locality was an important center of trade long before the dawn of history. The evolution of industry is traced through the Stone, Bronze, and early Iron Ages, and a continuity of culture is found throughout the successive epochs.

The Etruscans founded a city state at Perugia in the sixth century before Christ, though the Italic Umbrians remained the dominant race. A local bronze industry was established soon after the founding of the Etruscan city. Many imported bronze articles dating from the sixth and early fifth centuries prove that trade was carried on with Asia Minor.

The flower of Perugian civilization came in the fourth and third centuries. The imposing walls and gates were erected at the beginning of this period. During these centuries many beautiful engraved bronze mirrors, among the finest of all Etruria, were produced. More *kottaboi*, bronze instruments for determining one's success in love, have been found in Perugia than in all the rest of the world. A large number of gold and jeweled rings, earrings, and other personal adornments were made within the city and sold in neighboring towns. A type of Greek-imitated painted pottery, characterized by the frequent use of the palmette, was another common manufacture in Perugia. All these articles were in imitation of Greek artistic forms.

Both inhumation and incineration of the dead were practiced in Perugia. Hundreds of *tombe a camera*, clustered in various necropolises, have been found within three miles of the city. By the second century B.C., cremation had become the rule, and from the sculptured urns which contained the ashes of the dead can be determined much of the intellectual and religious life of the times.

A study was made of the Greek legends sculptured on these urns. Almost all the common hero stories are represented. The stories of Ipheginia, Scylla, Ulysses, Hercules, Troilus, and many others are found in many variations.

A number of reliefs deal with the Etruscan conception of the after life. Many show the Bearer of Souls as a strange sea creature, carrying the deceased on his back as he speeds over the waves to the Isles of the Blest.

Perugian culture continued unaffected for many decades after the Roman conquest of 294 B.C. The art of the second and first centuries, however, underwent great changes due to Roman influence. Urns and reliefs of the tomb of the Volumni, belonging to the second century, are flawless in technique, representing a serene beauty not known in earlier Etruscan art. The statue of the Arringatore, dated about 100 B.C., became a prototype for later Roman sculpture.

No Etruscan archaeological objects dating after the middle of the first century B.C. have been found, showing that Etruscan civilization in Perugia was completely wiped out with the destruction of the city.

The following master's theses were accepted by the Department during the year:

WILLIAM EDWARD BOONE. Land Value Taxation in Great Britain from 1909 to 1933. (Under the direction of HENRY MCGILBERT WAGSTAFF.)

Special emphasis has been placed on the effect of the Land Value Duties upon the disintegration of large landed estates in the United Kingdom. The conclusion reached was that the Land Value Duties, passed as part of the

Finance Bill of the Budget of 1909, contributed meagrely toward the break-up of the big estates. Other factors, social, political, economic, were largely responsible for the unusually heavy sales of landed property in Great Britain between 1909 and 1933.

GERTRUDE KNOFF GORDON. Theodore Roosevelt and the Algeciras Conference. (Under the direction of W. W. PIERSON.)

For many years it was believed that the United States sent delegates to the Algeciras Conference in 1906 to protect our commercial interests in Morocco and that our delegates took but a casual part in the proceedings of the Conference. An investigation of sources now available reveals the fact that the United States played a very important rôle in connection with the Algeciras Conference. In 1905 President Theodore Roosevelt arranged the Conference in order to prevent a war between France and Germany. In 1906 he drew up the terms of settlement which were adopted by the Conference, and induced the Kaiser to give his unwilling consent to them.

CHARLES CECIL HUSKINS. Transcontinental Railroad Surveys. (Under the direction of F. M. GREEN.)

Shortly after the discovery of North America, explorers began a search for a northwest passage to the Pacific. Failing to find a water passage, they sought overland routes. In the 1820's agitation for a railroad to the Pacific was begun and plans for the enterprise were formulated. In 1853 Congress made provision for the survey of the five proposed routes from the Mississippi River to the Pacific Ocean. Upon completion of the surveys, Jefferson Davis, Secretary of War, recommended the thirty-second parallel route as the most practicable one. This precipitated a fight, in and out of Congress, over the choice of routes, which continued until the withdrawal of Southern Senators and Representatives from Congress at the outbreak of the Civil War. A bill was then passed providing for the construction of one road along the central route, and on May 10, 1869, the Atlantic and Pacific states were at last connected by rail.

It was the purpose, therefore, of this essay to discuss and analyze the legislation bearing on the question of a Pacific railroad, and the sectional fight which developed over the selection of routes.

DAN MABRY LACY. The Beginnings of Industrialism in North Carolina, 1865-1900. (Under the direction of R. D. W. CONNOR and C. C. CRITTENDEN.)

Expanding markets for cotton goods and tobacco products, together with a favorable geographic environment and the presence of an abundance of cheap labor, led to a rapid expansion of manufacturing in North Carolina in the last quarter of the nineteenth century. This movement was accelerated by a public determination to reorganize the State's economy, awakened by the Civil War and Reconstruction. As a result, by 1900 North Carolina had become one of the leading states in the manufacture of cotton goods and tobacco, and its transformation into an industrial commonwealth had begun. Many effects of this industrialization upon the life of the State were already perceptible.

This study deals with certain aspects of the transformation. An analysis is attempted of the geographic and historical backgrounds of the movement, followed by a discussion of the changed attitude toward manufacturing. The cotton goods, tobacco, and furniture industries are separately treated. Finally, an attempt is made to analyze certain effects of industrialization upon the State.

STUART NOBLIN. George William Curtis and Edwin Lawrence Godkin as Reform Leaders in the United States, 1865-1900. (Under the direction of W. W. PIERSON.)

As a background for the careers of these reformers a brief review of their lives before 1865 is presented. The study describes *Harper's Weekly*, edited by Curtis, and *The Nation*, edited by Godkin, and analyzes the ideas they expressed in those papers. It explains the part of Curtis and Godkin in the Liberal Republican and Mugwump campaigns, and in the movement for civil service reform. The thesis proves that both were interested in liberal institutional and administrative reform, though they were conservative on economic questions. A short estimate and comparison of the men completes the study. A complete critical bibliography of Curtis and of Godkin is appended.

ESTELLE POPPER. The First National Bank as An Issue in Federalist Politics (1791-1801). (Under the direction of A. R. NEWSOME.)

A brief summary of economic conditions resulting in the calling of the Constitutional Convention of May, 1787, introduces this study. The second chapter deals with the forces at work in Congress against the chartering of the First National Bank. The third, fourth, and fifth chapters are primarily concerned with the opposition to the Bank as reflected in the political and economic thought and writing of the time. When Hamilton resigned the post of Secretary of the Treasury, on January 31, 1795, the major cause for Republican attack on the Bank was gone. True, Hamilton's influence on Wolcott, his successor, was always important, but this influence did not constitute a political issue. In conclusion it can be said that Hamilton was the motivating force in the politics of the Bank during the period that the Federalists were in control of the government.

JAMES WILLIAM WEBSTER. Parliamentary Practice in the Constituent Assembly (May 5-December 31, 1789). (Under the direction of M. B. GARRETT.)

The purpose of this study has been to follow chronologically the development of the Constituent Assembly and to analyze evidence relating either directly or indirectly to parliamentary practice.

The study is divided into four parts and an appendix. Chapter I deals primarily with the organization and procedure from May 5 to June 27. Chapter II gives a short account, from a parliamentary standpoint, of the work from June 27 to October 15; chapter III follows the proceedings from October 19 to December 31; while a short conclusion summarizes the study. The appendix is a chronological list of the chief officers from May 5 to December 31, 1789.

The Constituent Assembly formulated rules of parliamentary practice in its early existence and attempted to follow them. These rules developed from actual practice and were not copied from parliamentary practice of other governments.

THE SCHOOL OF LAW

Members of the faculty of the Law School, at the close of the 1935 legislative session, coöperated in the preparation of an article published as A Survey of Statutory Changes in North Carolina in 1935, 13 *North Carolina Law Review*, 355-449, June, 1935.

M. S. BRECKENRIDGE has published during the year:

With E. M. PERKINS, A Study of the Legal Phases of Holding Company Taxation: Taxation as a Means of Regulating Holding Companies and as an Impediment to their Further Excessive Expansion. Part II, Report on Relation of Holding Companies to Operating Companies in Power and Gas Affecting Control, Committee on Interstate and Foreign Commerce, House of Representatives, 73rd Congress, 2nd Session, (1935), *House Report* 827, pp. 105-180.

With E. C. WILLIS, JR., North Carolina Workmen's Compensation Act, Annotated with amendments and decisions to July 1, 1935, including rules of the Commission, Opinions of the Attorney General and a Compensation Citator. The Industrial Commission, Raleigh, 1935, pp. iv, 173.

J. H. CHADBOURN has published during the year:

Book review, Morgan and McGuire Cases on Evidence, 30 *Illinois Law Review* 128, May, 1935.

F. W. HANFT has published during the year:

Group Insurance: Its Legal Aspects, 2 *Law and Contemporary Problems* 70-94, January, 1935.

E. M. PERKINS has published during the year:

State Action under the Federal Estate Tax Credit Clause, 13 *North Carolina Law Review* 271-290, April, 1935.

With M. S. BRECKENRIDGE, A Study of the Legal Phases of Holding Company Taxation: Taxation as a Means of Regulating Holding Companies and as an Impediment to their Further Excessive Expansion.

(See above, under M. S. BRECKENRIDGE.)

M. T. VAN HECKE has published during the year:

The North Carolina Annotations to the Restatement of Contracts, Sections 1-177, 13 *North Carolina Law Review* 1-164, December, 1934.

An Annotator's Reflections upon The Restatement of Contracts, 13 *North Carolina Review* 304-309, April, 1935.

Book review, Havighurst, *A Selection of Contract Cases*, 29 *Illinois Law Review* 406, April, 1935.

THE SCHOOL OF LAW has the following studies in progress:

ALBERT COATES. Research on the Code of Criminal Procedure, to be published by the American Law Institute.

F. W. HANFT. Use of Their Own Expert Knowledge by Utilities Commissions, a discussion of the extent to which utilities commissions may draw on their own experience and general knowledge in deciding cases.

F. B. MCCALL. As a member of a Commission, created by the 1935 General Assembly, research incident to a proposed revision of the North Carolina law of intestate succession, wills, probate, and the administration of estates and trusts. (With the assistance of W. R. BOOTH).

A. C. MCINTOSH. The Sale of Land for Taxes in North Carolina, from the Beginning of the State Government to the Present.

Courts and Law in North Carolina during the Colonial Period, with special reference to the County Courts and the law therein administered, a project sponsored by the American Legal History Society.

CHARLES S. MANGUM, JR. and R. H. WETTACH. Work continued on A Study begun in 1934, to Determine the Legal Status of the Negro, with Particular Reference to the South. Particular studies have been made concerning legal and practical aspects of the Negro in relation to serving on juries, voting, and education. Further studies will involve problems of discrimination as illustrated by residential and other forms of segregation.

J. E. MULDER. The Place of Waiver in the Law of Contracts, thesis for the degree of S.J.D. from Columbia University, to be published in book form.

Legislation in the Commercial Law Field, a paper to be delivered at the meeting of the Association of American Law Schools in New Orleans, December, 1935, to be subsequently published in the *University of Chicago Law Review*.

Manipulation of the Doctrine of Consideration by Mr. Justice Cardozo, to be published in the *Columbia Law Review*.

Limitation of the Doctrine of Promissory Estoppel to Non-bargaining Transactions, to be published in the *North Carolina Law Review*.

E. M. PERKINS. The Influence of State Competition in the Adoption of Regressive Taxes: The North Carolina Sales Tax.

Extraterritorial Factors in the Measure of State Taxes.

Tax Exempt Securities in American Public Finance.

A Cumulative Index to the North Carolina Law Review.

R. H. WETTACH. Work continued on North Carolina Annotations to the Restatement of Conflict of Laws. The work on sections dealing with Contracts was completed with the assistance of J. A. KLEEMEIER, in the fall of 1934.

THE LIBRARY AND THE SCHOOL OF LIBRARY SCIENCE

ROBERT B. DOWNS has published:

College Curriculum Changes and the College Library. *Library Journal*, LIX: 961-962. 1934.

(With HARVIE BRANSCOMB.) A Plan for University Library Coöperation. *School and Society*, XLII: 64-66. 1935.

The Story of Books. *University of North Carolina Library Extension Publication*, I: 6. 1935.

Southern Library Resources. *South Atlantic Bulletin*, I: 1. 1935.

Developments in the South. American Library Association, *Public Documents*, 32-36. Chicago, 1935.

A Proposal to Modify the System of Exchange and Distribution of State Publications. American Library Association, *Public Documents*, 67-68. Chicago, 1935.

DEPARTMENT OF MATHEMATICS

ARCHIBALD HENDERSON has published:

The Elisha Mitchell Scientific Society: Its History and Achievements. *Journal of the Elisha Mitchell Scientific Society*, L: 1 and 2, December, 1934.

JOHN W. LASLEY, JR. has just completed a study of the application of the modern theory of linear dependence to a celebrated differential

equation of Monge. This study will appear in an early issue of *The American Mathematical Monthly*.

PROFESSOR LASLEY is engaged in preparing a connected and systematic account of the differential geometry of osculating conics to a plane curve at a point of it. The purpose of this study is to provide a simpler attack than heretofore employed and to extend results in this domain.

PROFESSOR LASLEY has under his direction the following theses:

E. A. CAMERON. (Progress on doctor's dissertation.) Associated Loci to a Plane Curve Due to the Motion of a Point Along It.

N. DI COSTANZO. (Progress on master's thesis.) On the Relation Between Projective Geometry and Theory of Equations.

R. D. VOGLER. (Progress on master's thesis.) Certain Methods of Approximation for Theory of Equations.

C. C. WILLIAMS. (Progress on master's thesis.) On Certain Methods of Approximation for Plane Curves.

E. T. BROWNE has completed a paper which will appear in an early number of *The Bulletin of the American Mathematical Society*:

The Solution of Certain Algebraic Matric Equations.

Let A be a square matrix of order n , the elements of which are known. Let X be a matrix of the same type with unknown elements. If then $P(A, X)$ is an arbitrary polynomial in A and X , our problem is to find matrices X satisfying the equation: $P(A, X) = 0$. In this paper attention is confined to such matrices X as are expressible as polynomials in A , and it is shown that the principal *indempotent* and *nilpotent* matrices associated with A lend themselves very readily to a very simple and direct solution of the problem.

M. A. HILL, JR., has continued his study on the Calculus of Finite Differences.

The following master's thesis was prepared during the year under the direction of the Department:

HUGHES BAYNE HOYLE, JR. On Conformal Mapping. (Under the direction of E. L. MACKIE.)

This paper presents a set of necessary and sufficient conditions for the mapping of a portion of one surface, containing no singular points, conformally upon a portion of another such surface. A proof of *Riemann's theorem* is given which shows that it is possible to determine an analytical function whereby any given closed curve in one plane can be made to correspond conformally to any given closed curve in a second plane. One complex plane is mapped upon another complex plane by means of certain linear integral functions, certain trigonometric functions, and certain hyperbolic functions.

MUSEUM OF NATURAL HISTORY

J. M. VALENTINE has completed for publication in the fall number of the *Journal of the Elisha Mitchell Scientific Society* the following:

Speciation in *Steniridia*, a Group of Cychrine Beetles.

This is an attempt to analyze the species-concept on the basis of anatomical, ecological, and geographical evidence.

He is continuing his research on the evolution, adaptation, and ecology of carabid beetles.

DEPARTMENT OF MUSIC

GLEN HAYDON published the following research while on the faculty of the University of California:

The Evolution of the Six-four Chord, A Chapter in the History of Dissonance Treatment. Berkeley: University of California Press, 1933.

Studies in the Fundamentals of Music. Berkeley: University of California Press. 1933.

Music Research and Modal Counterpoint. *Yearbook* of the Music Educators National Conference, 1934, pp. 217-222.

PROFESSOR HAYDON has published during the year:

The Adjustment to the College Student of Teaching Methods in Theory. Volume of *Proceedings* for 1934 of the Music Teachers National Association, pp. 138-143.

The Cadence: its rôle in Musical Theory and Practice with reference to the works of Monteverdi. Volume of *Proceedings* for 1934 of the Music Teachers National Association, pp. 177-187.

He has published reviews:

In *Books Abroad*:

Hans Pfitzner, *Gesammelte Schriften*.

Leopold Binetal, *Chopin*.

W. Flemming, *Die Oper*.

Paul Bekker, *Wandlungen der Oper*.

L. de la Laurencie, *Orphie de Gluck*.

R. Dumesnil, *Richard Wagner*.

In the *Daily Oklahoman*:

Charles Phillips, *Paderewski*.

Rom Landan, *Ignace Paderewski*.

R. Specht, *Beethoven as He Lived*.

H. Kinscella, *Music on the Air*.

J. W. McSpadden, *Opera Synopses*.

He has read the following papers:

Modern Trends in the Theoretical and Creative Fields in Music, North Carolina Music Teachers Association, Winston-Salem, March 29, 1935.

Aims and Objectives of the College and Conservatory Curricula in Music, New Orleans, April 10, 1935, Southern Conference for Music Education.

Some Comments on the Relation of Music to the General Curriculum, Southern Conference for Music Education, New Orleans, April 1935.

Some Aspects of the Dissonance Problem, at the April, 1935, meeting of the Washington-Baltimore Chapter of the American Musicological Society in Washington.

PROFESSOR HAYDON'S translation of K. Jeppesen's On Counterpoint was published in the October, 1935, issue of the *Musical Quarterly*.

He is writing a textbook on Musicology, and is directing the following research:

HERBERT HAZELMAN. Studies in the Psychology of Musical Intelligence.

BENJAMIN F. SWALIN has completed the following articles:

Soviet Education.

Russia: Its People and Religion.

Communistic Ideals.

PROFESSOR SWALIN has completed a study of Rossetti and the Pre-Raphaelites, which is ready for publication.

He has in progress:

A Handbook of Modern Music.

A Syllabus for Students of Harmony.

An essay on Conducting.

J. P. SCHINHAN has completed the following research:

The Music of the Papago and Yurok: A study of the Culture of the South and Northwest of the Pacific coast.

On the basis of up-to-date electrical recordings, made of one singer each of two Indian tribes of the Pacific coast, the cultures of these two peoples

were examined in the light of the latest findings in comparative Musicology and the resultant data compared. Although some songs of both these tribes were recorded and analyzed a few years ago, it became apparent that the result of these investigations could not stand when subjected to truly scientific tests. It is to fill the gap left by these previous analyses that this work was undertaken.

Heine as Music Critic.

Critical survey of Research work done, dissertations and books written, on the Origins of Music, with special consideration of the Indian Music on the Pacific Coast.

PROFESSOR SCHINHAN is beginning a study of North Carolina Folk Music.

SCHOOL OF PHARMACY

H. M. BURLAGE has completed the following studies during the year:

A Collaborative Study of the Swelling Factors of Various Species of Psyllium. *Journal of the Association of Official Agricultural Chemists*, October, 1935.

As a result of this study a method will be recommended as tentative for inclusion in the methods of the Association of Official Agricultural Chemists.

The Preparation of Three Official Products by Shorten Procedures.

The Effect of Antioxidants on the Preservation of Lard and Suet.

PROFESSOR BURLAGE has been engaged in the following studies during the year:

A Survey of Drugs and the Drug Industry of North Carolina. (With M. L. JACOBS.)

The Roll of Pearling Agents in the Manufacture of Creams.

The Constituents of White Snake Root.

Phyto-chemical Studies of *Eremocarpus setigera*.

The Examination of the Volatile Oil of *Heracleum lanatum*.

Chrysopsis graminifolia, its Composition and Preparations.

M. L. JACOBS has completed, but has not published, the following research:

A Comparative Study of the Adsorptive Powers of Activated Carbons and Animal Charcoal on Several Alkaloids.

PROFESSOR JACOBS during the year has been engaged in the following studies which are still in progress:

A Survey of Drugs and the Drug Industry in North Carolina.

A Study of Some New Solvents in Alkaloidal Assaying, Especially Methylene Chloride and Isopropyl Ether.

DEPARTMENT OF PHARMACOLOGY

WM. DEB. MACNIDER has published:

A Consideration of the Susceptibility and the Resistance of Tissues to the General Anesthetics. *Anesthesia and Analgesia*, XIV: 4:97. 1935. This publication also appeared in *The Diplomat*, VII: 1: 11. 1935.

Acquired Resistance of Liver Cells to the Toxic Action of Uranian Nitrate. *Proceedings of the Society for Experimental Biology and Medicine*, XXXII: 791-793. 1935.

The Resistance of Fixed Tissue Cells to the Toxic Action of Certain Chemical Substances. *Science*, LXXXI: 211: 601-605. 1935.

DEPARTMENT OF PHILOSOPHY

LOUIS O. KATTSOFF has completed the following research:

Postulational Methods I. *Philosophy of Science*, April, 1935.

Postulational Methods II. To appear in *Philosophy of Science*, January, 1936.

Postulational Methods III. To appear as a *Supplement to Philosophy of Science* in 1936.

These three papers are an analysis of postulate sets and their presuppositions, as used by mathematicians and logicians. Special attention is paid to proofs of independence and consistency and the lack of a completely general logic.

Review of Reichenbach, H. *Möglichkeitstheorie*. To appear in *Philosophical Review*.

Modality and Probability. Read to the Southern Society for Philosophy and Psychology at Nashville, Tennessee, April 19, 1935. To appear in *Philosophical Review*.

An attempt to establish a theory of Probability based on a complete Logic.

MR. KATTSOFF has the following research in progress:

Mathematical and Social Unrest.

This article points out the amazing similarity between social upheavals and those of mathematics.

Group Theory for Logical Truth-Values.

An application of the mathematical theory of groups to logical truth-values. Truth-values are here considered as operators.

Do Postulate Sets have Undefined Concepts? (To be submitted for reading at the Southern Society for Philosophy and Psychology.)

An attempt to show that an undefined concept is impossible. The postulate set defines these *primitive* concepts.

Is Space Euclidean or Non-Euclidean? (To be submitted for reading at the American Philosophical Association.)

An attempt to show that from the nature of Space the question cannot be answered.

A Text Book in Logic.

The Philosophy of Mathematics, a volume.

The following master's theses were accepted during the year by the Department:

CONNIE JONES BURWELL. A Study of the Process of the Hegelian Dialectic. (Under the direction of H. H. WILLIAMS.)

The dialectic process of Hegelian thought is a diagrammatic interpretation of the process of thought in the individual mind; and it is an explanation of the progress of philosophical ideas, Universal historical development, and the individual's self-realization in the realms of ethics, aesthetics, government, and religion. The Hegelian dialectic is most clearly expounded in the *Logik*; it is exemplified in Hegel's other works. The dialectic is neither the process of negation nor a violation of the law of contradiction. It is an explanation of progress as a synthesis and transcendence of the preceding moments. The dialectic is the key to an understanding of Hegel's theory of the Universe; it is likewise the key to an understanding of the individual's relation to the Universe.

WHITFIELD COBB, JR. The Logical Development of the Conception of God in Relation to Values. (Under the direction of H. H. WILLIAMS.)

Taking as its point of departure the fact that recent philosophy of religion has centered around "values" rather than God, this essay seeks to determine the actual relation between God and these values. To this end, the first chapter attempts to define Value and considers the possibility of a definition of God. But such a definition being precluded by the lack of unanimity in the conception of God, the second chapter considers the more plausible (or at least, the more prevalent) conceptions of God as particular variations of nine general types. These types are treated not as isolated revelations or random guesses but as steps in a logical development of the relation between God and Values. The third chapter interprets the conclusions reached in this development. An appendix summarizes (and compares with the present essay) two previous classifications of religion based on the relation between God and Values.

DEPARTMENT OF PHYSICS

ARTHUR E. RUARK published the following researches:

X-Ray Levels of Radioactive Elements with Applications to Beta and Gamma-Ray Spectra. *Physical Review*, XLVII: 107. 1935. (With FREDERICK A. MAXFIELD.)

On the Half-Lives of Potassium, Rubidium, Neodymium, and Samarium. *Physical Review*, XLVIII: 151. 1935. (With KARL H. FUSSLER.)

Is the Quantum-Mechanical Description of Physical Reality Complete? *Physical Review*, XLVIII: 466. 1935.

Inspectional Analysis: A Method Which Supplements Dimensional Analysis. *Journal of the Elisha Mitchell Scientific Society*, LI: 1. 1935.

Analysis of Data on Radioactivity Induced by Neutron Bombardment. *Physical Review*, XLVII: 700. 1935. (With CALVIN N. WARFIELD.)

X-Ray Wavelength Scales. *Physical Review*, XLVII: 316. 1935.

He has ready for publication:

General Theory of Radioactive Fluctuations. (With LEE DEVOL.) (A preliminary account has appeared in *Bulletin of the American Physical Society*, X: 3: 7-11. 1935.)

PROFESSOR RUARK and his colleagues have the following research in progress:

Search for the Alpha Particles of Actinouranium. (With FREDERICK A. MAXFIELD.)

The Time Distribution of Radioactive and Cosmic Ray Events Recorded by Geiger Counters. (With LEE DEVOL and FORREST WESTERN.)

Search for Photo-Disintegration of Some Heavy Elements. (With WILLIAM LAMONT SMITH.)

Survey of Gamma Ray Spectra and Nuclear Energy Levels.

Gamma Ray Spectra of Substances in the Radium Series.

OTTO STUHLMAN, JR., published the following articles:

The Intensity of the High Frequency Electrodeless Discharge as Conditioned by Power Control of the Generator. *The Journal of the Franklin Institute*, CCXIX: 37. 1935. (With M. S. McCAY.)

(For abstract see *Research in Progress*, 1934, p. 72.)

Near Ultraviolet Band Spectra of Iodine. (Abstract.) *Physical Review*. XLVIII: 381. 1935.

The emission spectrum of iodine vapour was examined under high frequency electrodeless discharge conditions. At minimum maintaining potential the "continuum" referred to as "3460" developed a marked maximum at $\lambda 3414$. This group is a P branch, head at 3414 and degraded to higher frequencies. The group in general is given as a wave number equal to $29,949 + 22.5 M + 28.42 M_2 + 2.000 M_3 + 0.0833 M_4$ with $-J'' = M = -1, -2$, etc.: $B' = 125.42$, $B'' = 97.08$, $D' = 0.4584$. Its upper level is 44.893 cm^{-1} . Its lower level is coincident with $15,598.3 \text{ cm}^{-1}$.

An adjacent band with maximum at $31,129 \text{ cm}^{-1}$ is a headless P branch whose general wave numbers are $31,760 + 208.83 M + 0.167 M^3$, where $B' = B'' = 104.50$ and $D' = D'' = 0.0417$. Its intensity distribution closely approximates thermal equilibrium. It was found to be the last band to disappear as the high frequency excitation potential is lowered.

PROFESSOR STUHLMAN and his students have the following studies under way:

Selective Radio Frequency Absorption in Gases.

The Intensity of Spectra, as Influenced by External Conditions of Excitation, in the Electrodeless Discharge.

Striking and Maintaining Potentials of the Glow Discharge as a Function of Frequency of Excitation. (With SHERWOOD GITHENS, JR.)

The Near Ultra-Violet Band Spectra of Bromine, Chlorine, and Iodine. (With R. L. DRISCOLL.)

The Flow of Liquids in Elastic Tubes. (With J. L. WARDLAW, JR.)

The Intensity of the Balmer Series as Conditioned by Dimensions of the Container, with Power Input Constant. (With F. BREAZEALE.)

E. K. PLYLER and his co-workers have published the following researches during the past year:

The Infrared Absorption of Alcoholic Solutions of Hydroxides. (With F. D. WILLIAMS.) *Journal of Chemical Physics*, II: 565. 1934.

(For abstract see *Research in Progress*, 1934, p. 75.)

The Infrared Absorption of Acid Solutions. (With E. S. BARR.) *Journal of Chemical Physics*, II: 306. 1934.

(For abstract see *Research in Progress*, 1934, p. 73.)

The Low Frequency Fundamental Bands of Methyl Chloride, Methyl Bromide, and Methyl Iodide. (With E. F. BARKER of the University of Michigan.) *Journal of Chemical Physics*, III: 367. 1935.

The parallel type bands ν_5 for CH_2Cl , CH_2Br and CH_2I have been found at $\lambda 13.7$, 16.4 and 12.8μ respectively, the rotation lines of the chloride band

being partially resolved. The iodide band has a particularly sharp zero branch suitable for use in calibration. Both the chloride and bromide bands are complicated by isotopic effects, the separation being 6 cm^{-1} and 1 cm^{-1} .

PROFESSOR PLYLER has had accepted for publication:

The Reaction Rate of Acetic Anhydride and Water. (With E. S. BARR.) To appear in *Journal of Chemical Physics*, November, 1935.

The infrared absorption of acetic acid and acetic anhydride has been measured from $1\ \mu$ to $6.5\ \mu$. A number of bands were observed below $5\ \mu$ which were similar for the two substances, and were attributed to CH bonds. An intense band was found in acetic anhydride at $5.45\ \mu$ and in acetic acid at $5.7\ \mu$. By measuring the intensity of these bands at different times, the reaction velocities of equivalent amounts of anhydride and water were determined. This method offers a new and independent means of determining reaction velocities and related constants. The reaction was approximately unimolecular for any concentration. The reaction constant decreased as the time increased. A different value of the constant was obtained when different concentrations were used. The reaction constant was also determined for three different temperatures. The values of the reaction constant and other constants are tabulated. The error is estimated to be 10 per cent.

E. K. PLYLER and E. S. BARR have completed the following studies:

The Near Infrared Absorption Spectra of Acid and Basic Solutions.

The infrared absorption spectra of H_2O and aqueous solutions of HCl, HBr, NaOH, KOH, ZnBr_2 , ZnCl_2 , and Na_2CO_3 have been measured from $1.5\ \mu$ to $2.8\ \mu$. Bands were observed at $2.44\ \mu$, $2.74\ \mu$, and $3.06\ \mu$ in the water; at $2.3\ \mu$ and $2.45\ \mu$ in hydroxides; at $2.3\ \mu$ and $2.55\ \mu$ in acids; and $2.3\ \mu$, $2.45\ \mu$, and $2.55\ \mu$ in hydrolyzing salts. The resolution of the instrument was sufficient to separate the $3\ \mu$ water band into its three components and to show the components of the absorption bands of the solutions. The band at $2.45\ \mu$ is produced by the OH ion and the $2.55\ \mu$ band is produced by the hydrated acid molecule.

The Reaction Rates of Propionic and Acetic Propionic Anhydrides.

The infrared absorption spectra of mixtures of water and acetic propionic and of propionic anhydrides have been measured in the region from $5\ \mu$ to $6.4\ \mu$. The intensity of the bands was found to decrease with time. By using the relative intensity of the anhydride band, the reaction rate was calculated for three concentrations. The reactions were unimolecular, but the value of the reaction constant was different for each concentration, its value being approximately proportional to the concentration of the water. The value of the reaction constant of acetic propionic anhydride was about twice the value of the constant for propionic anhydride. A table is given of the values of the reaction constants for the different concentrations.

PROFESSOR PLYLER and his students are continuing the studies of solution effects in mixtures of liquids.

KARL H. FUSSLER has published:

On the Half-Lives of Potassium, Rubidium, Neodymium and Samarium. (With A. E. RUARK.) *Physical Review*, XLVIII: 151-154. 1935.

(For abstract see under A. E. RUARK.)

This paper was presented by one of the authors at the meeting of The Southeastern Association of Physicists at Atlanta, Ga., April, 1935; at the meeting of The American Physical Society, Washington, D. C., April, 1935; and at the meeting of the North Carolina Academy of Science, May, 1935.

PROFESSOR FUSSLER presented the following paper at the meeting of The North Carolina Academy of Science, May, 1935:

Evidence of a "Shell" Structure in the Nuclei of Atoms.

If the isotopic (Harkins. *Physical Review*. XXXVIII, p. 1280, 1931) number of all atomic species of the 4M type (mass number divisible by four without a remainder) be plotted as a function of the atomic number, a stair-step arrangement results.

The number of atomic species in each step correlates almost exactly with the number of electrons in the different energy levels of the extra-nuclear electrons.

JOHN A. WHEELER published during the past year, while National Research Fellow at the Institute for Theoretical Physics, Copenhagen, the following papers:

The Variation of K—Resonating Strength with Atomic Number. *Physical Review* XLVI: 755. 1934. (With J. A. BEARDEN.)

Inelastic Scattering of Quanta with Production of Pairs. *Physical Review*, XLVIII: 302. 1935.

He has completed, but has not yet published, the following research: Wave Functions in a Repulsive Inverse Square Field of Force. (With G. BREIT and F. L. YOST.)

The Interaction between Alpha Particles.

The Theory of Multiple Scattering. (With M. S. PLESSET.)

The Anomalous Scattering of Gamma Rays. (With M. S. PLESSET.)

KATHERINE WAY has published the following article based on work done at the Boyce Thompson Institute for Plant Research:

Spectrophotographic Determination of Calcium in Plant Ashes *Contributions from Boyce Thompson Institute*, VII: 2: 103. 1935. (With JOHN M. ARTHUR.)

The following doctoral dissertations have been accepted by the Department during the year:

C. J. CRAVEN. The Infrared Absorption of Aqueous Solutions of Various Copper Salts from 0.6μ to 6.2μ . (Under the direction of E. K. PLYLER.)

A study has been made of the infrared absorption spectra of CuSO_4 , $\text{Cu}(\text{NO}_3)_2$, CuCl_2 , and CuBr_2 in the region from 0.4μ to 6.4μ . A special study was made of a band which has its maximum absorption at 0.81μ for these salts, and it was found that for the same concentration and cell thickness, the band was most intense for CuCl_2 solution, and least intense for CuSO_4 and $\text{Cu}(\text{NO}_3)_2$ solutions. A less intense band was observed in the region of 0.42μ . A solution of the nitrate of 0.6 N concentration was less absorbing in this region than one of the bromide of 0.3 N concentration. The great intensity of this band for the bromide salt causes the brown color of concentrated solutions. Beer's law was tested by studying CuSO_4 in solution with concentrations varying from 0.64 N to 0.0064 N , and with cell thicknesses varying from 1 mm to 100 mm . 40% of the radiation was transmitted in the region of 0.81μ by the 0.64 N solution, and 52% by the 0.0064 N solution. This decrease in intensity of absorption with dilution is attributed to the greater hydrolyzation of the less concentrated solution. The intensity of the 0.81μ band was measured for two concentrations of CuBr_2 and CuCl_2 solutions, and Beer's law was found to hold approximately.

The region from 1.5μ to 6.4μ was studied to ascertain whether any bands were present due to a hydrated copper ion or hydrated salt molecule. Because of the low solubility of $\text{Cu}(\text{NO}_3)_2$ and CuSO_4 , these salts were not studied in this region. In the spectra of solutions of CuBr_2 and CuCl_2 of 5 N concentration, bands were found at 3.45μ , 5.2μ , 5.6μ , and 6.1μ . The bands at 3.45μ and 5.2μ are due to the hydrated hydroxide molecule, while the one at 5.6μ is due to the hydrated acid molecule. The 5.2μ band is more intense than the one at 5.6μ , which is in accordance with the fact that these salts give an acid reaction in solution. The band at 6.1μ has not been found in other hydrolyzing salts, such as ZnCl_2 and ZnBr_2 , and is attributed to the hydrated copper ion or the hydrated salt molecule.

WALTER GORDY. The Infrared Absorption of Solutions of Hydroxides and Hydrolyzing Salts. (Under the direction of E. K. PLYLER.)

A study has been made of aqueous solutions of NaOH , KOH , LiOH , ZnCl_2 , ZnBr_2 , $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$, Na_2CO_3 , $\text{Na}_2\text{C}_2\text{H}_3\text{O}_2$, $\text{Na}_2\text{B}_4\text{O}_7$, Na_2SiO_3 , and $\text{Al}_2(\text{SO}_4)_3$ in the region from 0.6μ to 6.6μ . Bands were observed at 0.75μ , 0.79μ , 0.87μ , 1.04μ , 1.22μ , 1.30μ , 1.81μ , 2.30μ , 2.60μ , 3.65μ , and 5.20μ in the hydroxide solutions. These bands were at approximately the same positions for all the hydroxides, and the more intense bands were observed for concentrations down to 0.1 normal. The salt solutions were found to have bands in the same regions as the hydroxides, and, in addition, bands were observed in the regions of 4.5μ and 5.6μ . Bands had been previously observed at 5.6μ in acid solutions. The bands in the region of 4.5μ were not present

in either hydroxide or acid solutions, and are to be attributed to energy levels characteristic of hydrolyzing salts.

From the results of the study of hydrolyzing salts, it was found possible to draw conclusions about the hydroxide bands at 1.81 μ , 2.30 μ , 2.60 μ , 3.65 μ , and 5.2 μ and about the band in the region of 5.6 μ characteristic of acid solutions. For salt solutions which gave acid reaction, the absorption was great in the regions of 1.81 μ , 2.60 μ , 3.65 μ , and 5.2 μ , and the absorption in the regions of 2.30 μ and 5.6 μ was less intense; whereas, for salts which yield basic solutions, the bands at 2.30 μ and 5.6 μ were intense, and the absorption in the regions of 1.81 μ , 2.60 μ , 3.65 μ , and 5.6 μ was less intense. This intensity variation indicates that the hydroxide bands at 1.81 μ , 2.60 μ , 3.65 μ , and 5.2 μ are characteristic of the hydroxide molecule in solution, and that the band at 2.30 μ is characteristic of the hydroxide ion. This variation indicates also that the acid band at 5.6 μ is characteristic of the hydrated acid molecule rather than the H ion.

The bands at 2.30 μ , 3.65 μ , and 5.2 μ were considered as fundamentals, and it was found possible to classify all other bands observed in hydroxide solutions as harmonics of these bands.

P. J. STEELE. The Infrared Absorption Spectra of the Hydrolyzing Salts of Cobalt and Nickel in Solution. (Under the direction of E. K. PLYLER.)

A study has been made in the region from 1 μ to 6 μ of the infrared absorption spectra of $\text{NiCl}_2 \cdot 6 \text{H}_2\text{O}$, $\text{Ni}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$, $\text{NiSO}_4 \cdot 6 \text{H}_2\text{O}$ and $\text{CoCl}_2 \cdot 6 \text{H}_2\text{O}$, $\text{Co}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$, $\text{CoSO}_4 \cdot 6 \text{H}_2\text{O}$. In all the nickel salts a strong band was found at 1.13 μ , and this band was attributed to the presence of the nickel in the solution. From this single band it was not possible to tell whether it arose from a hydrated ion or the hydrated molecule. In the cobalt compounds a characteristic band was found at 1.19 μ . The intensities of these bands varied with the concentration, and the intensity changes obeyed Beer's law approximately. In the region from 1.5 μ to 6 μ , several intense bands were observed. These bands occurred approximately at 3.45 μ , 5.2 μ , and 5.6 μ . These bands were identified as due to the presence of the hydrolyzation which had taken place in the solution. By a study of the intensity of the bands, it was found that all six of the salts studied should be acid in reaction. This result is in accordance with direct tests by chemical methods. The degree of hydrolyzation of these salts was not as great as that of ZnCl_2 or ZnBr_2 . The bands due to hydrolyzation could not be observed in solutions whose concentrations were below two normal. Intensity measurements showed that the chloride salts hydrolyzed more than either the nitrate or sulphate salts.

DEPARTMENT OF PHYSIOLOGY

Within the last year E. W. McCHESENEY has published the following articles:

The Determination of Lactic Acid in the Presence of Certain Interfering Substances. *Proceedings of the Society for Experimental Biology and Medicine*, XXXII: 94. 1934.

The Determination of Alanine in Biological Materials. *Journal of the Elisha Mitchell Scientific Society*, LI: 147. 1935.

Proteins of the Blood Serum in Cases of Essential Epilepsy. (With B. W. McKENZIE.) *Archives of Neurology and Psychiatry*, XXXIV: 764. 1935.

During the year PROFESSOR McCHESNEY has made studies on the preparation and properties of the zinc salts of the amino acids and of an apparently undescribed compound in the products of hydrolysis of casein. A report on the former subject was given at the meeting of the American Chemical Society in April, 1935, and of the latter at the meeting of the North Carolina Academy of Science in May, 1935. These studies are being continued.

DEPARTMENT OF POLITICAL SCIENCE

W. W. PIERSON has published:

Foreign Influences on Venezuelan Political Thought, 1830-1930. *Hispanic-American Historical Review*, XV: 1: 3-42. 1935.

W. S. JENKINS has published:

Pro-Slavery Thought in the Old South. Chapel Hill: The University of North Carolina Press. 1935.

This volume analyzes the body of thought that developed in the Old South in defense of the institution of domestic slavery. The first two chapters are historical, tracing the growth of the slavery defense from its earliest utterances in America through the many ramifications of its expression, to its complete statement. The last five chapters are an analysis of the pro-slavery argument in its finished form. The philosophic and legalistic reasoning in the slavery thought of the Old South is discussed in chapters Three and Four. Chapter Five is devoted to the moral and ethical rationale of slavery. Chapter Six, the ethnological justification of slavery, discusses the attempt in the Old South to find a scientific foundation for the institution. Chapter Seven presents theories of slavery as a social system, comparing and contrasting slave and free society as to social gradation, the conflict between capital and labor, economic security of the individual, and well-ordered society. At the end is a comprehensive bibliography of the subject.

PROFESSOR JENKINS and H. B. HOWERTON have begun research in the History of the Amending Processes of the Constitution of the United States.

C. B. ROBSON is preparing a revision and extension of his thesis, *The Influence of German Thought on Political Theory in the United States in the 19th Century*, for publication.

JAMES W. FESLER has completed:

Federal Administrative Regions with special reference to War Department Procurement Planning Activities. (Typewritten doctoral dissertation, Harvard University, 1935.)

Portions of report by National Resources Committee on Regional Factors in National Planning and Development. (Mimeographed, Washington, June, 1935; to be published in November, 1935.)

The following topics were treated: Administrative Regions of Federal Agencies, Planning Regions of Federal Agencies, and Regional Developments in European Governments.

The Loan of Expert Personnel Among Federal Agencies. Report to the Land Planning Committee of the National Resources Committee. (Mimeographed, Washington, September, 1935.)

PROFESSOR FESLER has in progress:

Further analysis of regional administration and regional government.

A study of education for public administration in American universities.

The following doctoral dissertation was accepted by the Department during the year:

DAVID ALEXANDER LOCKMILLER. The Second United States Intervention in Cuba, 1906-1909. (Under the direction of W. W. PIERSON.)

The causes and course of the intervention are discussed in detail, and an attempt is made to evaluate the record of the Provisional Government. Special emphasis is given to the administration of Provisional Governor Charles E. Magoon.

The introductory chapter on the First Intervention, 1898-1902, deals with the Brooke and Wood administrations, the Cuban constitutional convention, the Platt Amendment, and the establishment of the Republic. In the following chapters the Estrada Palma administration, the Reciprocity Treaty, the Isle of Pines dispute, the elections of 1905, the August Revolution of 1906, the Taft and Bacon Peace Mission, and the establishment of the Provisional Government are discussed. Chapter IV deals with the selection by Roosevelt of a Provisional Governor and the complex political, social, and economic problems which confronted the Provisional Government. The extensive public works, health, and sanitation programs are treated in Chapter V, and a discussion of agriculture, commerce, and industry follows. In Chapter VI problems of the census, public order, public education, options to purchase church property, and government aid to cities and the sugar industry are also considered. A chapter is given to the work of the Advisory Law Commission and to an analysis of the legislation drafted by that body. Chapter VIII treats political

parties, election campaigns, and the elections of 1908. The steps taken to restore Cuban government, the inauguration of President José Miguel Gómez, and the departure of the United States officials are discussed. In the concluding chapter an effort is made to evaluate the work of the Second Intervention, and the charges brought against Governor Magoon and his administration are examined. A complete bibliography of the Cuban and United States sources is given.

The study leads to the following conclusions:

(1) President Roosevelt was reluctant to intervene in Cuba and intervention was delayed until the Cuban government had resigned. (2) The Taft and Bacon mission perhaps made a mistake by not supporting the Estrada Palma government, thereby avoiding formal intervention. (3) The Provisional Administration under Governor Magoon maintained public order, gave Cuba needed legislation, promoted health and sanitation, and constructed many public works. (4) The Provisional Government was subject to orders from Washington and to the evils of a United States policy which temporized and compromised. (5) The criticisms directed against Magoon and his administration, except those concerning patronage and pardons, are not supported by the evidence. (6) The United States lived up to the original meaning of the Platt Amendment by restoring self-government to Cuba in 1909.

The following master's thesis was accepted by the Department during the year:

ALEXANDER TAYLOR EDELMAN. The Views of Justice Holmes Regarding the Functions of the Courts in Cases Involving Labor Problems. (Under the direction of W. S. JENKINS and C. B. ROBSON.)

After a discussion of Justice Holmes's ideas on the nature of law and on rules of legal interpretation, labor problems are considered according to several heads: (1) the necessity and legality of labor combinations; (2) weapons that may be used by labor in the industrial conflict; and (3) social legislation. The resulting conclusion is that Justice Holmes believed the function of the courts is not to pass on the wisdom or expediency of laws considered desirable by the legislature, which should have wide freedom in attempting social experiments and making effective dominant opinion. In seeking to improve its condition, labor should be allowed to strike, boycott, picket, and use other weapons of industrial warfare, when not motivated by malice.

DEPARTMENT OF PSYCHOLOGY

J. F. DASHIELL has published:

A Survey and Synthesis of Learning Theories. *Psychological Bulletin*, XXXII: 261-275. 1935.

An analytic survey of the experimental data advanced by the Trial-and-error, the Conditioned response, and the Configurational schools brings out many phenomena upon which there is substantial agreement; and a platform of eleven principles is established upon which reconciliation of the three schools is held to be possible.

Experimental Studies of the Influence of Social Situations on the Behavior of Individual Human Adults. *Handbook of Social Psychology*. Wooster: Clark University Press. 1935.

A critical review of this avenue of application of experimental methods to social phenomena shows that no definite studies have yet appeared, though exceedingly promising lines of research are now opened up. Some researches by the author are included.

Some Principles of Behavior. Chapter III of *Readings in General Psychology* (by twenty-six authors). New York: Farrar and Rinehart. 1935.

PROFESSOR DASHIELL has served as editor of the series *Publications in Psychology*. New York: McGraw-Hill Book Company. 1935.

DELOS D. WICKENS, collaborating with H. N. DEWICK, is continuing a survey of the attitudes of college students toward life insurance.

A. G. BAYROFF is continuing the study of a new technique in animal learning, in which air blasts are used in place of electric shock.

MR. BAYROFF read the following paper at the meeting of the American Psychological Association, University of Michigan, September 4-7, 1935:

Repetitious Errors in Light Discrimination.

The following master's theses were accepted by the Department during the year:

SYBILLE KAHN BERWANGER. The Relation of Preference to Choice Time in Paired Comparisons of Colors. (Under the direction of J. F. DASHIELL.)

Problem: To get quantitative evidence of the degree to which time for choosing between paired colors is dependent on relative preference for each of the colors.

Procedure: Paired colors were presented in a Dodge tachistoscope, the time required to choose between them being measured by an electric stop-watch. Preference ranks of the seven colors were determined by the number of times each color was preferred in all combinations.

Results: 1. When average choice times of individual colors of each preference ranks, paired with colors of all other ranks, are compared, it is found that choices involving colors at the extremes of preference have shorter reaction times than those involving colors of the middle preferences.

2. When average times for choices between the paired colors are arranged (a) in order of preference of one of the pair, or (b) in order of size of interval between the ranks of the two colors, there is found a consistent decrease in speed of judgment as degree of difference in preference between the two colors decreases.

HARRY VOORHIES BICE. Some Preliminary Studies of the Word Association Technique Preparatory to Standardization of a Test. (Under the direction of **HARRY W. CRANE.**)

A word association test was devised consisting of fifty words from the Kent-Rosanoff Free Association Test and fifty others with some objective indication of a close relation to the emotional life. This was arranged in three forms and administered by two experiments to 650 students.

The results indicate that, judged by some usually accepted criteria, the words chosen for the purpose do provide ready access to the emotional complexes. Attempted classification of responses according to schemes that have previously been used indicates that the Frequency Table method is the most suitable. Due to a difference in purpose, and environmental changes occurring since they were prepared, the Kent-Rosanoff tables are not satisfactory for our purposes; new tables are needed. These have been prepared on the basis of the tests given, but will not be considered adequate until at least 1,000 tests have been given.

SCHOOL OF PUBLIC ADMINISTRATION

WILEY B. SANDERS, in collaboration with **W. C. EZELL,** Field Agent of the State Board of Charities and Public Welfare, has completed and is preparing for publication a statistical analysis of 16,685 children's cases handled by the juvenile courts of North Carolina during the depression period 1929-1934. The primary objective of this study was to determine, if possible, in what way and to what extent the widespread economic depression had affected the number and type of children appearing before the juvenile courts.

The following master's thesis was accepted by the School during the year:

HILLIARD BAXLEY WILSON. Financial Aspects of City Planning: An Objective Study of Planning Commissions in Cities of Greensboro, High Point, and Durham, North Carolina. (Under the direction of **CLARENCE HEER.**)

This study represents an objective survey of the actual workings of planning commissions in the cities of Greensboro, High Point, and Durham, North Carolina, during the years 1925 to 1934 inclusive, with particular reference to the influence which these bodies exerted on the increase of municipal indebtedness during those years. The study includes a review of the general objectives of city planning, together with an analysis of the state enabling act authorizing municipal planning commissions and of the local ordinances based on this act. A survey of the activities of the planning bodies since their inception is presented in conjunction with a financial history of each of the cities.

DEPARTMENT OF ROMANCE LANGUAGES

WILLIAM M. DEY read a paper in April, 1935, on French Research in America at the celebration of the Seventy-Fifth Anniversary of Louisiana State University. This paper will be published by that university.

He also read a paper entitled The Pessimism and Optimism of Alfred de Vigny before The Philological Club, University of North Carolina, May 7, 1935.

PROFESSOR DEY has continued his work on Stendhal and the literature of his time.

STURGIS E. LEAVITT has published:

Some Aspects of the Grotesque in the Drama of the *Siglo de Oro*. *Hispania*, XVIII: 77-86. 1935.

A Bibliography of Theses Dealing with Hispano-American Literature. *Hispania*, XVIII: 169-182. 1935.

He has in press: A Bibliography of Hispano-American Literature in the United States, 1932-1934.

He is working on a bibliography of biography and literary criticism in the United States; a study of the *comedia de figurón* in Spain; the *tradición* in Spanish America.

PROFESSOR LEAVITT is directing the following research:

J. A. BARRETT. The Influence of Oscar Wilde upon the Spanish Drama of the Twentieth Century.

L. L. BARRETT. The Rôle of the Supernatural in the Theatre of the *Siglo de Oro*.

P. H. CUMMINGS. A Glossary of the Academy Editions of Lope de Vega.

F. C. HAYES. (Progress on doctoral dissertation.) Proverb Lore in the Drama of *Siglo de Oro*.

J. V. McCALL. (Progress on doctoral dissertation.) The Dramatic Works of Luis Mariano de Larra.

W. A. McKNIGHT. (Progress on master's thesis.) Antonio Hurtado y Valhondo.

W. R. WEAVER. A Preliminary Survey of the Mechanical Devices used in Staging the Plays of the *Siglo de Oro*.

NICHOLSON B. ADAMS has completed during the year:

Siglo de Oro Plays on the Madrid Stage, 1820-1850. (Accepted for publication in the *Hispanic Review*.)

The following doctoral dissertations are in progress under the direction of PROFESSOR ADAMS:

J. A. THOMPSON. *The Influence of Dumas the Elder in Spain.*

MYRA L. YANCEY. *The Naturalism of Pardo Bazán.*

RALPH S. BOGGS has published:

North Carolina Folktales Current in the 1820's. *Journal of American Folklore*, XLVII: 269-288. 1934.

North Carolina Folktales and Riddles. *Journal of American Folklore*, XLVII: 289-328. 1934.

(Collected by the editor from oral circulation all over the State during the past six years. This collection was made possible by the help of the Smith fund in travel grants.)

"Let Him Buy You Who Does Not Know You." *Studies in Philology*, XXXII: 22-39. 1935.

A comparative study of a Spanish proverb.

PROFESSOR BOGGS has compiled the American items for the *Volk-skundliche Bibliographie* for 1929-1930.

He has completed a study of folklore in Fray Gerundio, and is continuing his studies of folklore in the Celestina. The Old Spanish Dictionary and Spanish Bibliography projects are being continued, with the help of FERA students; likewise the Spanish Proverb project, under the direction of F. C. HAYES.

PROFESSOR BOGGS is directing the following doctoral dissertations:

T. E. WRIGHT. *An Index of French Folktales.*

D. F. McDOWELL. *Verbal Etymologies in Alfonso the Wise's Cronica general.*

F. C. HAYES. *Proverbs in the Spanish Golden Age Drama.*

J. Y. CAUSEY. *An Edition of the Poema de Alfonso Oncero.*

S. A. STOUDEMIRE has continued progress on the study *The Influence of the Italian Opera on the Spanish Romantic Drama.*

W. L. WILEY has published:

Pierre Le Loyer's Version of the *Ars Amatoria*. *Romanic Review*, April-June, 1934.

PROFESSOR WILEY has had accepted for publication:

The Love Tales of Antoine de Baif. (To appear in the January issue of *Studies in Philology*.)

He is directing the following master's thesis:

ANNA MARY SANFORD. Symbolism in the Drama of François de Curel.

T. E. WRIGHT has continued his compilation of *The French Folk-tale*, based upon Antti Aarne's *Episodicâl Index*.

W. M. McLEOD has published the following:

The Consaus d'Amours of Richard de Fournival. *Studies in Philology*, XXXII: 1: 1-21. 1935.

He has ready for publication:

Source Problems of the *Chétifs*. (In collaboration with U. T. HOLMES.)

The following doctoral dissertations were accepted during the year by the Department:

WILBURN PHILIP SMITH. *Jesús Castellanos, His Life and His Works*. (Under the direction of S. E. LEAVITT.)

The purpose of this study is to consider not only the works of Jesús Castellanos, but to review his life and point out the influence he exerted upon the social and cultural life of Cuba. Part One is biographical, and attention is called to an error frequently made by critics in the date of his birth. Part Two deals with Castellanos as a journalist and critic. Most of his work lies in the field of journalism, and here the didactic element is pronounced. Throughout his life, Castellanos was prompted by a fervent desire to improve the social, economic, and educational life of his compatriots. His unpublished works are perhaps as extensive as those published, which number six volumes, three of which are posthumous. Castellanos wrote numerous brief critical articles, but his most sustained work as a critic is to be found in his "conferencias" on important men of letters, notably Rodó and Kipling. In these articles and lectures Jesús Castellanos revealed himself as a judicious critic. Part Three deals with Castellanos's contribution to prose fiction, in most of which decided preference is given to Cuban settings. This he explains by stating that it was his desire to see Cuba develop a national literature. Part Four deals with the influence of Jesús Castellanos upon the cultural and social life of his country.

LEWIS BELLINGER STABLER. *Initiatory Study of Middle French Syntax, with Check-List*. (Under the direction of U. T. HOLMES.)

This study grew out of the urgent need for more information on the syntax of Middle French. A hint as to the manner of procedure was drawn from Professor Hayward Keniston's syntax check-list for Spanish. Thereafter, the first task was to develop a check-list of like nature for French syntax. When this was done, the check-list was used to study the *Quadriologue Invectif* of Alain Chartier, the date of which is 1422. When the language of this text had been analyzed and put into the numerous categories contained in the

check-list, analytical comparisons of the results were made with syntax of Old French, an analysis of which is contained in Lucien Foulet's *Petite Syntaxe de l'Ancien Français*. From those comparisons, conclusions were drawn as to the state of the language at the time of the writing of the *Quadrilogue*.

The nature of the task makes this only an initiatory study—a pattern for future effort. The check-list is to be made available for further study. Although not perfect, it has the framework into which may be fitted new phenomena as they are met.

CECIL GRADY TAYLOR. *French Tragedy and Tragic Theory, 1690-1715*. (Under the direction of W. L. WILEY.)

In practically all studies of French drama, the period from about 1690 to the time of the death of Louis XIV has been passed over with only a few denunciatory summary remarks and the mention of the names of two or three authors who wrote a few tragedies unworthy of attention. In the present study an attempt has been made to review all of the individual tragedies of the period (other than those of Crébillon) which could be found in print and to consider them under various aspects: the tragedy in respect to its social background, particularly the court (where the decline of Louis XIV and the entrance of Mme. de Maintenon were effecting a decided change in spirit); the tragedy in relation to the tragic theory of the period as shown in prefaces to the individual tragedies; the nature and character of the tragedies themselves, which have been divided into two groups,—the profane tragedies and those with subjects drawn from the Bible or from Church history. It has not been the intention to draw conclusions as much as it has been to analyze the dramatists's attitude toward tragedy during the period.

After the marriage of Louis XIV to Mme. de Maintenon, the French court became a stronghold of piety and practically ostracized tragedy other than that of a religious and moralizing nature. Mme. de Maintenon herself fostered the writing of religious tragedy, beginning by making to Racine the request which brought first *Esther* and then *Athalie*, both of which served to start a flock of *abbés* to writing *tragédies saintes*. The younger element of the court, the most influential part of which in literature was made up of women, was more frivolous and demanded tragedy full of tender sentiments and romantic and stirring adventure. The popularization of the theatre had some effect in lowering the dignity of the tragedy to suit the *bourgeois* tastes of the audiences. The victory of the Moderns in their Quarrel with the Ancients served to encourage the feeble-witted dramatists of the time in their bad taste.

As for tragic theory, most of the *dramaturges* quote Aristotle or Horace, cite "le grand" Corneille or Racine, and proclaim that they have carefully abided by classic rules. About the only manner in which they show that they are conscious of a new tendency is in their frequent use of the words *merveilleux* and *horreur*.

In spite of the predominance of authors's declarations of exercising classic restraint, the last years of the seventeenth century showed that the influence of Pierre Corneille and Racine was not as great as that of Thomas Corneille

and Quinault. Excepting a few tragedies, in which action is restricted and insipid sentiments lavishly strewn, between 1690 and 1715 we find in the profane tragedy the tradition of the tragi-comedy continued with suggestions from the romanesque tragedy and elements from the recently popularized opera fused to make exciting, astounding spectacles. After *Esther* and *Athalie*, attempts in religious tragedy were very feeble and puerile. Most of the *tragédies religieuses* were insignificant *pièces de collège*.

There is added to this study an appendix which contains biographies of some of the authors with whom this work is concerned, an alphabetical list of tragedies written between 1690 and 1715, a list of tragedies (alphabetical by authors), a chronological list of tragedies, 1690-1715, references in the *Théâtre François* of the Parfaict frères to tragedies between 1690 and 1715, and summaries of some of the tragedies occurring between 1690 and 1715.

The following master's theses were accepted during the year by the Department:

MARGARET ELINOR ADAMS. A Study of the Heroic Poems of Desmarests de Saint-Sorlin. (Under the direction of J. C. LYONS.)

The purpose of this thesis was to examine the four heroic poems of Desmarests de Saint-Sorlin in order to determine to what extent they conform to the standards set for epic poetry. These standards are the rules made by Desmarests in his various treatises, checked against and supplemented by those of the two principal theorists of the day, Boileau and Pere le Bossu, and Jean Chapelain, author of *La Pucelle*, the most important of the secondary epics. This detailed study should serve as supplementary material to the general works of Duchesne, *Histoire des Poemes Epiques Français*, and Toinet, *Quelques Recherches autour des Poemes-Heroiques-Epiques Français du 17^e Siecle*.

The conclusion is that *Clovis* has all the forms of the 17th century epic although the effect created is not that desired by the author. Neither *Marie-Magdelene* nor *Esther* are true heroic poems. The former is more properly entitled *Poème chrétien*. *Abraham* has all the forms of the heroic poem, but the spirit is not that of an epic. Finally, Desmarests's style is bombastic, pompous, and redundant; but, when inspired by sincere patriotism or religious fervor, he attains excellent poetic expression and real literary value.

LILLIAN GRAHAM ALLEN. An Analysis of the Medieval Bestiaries. (Under the direction of URBAN T. HOLMES.)

This study attempts to coördinate the medieval bestiary material which is based on the ancient *physiologus* of Alexandria. The different bestiaries have been compared and the animals have been listed alphabetically under the headings: beasts, birds, and reptiles. The name of each animal is given in Latin, Old French, and French where possible. After the name the description of the animal is given, the characteristic habits of this animal, and then the moral or significance which the different bestiaries have pointed. After each statement or paragraph a small letter or letters indicate which bestiaries have made the statement.

However, the bestiaries which are based on Pliny, that is, Albertus Magnus,

Solinus, Isidore of Seville, Bartholomew the Englishman, and Thomas of Cantimpré are not used because they contain material other than that contained in the ancient *physiologus* of Alexandria.

ALFRED G. ENGSTROM. *Gautier and Baudelaire: A Study of their Similarities and Differences, with a Consideration of their Treatment of Similar Poetic Themes.* (Under the direction of W. M. DEY.)

The work is an attempt to present sufficient evidence from the writings of Gautier and Baudelaire and from critical and biographical material about them to show something of the similarities and differences in their natures and poetic works. Chapter I considers the similarities of the two poets; Chapter II, their differences; Chapter III, their treatment of similar poetic themes. There is included before the bibliography an analytic table of contents, which gives a brief outline of the thesis with page references for significant material considered in each chapter.

JOHN DAVIS FROST, JR. *A Critical Edition of Pierre Du Ryer's Arétaphile.* (Under the direction of URBAN T. HOLMES.)

Arétaphile, a tragi-comedy by Pierre Du Ryer which was presented in 1628, is the author's first play. It has received scant notice from commentators on the theatre of the seventeenth century. *Silvanire* and *Sophonisbe* by Mairet, and *Clitandre* by Corneille are the accepted monumental plays and immediate predecessors of an era of transition in the French theatre when strict classical rigidity and regulation swept from the boards the free and unrestrained plays of the highly romanesque type which were prevalent in the first two decades of the century.

An examination of *Arétaphile* reveals that it, too, is a definite precursor of Classicism, and, since it antedates the above three plays, it may be included with justification in a panorama of pre-classical dramatic literature.

JEANNE MERCEDES VIRGINIA HOLT. *The New Elements of the French Vocabulary of the Fourteenth and Fifteenth Centuries.* (Under the direction of URBAN T. HOLMES.)

The vocabulary of a language is constantly expanding and altering according to the civilization of the era through which it is passing. A study of lexicographic change is therefore important for the understanding of a period in history.

The Middle French era (roughly 1300-1515) marked the transition from medieval to what we call modern or renaissance ideals. An analysis of the new vocabulary, entering at this time, has previously never been made. Basing the lists of these words upon the etymological dictionaries of Gamillscheg and Oscar Bloch (which in turn have made use of all predecessors) they have been classified in two ways: first according to language derivation and secondly according to meaning and use. The influence of the Hundred Years' War, the influx of mercenary troops, the position of arts and sciences, the development of private life, and the general increase of knowledge are all reflected in the two classifications of these 4,565 words.

MAXALYNN MOURANE. The Syntax of *Le Livre du chevalier de la Tour-Landry*. (Under the direction of URBAN T. HOLMES.)

The study of the syntax of *Le Livre du chevalier de la Tour-Landry*, a courtesy book written in France in 1372, was an attempt to help fill the gap in the knowledge of Middle French grammar. Little has been done in this particular field because of the confusion of the language during this period. Several trends towards Modern French were noted, and where possible rules were stated. Some comparison to Old French forms was shown.

Particular attention was paid to the pronouns, verbs, prepositions, and sentence structure. The chief facts learned were: (1) Middle French sentences are long and involved; (2) rules are broken at will; (3) the demonstrative pronouns and adjectives were confused with one another; (4) the subjunctive mood is very common and is used where there is no logical explanation for it—especially in passive verbs and main clauses; (5) and the case system, though dying out, still existed in 1372.

JOHNNIE LOU WILLIAMSON. Malherbe's Lack of Originality as Expressed in the Works of a Predecessor: Guillaume Du Vair. (Under the direction of URBAN T. HOLMES.)

This thesis is based upon the belief that Malherbe in his so-called reform laws was not an innovator, but a recorder. Evidence is sought in the works of a prominent predecessor, Guillaume Du Vair. Following a synopsis of the life and works of Malherbe is a discussion of his part in the reform movement in French literature around 1600. The two remaining chapters are a study of the relationship between Guillaume Du Vair and Malherbe. This investigation reveals the following facts: (1) Guillaume Du Vair and Malherbe were intimate friends after 1596. (2) The former was an established writer when this friendship began, the latter being still unknown. (3) An actual count in the works of Du Vair shows an agreement of 96.3 per cent with ten representative laws of Malherbe, which proves that Du Vair was applying Malherbe's grammatical principles long before the latter announced them.

DEPARTMENT OF RURAL SOCIAL-ECONOMICS

S. H. HOBBS, JR., is at work on a revision of his book on *North Carolina: Economic and Social*.

He has edited the *University News Letter*, published every two weeks, carrying economic and social studies of concern to the people of the state.

He has directed the research work of the North Carolina Club, and has edited the papers for publication, provided funds can be made available.

He has submitted two manuscripts on Optional Forms of County Government for the State of Alabama.

He has prepared a report on Penderlea Homesteads, Inc., submitted to the Board of Directors, and to the Secretary of the Interior.

He has directed a study of the Financial Capacity of the City of Asheville and the County of Buncombe to Meet Debt Obligations.

PAUL W. WAGER has been on leave, serving as Chief of the Land-Use Planning Section, Land Utilization Division, Resettlement Administration, Region IV. His work consists in directing the classification of the land in the states of his region—North Carolina, Virginia, West Virginia, Tennessee, and Kentucky—the research necessary to determine the best long-term use of each area, and other studies bearing on land use, such as studies in the field of taxation and credit.

Tennessee: Economic and Social, by C. E. ALLRED and associates, has been completed and submitted to the University of North Carolina Press for publication.

The following studies have been made by graduate students in the Department:

E. D. HANCOCK. Economic and Social History of Robeson County.

H. P. SMITH. Federal Aid to Education in North Carolina.

H. P. SMITH. The Origin and Development of Federal Aid to Education in the United States.

H. P. SMITH. A Short History of Public Education in North Carolina.

OLIVE STONE. The Present Position of The Negro Farm Population in the South.

DEPARTMENT OF SOCIOLOGY

HOWARD W. ODUM has published during the year:

The Regional Approach to National Social Planning. With Special Reference to a More Abundant South and Its Continuing Reintegration in the National Economy. The Foreign Policy Association, New York, and the University of North Carolina Press, Chapel Hill, in coöperation with the Institute for Research in Social Science, 1935. 31 pp.

PROFESSOR ODUM has completed during the year:

The Case for Economic and Social Diversity in the Cotton Economy of the Southeast. Read at the New Orleans Conference of the Southern Regional Committee of the Social Science Research Council. Mimeographed for private distribution by the Social Science Research Council. 1935.

PROFESSOR ODUM is completing the manuscript for *Southern Regions of the United States: Studies in American Culture Economy*.

This volume will include, in addition to text material, some 500 maps, charts, graphs, and tables. It will present the findings of the research project, The Southern Regional Study: The South's Capacity for Social and Educational Development, a three year study made for the Social Science Research Council. The findings will be discussed under: The Composite Picture: A Syllabus and Summary; A General Picture of the South and Its Prospects; A New Regional Analysis: Southern Regions in the National Economy; Regions of Natural Richness and Abundance; Technology, Deficiency, and Waste; The Agrarian South; Measures of Industry and Wealth; The Southern People; Regional Institutions and Folkways; The Southeast and Its Subregions; The Tennessee Valley; The Southwest and Its Subregions; Many States, Many Souths; Toward Regional Inventory and Planning; Acknowledgments and Guide to Readings and Study. The manuscript is in galley proof and will be released by the University of North Carolina Press early in 1936.

PROFESSOR ODUM, in collaboration with HARRIET L. HERRING, is completing the study of *A University and Its State: North Carolina, 1900-1930*.

PROFESSOR ODUM has directed the following research projects:

LYDA GORDON SHIVERS. (Doctoral dissertation.) *The Social Welfare Movement in the South. A Study in Regional Culture and Social Organization*.

The social welfare movement in the South is a part of the characterization of the region; also it is a part of the regional approach of the national movement. The purpose of this study is to portray the southern regional features in considering the social welfare movement. The social philosophy of the first two decades of the twentieth century had its roots in the nineteenth century and in the English legislation. The Southern Sociological Congress, although it was finally a tragic failure, did accomplish the important result of bringing together southern leaders in social welfare. The World War was the immediate cause for the increased attention given to social welfare and marks the beginning of the modern social welfare movement in the Southeast. The American Red Cross made a great contribution by bringing to the attention of the sections of the state not served by other private agencies the possibilities and the need for professional social work. The advancing social welfare program of the region was sponsored by interested laymen. The National Conference of Social Work has exerted little influence within the region. In 1927 there were only two hundred and thirty-six members of the American Association of Social Workers within the region. The contributions of the women's organizations have included surveys of local situations, support of the state's public welfare program, social legislation, and valuable propaganda for social welfare. The civic and fraternal organizations represent a great potential strength for the support of public welfare. Southern churches have made small contribution to the social welfare movement but have tended to

emphasize moral issues and personal salvation. The state conference of social work serves as the key to the social welfare program of the individual states. Such conferences show a regional characteristic in the importance of the layman in their activities and in their emphasis upon social legislation. The chief attention within the region has been given to public welfare. The states of North Carolina, Virginia, and Alabama have been the leaders in public welfare progress. The recent trend has been toward the departmental form of Virginia rather than the North Carolina plan of the lay board. Arkansas and South Carolina have taken backward steps in public welfare administration. In Georgia and Louisiana the private social agencies have been important—due to their concentration in New Orleans and Atlanta. The region shows a cultural lag in industrial legislation and social insurance, but decided progress was made during the interval studied. Little progress has been made in dealing with the social problems of agricultural labor. Greater progress was made in social welfare during the period studied than in any similar period of time.

ROBERT NEWTON WOODWORTH. (Master's thesis.) Population as an Area of Study in Social Planning: An Introduction to the Southeastern Region of the United States.

The population of the Southeast is surveyed and given preliminary analysis as to composition, trends, and subregional variations. Pertinent problems of composition and trends are discussed—such as problems of race, wealth, occupation, growth, and distribution. It was found that the Southeast has been the human reservoir of the nation; that, owing to its high reproduction rate, migration has been necessary to relieve the pressure of numbers as well as to supply the labor needs of other regions. Lately this migration has tended to reverse and the region is in danger of severe overpopulation. The return of people to already over-crowded rural areas will probably cause increasing rural poverty. These factors require planning procedures and the consideration of optimum population based on material production and distribution.

With KATHARINE JOCHER and others, PROFESSOR ODUM is continuing his major project in folk-sociology featuring especially folk-regional society.

PROFESSOR ODUM has edited Volume 13 of *Social Forces*.

HAROLD D. MEYER is continuing his work on the book, *Regional Recreation: Leisure Time in the Southeast*, which should be ready for press this year.

PROFESSOR MEYER, with the Recreation Committee of the North Carolina Conference for Social Service, is making a study of recreational leadership: opportunities for study, courses of study, vocational interests, and methods of leadership training.

He has directed the following research (with HARRIET L. HERRING):

FRANCES HAMPTON. (Master's thesis.) *New Leisure: How Is It Spent?*

A study of what one hundred twenty-two textile workers of Leaksville, Spray, and Draper are doing with the new leisure created by the National Recovery Administration, as applied to certain types of activity. The background for the study consists of a brief discussion of various theoretical questions concerning leisure; a summary of the gradual reduction of working hours since 1776; a short account of the industrial development in the South; a description of the mill village; and a brief history of Leaksville, Spray, and Draper. The findings are presented from four viewpoints: the leisure-time activities as a whole, and variations according to sex, age groups, and community.

We find that the one hundred twenty-two textile workers divide their leisure time among two or twenty-one each of forty-six activities, the average for the group being ten. The group does not, except for a few individuals, take part in the activities offered in the three communities.

For reports of the research activities of the following professors see section entitled, "Institute for Research in Social Science," pp. 87-91.

ERNEST R. GROVES. *Marriage, recent trends in the family, social psychiatry.*

T. J. WOOFER, JR. *Social and economic Survey of the Catawba Valley, studies of southern population, rural research in the FERA.*

GUY B. JOHNSON. *Studies of race prejudice, Negro participation in southern life, development of Negro social institutions, tri-racial community in Robeson County, North Carolina.*

RUPERT B. VANCE. *Regionalism, social demography, and human geography in relation to problems of the South and social planning, studies of the Negro agricultural worker, population distribution in the Old Cotton Belt, share tenancy, social and economic survey of the Catawba Valley, southern folk leaders, government aid to tenant farmers.*

H. VON BECKRATH has been engaged in a comparison of the different national phases of the present crisis and the different ways of coping both politically and economically with that crisis by individual countries. This research was based upon a worked-out theory about the mutually interdependent political and economic foundations of modern society, and the whole subject is to be gathered into a book dealing with the present political, cultural, and economic crisis of the western world.

The following master's thesis was completed during the year under the direction of GUY B. JOHNSON:

ERNEST D. HANCOCK. A Sociological Study of the Tri-Racial Community in Robeson County, North Carolina.

In Robeson County, North Carolina, are found three distinct groups of people—whites, Negroes, and a mixed group of somewhat uncertain derivation but known generally as Indians. These Indians cling to a legend of descent from Raleigh's "lost colony." The county makes separate provisions for the three groups in schools, jails, and charitable institutions. The subject matter of this thesis includes: 1. a brief history of each group; 2. a comparative study of their social and economic conditions; 3. a summary of the patterns of relationship between the three groups. The Indians have intermediate status, not only with respect to general social and economic conditions, but with respect to separation and segregation.

LEE M. BROOKS has directed the following research:

FREDERICK BUTTERFIELD PARKER. (Master's thesis.) A Study of the Social Adjustment of the Adopted Child.

The adopted person's social adjustment is conditioned by his early pre-adoption experiences, including some degree of shock connected with his removal from his own family. The severity of this shock depends upon his age at the time of adoption and upon his attitudes toward his own background and family. Also, the characteristics of the adoptive parents, such as their age, childlessness, and motives are especially significant for his adjustment. Within the family, the adoptive child on the whole seems to give and receive as much affection, and to enjoy as great security as would a natural child. The bond, however, may be weakened where contacts with own relatives persist, or it may be markedly disturbed occasionally during adolescent turbulence. Unless there are maladjustments in other respects, the fact of adoption has little importance in determining his social relationships or social status, mainly because it is usually concealed and so closely approximates the natural parent-child relationship. Aside from a few possible psycho-social hazards the adopted child's social adjustments differ little from those of the own child.

DEPARTMENT OF ZOOLOGY

H. V. WILSON has completed the investigation begun several years ago at the Naples Zoölogical Station. It will be published in the *Journal of Morphology* under the title, Some Critical Points in the Metamorphosis of the Halichondrine Sponge Larva. An abstract will be printed in this record when the paper is published.

R. E. COKER has published the following papers:

(With M. E. PINNEY.) Terrestrial and Freshwater Gastropods of the Allegany State Park in New York State. *The Nautilus*, XLVIII: 2: 55-60. 1934.

A list of the species and varieties of land and fresh-water snails found in Allegany State Park, New York, by the authors during the preceding eight

summers. The record comprises thirty-eight species and one variety of terrestrial snails, and fifteen species and one variety of aquatic snails.

Contribution to Knowledge of North American Fresh-water Harpacticoid Copepod Crustacea. *Journal of the Elisha Mitchell Scientific Society*, L: 1 and 2: 75-141. 15 plates and 9 text figures. 1934.

Descriptions and illustrations of all North American fresh-water harpacticoid copepods for which adequate material was available. Ten copepods are described, of which one is a new species and three are new sub-species. There is also a list of all known North American fresh-water harpacticoids with records of distribution. This is the first attempt at a comprehensive study of the American species of this group.

Reactions of Some Freshwater Copepods to High Temperatures, With a Note Concerning the Relation of the Rate of Development to Temperature. *Journal of the Elisha Mitchell Scientific Society*, L: 1 and 2: 143-159. 1934.

Several species of copepods show the capacity for dormancy or suspended animation at high temperatures, without evident formation of a protective body covering or any change whatsoever in appearance. Recovery from dormancy may take place within a period of hours and without evident impairment of vitality. A female that had passed through several periods of dormancy continued to form egg sacs and liberate young, without additional matings. The critical temperature for dormancy varies from about 30° C to 38.5° C, depending to some extent upon the individual, but in part also upon the temperature at which the copepod has been reared. This physiological difference in the temperature groups was not obliterated by acclimation for a period of a week. Rate of development increases as the temperature is raised, but rate of acceleration of development with rise of temperature diminishes very rapidly as the temperature scale is ascended.

Transfer of Spermatozoa by Cyclops: A Special Purpose Served Without a "specialized" Structure. *Archives de Zoologie Expérimentale et Générale*, LXXVII: Notes et Revue: 1: 9-11.

The fact that some species of copepods, most successful in reproduction as indicated by broad distribution and general abundance, transfer spermatozoa in mating by the use of apparently quite unmodified swimming limbs, throws strong doubt on the "survival value" of the highly modified copulatory appendages of other and less common copepods. The facts observed suggest the need for more serious consideration of "non-adaptive" characters in connection with speculations on the origin of species.

C. D. BEERS has published:

Structural Changes During Encystment and Excystment in the Ciliate *Didinium nasutum*. *Archiv fuer Protistenkunde*, LXXXIV: 133-155. 1935.

During encystment the seizing organ, cilia, contractile vacuole and peri-

pheral granules disappear. The cyst is surrounded by three membranes, and its cytoplasm is remarkably rich in food inclusions. A study of selected stages in the encystment process failed to disclose a nuclear reorganization.

PROFESSOR BEERS has begun a cytological and taxonomic study of the astomatous ciliate infusoria which inhabit the annelidan coelomic cavity and digestive tract.

D. P. COSTELLO has published:

Fertilization Membranes of Centrifuged *Asterias* Eggs. I. The Effects of Centrifuging before Fertilization. *Physiological Zoölogy*, Vol. VIII: 65-72. 1935.

A summary of the views concerning the origin of the fertilization membrane of marine invertebrate eggs, together with additional evidence for the current theory derived from experiments centrifuging the egg of the starfish, are presented in this paper. Eggs fertilized after prolonged centrifuging at certain periods of the maturation cycle fail to give a normal fertilization reaction at the centripetal pole.

MILDRED IRENE BOLIEK (under the direction of H. V. WILSON) has completed her dissertation for the doctor's degree. The title is Syncytial Structures in Sponge Larvae and Lymph Plasmodia of Sea Urchins. The investigation bears on the general problem of the relation of syncytia to cellular structure and will be published in the *Journal of the Elisha Mitchell Scientific Society*. On its publication an abstract will appear in this record.

L. L. WILLIAMS, aided by the Smith Research Fund, spent several weeks during the past spring, through the courtesy of the United States Bureau of Fisheries, at the Woods Hole (Mass.) Station and again at the Edenton (N. C.) Station collecting embryological material of the cod, shad, and other fishes and in making the necessary observations on the live embryos. He spent the summer in Chapel Hill at work on his dissertation, which continues to progress. The subject is The Development of the Liver in Teleost Fishes, with Special Reference to the Association Between the Yolk Syncytium and the Growing Liver. (Under the direction of H. V. WILSON.)

INSTITUTE FOR RESEARCH IN SOCIAL SCIENCE

Substantial grants from the Laura Spelman Rockefeller Memorial and the Rockefeller Foundation made to the University of North Carolina, for the study of problems in the social sciences arising out of state and regional conditions, led to the establishment in 1924 of an Institute for Research in Social Science. The work of the Institute

represents, therefore, a specific program of regional social research, study, and interpretation, with studies in local government, southern historical backgrounds, socio-economic activities (including studies in social-industrial relationships), crime and criminal justice, the Negro, folklore and folk backgrounds of the southern people, social institutions, public welfare and child welfare, and human geography of the American South. While chosen for the most part from the state and regional field, research projects are selected with a view to their generic value and for their possible contribution in both method and content.*

THE INSTITUTE has published during the year:

The Regional Approach to National Social Planning. By HOWARD W. ODUM. New York: The Foreign Policy Association, and Chapel Hill: The University of North Carolina Press. 1935. 31 pp.

Regional Reconstruction: A Way Out for the South. By RUPERT B. VANCE. New York: The Foreign Policy Association, and Chapel Hill: The University of North Carolina Press. 1935. 31 pp.

Human Geography of the South. Second Revised Edition. By RUPERT B. VANCE. Chapel Hill: The University of North Carolina Press. 1935. 596 pp.

Pro-Slavery Thought in the Old South. By WILLIAM SUMNER JENKINS. Chapel Hill: The University of North Carolina Press. 1935. 381 pp.

For a report of the research activities of HOWARD W. ODUM in the Southern Regional Study: the South's Capacity for Social and Educational Development, to be published early in 1936 by the University of North Carolina Press under the title, *Southern Regions of the United States: Studies in American Culture Economy*, and studies of folk-regional society, see section entitled "Department of Sociology," pp. 80-82.

ERNEST R. GROVES has published during the year:

Understanding Yourself (Mental Hygiene). New York: Greenberg. 1935.

Domestic Adjustment and Character. *Character*, I: 1. 1934.

The Development of Social Psychiatry. *The Psychoanalytic Review*, XXII: 1. 1935.

* For a further statement regarding the establishment and the purposes of the Institute and for book lists of publications, see *Research in Progress*, 1928-1929, pp. 95-97; 1929-1930, p. 80; 1930-1931, p. 89; 1931-1932, p. 90; 1932-1933, p. 91; 1933-1934, pp. 95-96.

Sex Adjustment of College Men and Women. *The Journal of Educational Sociology*, VII: 6. 1935.

Adaptations of Family Life. *The American Journal of Sociology*, XL: 6. 1935.

Migratory Divorces. *Law and Contemporary Problems*, II: 3. 1935.

PROFESSOR GROVES, in collaboration with DR. PHYLLIS BLANCHARD, has ready for press a book of readings in mental hygiene.

PROFESSOR GROVES has edited the *Journal of Educational Sociology*, VIII: 8. 1935.

T. J. WOOFER, JR. has published during the year:

The Natural Increase of the Rural Non-Farm Population. *The Milbank Memorial Fund Quarterly*, XIII: 311-319. 1935.

Southern Population and Social Planning. *Social Forces*, XIV: 16-22. 1935.

DR. WOOFER collaborated with HARRIET L. HERRING and RUPERT B. VANCE in making a survey of the social and economic development of the Catawba Valley in coöperation with the Tennessee Valley Authority. He contributed the section on Population.

He completed the assembly of background material on Negro tenancy. This study was made in coöperation with the Commission on Inter-racial Coöperation.

For the FERA, DR. WOOFER has made a study of the Plantation-Tenant System.

DR. WOOFER is now acting as coördinator of rural research in the FERA.

CLARENCE HEER has completed and published during the year:

A Statistical Analysis of the Public Service, for the Commission on Public Service Personnel, published as an appendix of the report of the Commission on Public Service Personnel.

Taxation and the Schools. An analysis of the effects of recent changes in the methods of financing public schools in North Carolina, together with a survey of various sources of state revenue. Published in *University News Letter*, February 6, 1935.

ROY M. BROWN, during the winter quarter of 1934-35, was engaged in making a study of Public Welfare Administration in the State of Oklahoma, for the Brookings Institution.

DR. BROWN is bringing up to date and concluding a study of crime and criminal justice in North Carolina.

As a member of a Committee on Public Welfare, DR. BROWN is aiding in the preparation, for the State Planning Commission, of a plan for revising North Carolina's public welfare administration in the light of recent federal legislation.

HARRIET L. HERRING collaborated with T. J. WOOFER, JR., and RUPERT B. VANCE, in a study of the social and economic development of the Catawba Valley made in coöperation with the Tennessee Valley Authority. MISS HERRING contributed the sections on Industry and Power.

MISS HERRING directed (with HAROLD D. MEYER) FRANCES HAMPTON's master's thesis on a Study of Leisure Time Activities of Mill Workers Under the NRA. (For abstract, see Department of Sociology.)

In collaboration with HOWARD W. ODUM, MISS HERRING is completing a study of A University and Its State: North Carolina, 1900-1930.

MISS HERRING is also completing her history of the textile industry in the South.

KATHARINE JOCHER, with HOWARD W. ODUM, is continuing the studies of folk-regional society.

DR. JOCHER is assisting HOWARD W. ODUM in preparing the manuscript of *Southern Regions of the United States: Studies in American Culture Economy* for press.

DR. JOCHER has also assisted in editing Volume 13 of *Social Forces*.

GUY B. JOHNSON has published during the year:

Some Factors in the Development of Negro Social Institutions in the United States. *American Journal of Sociology*, XL: 329-337. 1934.

Education, Segregation, and Race Relations. *Quarterly Review of Higher Education Among Negroes*, III: 89-94. 1935.

Some Ways of Reducing Race Prejudice in the South. *The Southern Workman*, LXIV: 272-278. 1935.

DR. JOHNSON is continuing the study of the participation of Negroes in southern life for the Commission on Inter-racial Coöperation.

DR. JOHNSON has under way a study of a tri-racial community in Robeson County, North Carolina, and other similar groups in the South.

During the year, DR. JOHNSON directed the following master's thesis: A Study of the Tri-Racial Community in Robeson County, North Carolina, by ERNEST D. HANCOCK. (For abstract, see Department of Sociology.)

GUION GRIFFIS JOHNSON has completed the manuscript of A Social History of North Carolina, 1800-1860, and is now preparing it for publication.

RUPERT B. VANCE has published during the year:

Regional Reconstruction: A Way Out for the South. The Foreign Policy Association, New York, and the University of North Carolina Press, Chapel Hill, in coöperation with the Institute for Research in Social Science, 1935. 31 pp.

Planning the Southern Economy. *Southwest Review*, XX: 111-123. 1935.

Implications of the Concepts "Region" and "Regional Planning." *Publications of the American Sociological Society*, XXIX: 85-93. 1935.

DR. VANCE has completed during the year:

The Negro Agricultural Worker under the Federal Rehabilitation Program.

Section I. Part I. The Negro Farmer: Marginal Man in Agricultural Readjustment. Part II. Landlord-Tenant Relations in the South. Mimeographed for private distribution by the Committee on Minority Groups in Economic Reconstruction. 1935.

Population Redistribution in the Old Cotton Belt. Made for the Study of Population Redistribution, Washington, D. C.

Is Share Tenancy Inevitable in the Cotton System? A Research Approach. Read at the New Orleans Conference of the Southern Regional Committee of the Social Science Research Council. Mimeographed for private distribution by the Social Science Research Council. 1935.

With T. J. WOOFER, JR., HARRIET L. HERRING, and J. HERMAN JOHNSON, DR. VANCE has collaborated in a study of the social and economic development of the Catawba Valley in coöperation with the Tennessee Valley Authority. He contributed the sections on Agriculture, Part-time Farming, and the Use of Coal in the Catawba Valley Power Province.

DR. VANCE is continuing research on:

1. Southern folk leaders in politics in the post-reconstruction period.

2. The function of government aid in helping tenants to own farms. This is a comparative study of foreign experience with special reference to tenancy in the Cotton Belt.

3. Theoretical consideration of regionalism, social demography, and human geography in relation to problems of the South and of social planning.

DR. VANCE is directing OLIVE M. STONE in a historical study of the Alabama farmer.

JULIA CHERRY SPRUILL has completed her volume on *Women in the Southern Colonies*. The manuscript is now being prepared for publication.

EDWIN M. PERKINS has published during the year:

State Action under the Federal Estate Tax Credit Clause. *North Carolina Law Review*, 13: 271-290. 1935.

Critical Appraisal of Tax Statutes, in A Survey of Statutory Changes in North Carolina in 1935. *North Carolina Law Review*, XIII: 355-499, tax statutes at 405-435. 1935.

With M. S. BRECKENRIDGE, A Study of the Legal Phases of Holding Company Taxation: Taxation as a Means of Regulating Holding Companies and as an Impediment to Their Further Excessive Expansion, Part 2, pp. 105-180, Report of Holding Companies to Operating Companies in Power and Gas Affecting Control, Committee on Interstate and Foreign Commerce U. S. House of Representatives. *House Report No. 827*. 1935.

MR. PERKINS has completed for publication:

The Influence of State Competition in the Adoption of Regressive Taxes: the North Carolina Sales Tax.

MR. PERKINS has under way:

Extraterritorial Factors in the Measure of State Taxes.

Tax Exempt Securities in American Public Finance.

An Index to the North Carolina Law Review.

ROBIN HOOD, under the direction of H. D. WOLF, D. D. CARROLL, and HARRIET L. HERRING, has continued work on his annotated bibliography on southern labor since 1865.

MR. HOOD also has under way a study of southern labor standards

including an investigation of wages, hours, occupational distribution, and working conditions in the twelve southeastern states since 1880.

DAVID A. LOCKMILLER, under the direction of W. W. PIERSON, has completed his study of the Second United States Intervention in Cuba. (See Department of Political Science.)

OLIVE M. STONE, under the direction of RUPERT B. VANCE and with the aid of the Elmhirst Fund, is making a historic study of the Alabama farmer, with special emphasis upon social and economic conflict and accommodation.

MISS STONE has completed an article on the Present Position of the Negro Farm Population, to be published in the *Journal of Negro Education*.

BENNETT WALL is making a study of the Pettigrew family of North Carolina under the title of Three Generations of a Southern Plantation Family.

RESEARCH ORGANIZATIONS

PROCEEDINGS OF THE ELISHA MITCHELL SCIENTIFIC SOCIETY

OCTOBER 9, 1934, TO MAY 14, 1935

354TH MEETING, OCTOBER 9, 1934

H. D. CROCKFORD: *Certain Thermodynamic Studies of Lead-Acid Storage Cells.*

W. C. GEORGE: *The Rôle of Blood Cells in Excretion in Ascidians.*

355TH MEETING, NOVEMBER 13, 1934

H. M. BURLAGE: *The Official Sulfur Ointments and their Assay.*

WALTER GORDY: *The Infra-Red Absorption of Basic Solutions.*

356TH MEETING, DECEMBER 11, 1934

J. N. COUCH: *Natural Hybrids of Septobasidium.*

ENGLISH BAGBY: *The Genesis of an Hysterical Symptom.*

357TH MEETING, JANUARY 8, 1935

J. W. LASLEY, JR.: *On the Integration of Monge's Differential Equation.*

W. F. PROUTY: *The Structure of the Coastal Plain.*

The President announced that the committee to draw up a resolution on the death of Dr. Collier Cobb was made up of Professors W. F. Prouty, W. deB. MacNider, and H. V. Wilson. Dr. Prouty then read the resolution, which was as follows:

The death of Professor Collier Cobb on November 28, 1934, at Chapel Hill, has taken from the Elisha Mitchell Scientific Society one of its most loyal supporters. Professor Cobb was a constant contributor to the Society's activities and publications from the time of his appointment as Assistant Professor of Geology in the University of North Carolina in 1892 until the beginning of his final illness in 1933. A striking instance of his untiring interest in the Society was his voluntary service in the compilation of new minutes to fill a gap in the records of the Society. The gap in the records embraced a period of several years and compiling the new minutes required careful work for several months.

Professor Cobb was a native of North Carolina and was noted for his devotion to his state and its institutions, but this fact did not in any way limit his keen interest in travel and in world affairs and he was nearly as well known abroad as in the United States. His Christmas mail always brought remembrances from people of high rank in many lands. His striking personality, keen intellect, and remarkable memory, coupled with his wealth of rare anecdotes made him the central figure in any group.

Because of his travel and great interest in peoples and customs he will, perhaps, be best remembered in the scientific world as a human geographer. In the bibliography recently published by the Elisha Mitchell Scientific Society Professor Cobb has thirty-three listed publications. Seventeen of these dealt with human geography and nine with shoreline processes and development. Although his writings cover a wide field of thought, his greatest interest was in the work of the wind in desert and shore areas as indicated by: "Where the Wind Does the Work," "Lands and Dunes of Gascony," and "Loess Deposits of China."

The early intellectual development of Professor Cobb was remarkable. At the age of nine years he began the publication of "The Home Journal" in Shelby, North Carolina. In his tenth year he made a metrical English version of Virgil's *Georgics* and printed this for his friends. The early talent for writing followed him in his college career. After two years spent at Wake Forest and one at the University of North Carolina, Professor Cobb took his A.B. and M.A. degrees at Harvard. While at Harvard he furnished a number of newspapers with "associated news."

Professor Cobb was one of the great pioneers of geology in North Carolina, and he enjoyed a notable record as an enthusiastic and inspiring teacher, believing that the spirit of the subject was more important than the letter, and with this same appreciation many of his students have gone out into positions of responsibility and honor.

Professor Cobb was a fellow of the Geological Society of America, and member of many societies, including the American Association for the Advancement of Science, Association of American Geographers, Boston Society of Natural History, American Institute of Mining and Metallurgical Engineers, Seismological Society of America, Elisha Mitchell Scientific Society, North Carolina Academy of Science, and Sigma Xi.

His knowledge of the University and of the state of North Carolina was such that he was much consulted for facts not readily obtainable elsewhere. Always a collector of books, his private library grew into one of unusual value.

The Elisha Mitchell Scientific Society has suffered a great loss by the death of Professor Collier Cobb and wishes to acknowledge and express appreciation for his active and loyal services.

358TH MEETING, FEBRUARY 12, 1935

C. W. BORGMANN: *An Optical Investigation of the Passivity of Iron in Nitric and Chromic Acids.*

A. S. ROSE: *The Mechanism of Visceral and Referred Pain.*

359TH MEETING, MARCH 12, 1935

W. C. COKER: *Parasitic Flowering Plants in North Carolina.*

T. F. HICKERSON: *Four Solutions of a Railroad Bent Problem.*

A trapezoidal bent subjected to both a Cooper's E-50 locomotive loading and horizontal wind pressure was analyzed for corner bending moments by means of four different methods, each considering sidewise deflection resulting from the horizontal loading. These four independent methods were as follows: (1) the so-called Method of Work (solution made by T. P. NOE); (2) the Slope Deflection Equations (solution by G. WALLACE SMITH); (3) the Beggs Deformeter Apparatus, a device which measured deflections of a celluloid model of the bent, while the left-hand support was given in turn three types of displacements, producing three separate effects representing the actual Thrust, Shear and Bending Moment, which when substituted in the three standard equations of static equilibrium, lead to the desired results, thus verifying experimentally the basic principles and processes underlying the other three methods presented herewith; and (4) the method of analysis evolved by the writer, whereby the bending moments at the joints are evaluated in terms of the degree-of-fixation at the ends of every member, due to the rigidity of the bent.

360TH MEETING, APRIL 9, 1935

J. N. LECONTE: *Some New p-Cymene Analogues of Quinoline.*

W. R. JOHNSON, JR., and H. W. STRALEY, III: *An Attempt to Locate the Boundaries of the Durham Triassic Basin with the Aid of a Magnetometer.*

The survey was undertaken to establish the practicability of determining, entirely on the basis of variation in the earth's magnetic field, the boundaries of a sedimentary series surrounded by igneous and metamorphic rocks. The writers made use of seven traverses across the basin, with magnetic observations made at half mile intervals.

On the basis of this work it was concluded that

(1) Were the area under sufficient cover to obliterate the surface geology, it would be impossible to determine the exact limits of the basin, although its existence could be hypothesized.

(2) Northeast of Cary the magnetic permeability of the northwestern half of the basin appears to be uniformly higher than the southeastern.

361ST MEETING, MAY 14, 1935

A. E. RUARK: *The Wave-Like Properties of Matter*.

J. M. VALENTINE: *Sympathetic Evolution*.

THE PHILOLOGICAL CLUB

OCTOBER 2, 1934

A. P. HUDSON. Folk-Song in Recent Fiction Describing Southern Life.

The material of this study is forty-seven novels and short stories, by thirty-two individual writers, published in the decade 1923-1932, containing two hundred and seven folk-songs, titles, tags, or allusions used for fictional purposes. The object is to show the varieties of technical use of the folk-song material, and the possible connection between the recent efflorescence of Southern fiction and the considerable production of research in Southern folk-song. Four general modes of use are exemplified: (1) folk-songs as bits of color or as pictorial media appropriate to the characters and the settings of historical fiction; (2) folk-songs as important devices or material for the description of character and local color in fiction of contemporary life; (3) folk-songs as an essential thematic, structural, or atmospheric medium in such fiction; (4) special scholarly interest in folk-song, or theoretical knowledge of it, as an influence on fictional art. These examples, and express statements, in personal letters to the author of the paper, from fifteen of the writers studied, bespeak an artistic consciousness of folk-song as a fictional resource, and an interest in it, sometimes scholarly and scientific, always intelligent and sympathetic. Judged in terms of its consequences in creative art, the work of scholars in the field of Southern folk-song has already borne justifying fruits.

OCTOBER 29, 1934

WALDO G. LELAND. The Experience of the American Council of Learned Societies in Dealing with the General Problems of the Humanities.

The Council was organized on February 14, 1920. It is composed of thirty-six members, two from each of the learned societies affiliated with the Council. It holds its annual meeting either in Washington or New York City. At this time, the budget for the ensuing year is adopted. It confines itself to the propagation of the spiritual interests of the Humanities, that is, the interests of culture, learning, education, and art.

The Executive Offices of the Council are in Washington, D. C. The executive officers consist of a permanent Secretary, a Secretary of Fellowships and Grants, and an Assistant Secretary assigned to the development of Far-Eastern interests.

The Council divides itself into various committees and boards, among which are an Executive Board, an Advisory Board (composed of representatives of societies in fields not directly affiliated with the Council), a Committee of Fellowships and Grants, a Joint Committee on Materials for Research, and committees on Area and Development.

The chief monetary support of the Council has come from dues, now no longer assessed, the General Education Board, the Laura Spelman Rockefeller Foundation, the Carnegie Corporation, and sixty other sources. The *New York Times* has given \$525,000 to forward the publication of the *Dictionary of American Biography*. To date, \$2,125,000 have been secured from various sources. The chief contributors have been the two Rockefeller Foundations.

The activities of the Council embrace the whole field of the Humanities. The Council has adopted an "Open Door" policy towards every branch of the Humanities rather than a policy of concentration on a few projects. Consequently, its individual grants have been comparatively small. It encourages the various learned societies to plan for the Council. It aids individual scholars by grants ranging from \$300 to \$1,000. Most of the grants are for work of intrinsic value. These grants cover various fields and are distributed through many institutions.

DECEMBER 4, 1934

STURGIS E. LEAVITT. A Chamber of Horrors from the Drama of the *Siglo de Oro*.

Spanish dramatists of the Golden Age gave little heed to decorum. Instead of avoiding macabre scenes, they seem to have made an effort to introduce horror as an added thrill to the audience. Tableaux of death were arranged behind a curtain in the back of the stage, and at an appropriate time the curtain was drawn aside and the fearful sight revealed.

This practice had its beginning before Lope de Vega, and was continued and extended by him and his successors. Tirso de Molina seems to have had a predilection for Bible scenes, Guillén de Castro for a variety of horror, and Vélez de Guevara for artistic effect. Calderón probably carried this vogue to a greater extreme than any of his contemporaries. Horrible scenes of any sort are rare in the work of Ruiz de Alarcón, and almost wholly lacking in Moreto and Rojas.

JANUARY 8, 1935

WILFRED EVANS. African Dialects and Folk-Lore.

FEBRUARY 7, 1935

HARDIN CRAIG, Leland Stanford Junior University. The Window of Momus—a Study of the Elizabethan Mind.

The basal question raised was whether or not there are actually ascertainable differences between the characteristic and habitual moods and acts of the Elizabethan mind and the modern mind.

Certain *a priori* circumstances give rise to an antecedent probability that there are such differences. The psychology of Locke and his followers changed the conception of the processes of the mind, and the knowledge of processes has probably affected the ways in which the mind is used and controlled. Many scientific and philosophic ideas (particularly the theory of evolution) have worked to the same end. Man understands himself better than he did during the Renaissance.

Also the growth of science and the spread of scientific method have taught men the value of suspension of judgment in the process of discovering the truth. The modern world is probably much more sceptical with reference to general propositions. "Distrust of general statements about love, including this" (French Proverb) probably expresses the current attitude of the modern educated man. It certainly does not express the attitude of the educated man of the Renaissance. Also, the modern man is much less dominated by authority than the man of the Elizabethan age.

The man of the Renaissance lived in an established world, as regards its cosmological, moral, and to some extent political aspects. Authority, Divine purpose, detailed analogical correspondence dominated it. Generally speaking, there was little to be invented, though much to be rediscovered. Everything had a place, a function, and a purpose, and the task of the Renaissance scientist was discovery and classification. Classes were relatively speaking immutably fixed, and the job of the scientist was pigeon-holing.

The man of the Renaissance was an active man and had an ideal of action. Truth, or divine will, or royal will, or the dictates of wisdom, policy, code morals, and learning (both practical and polite) once known, the man of the Renaissance believed in acting on the doctrine made manifest. He was like a soldier trained to obey the word of command.

It comes about from these circumstances that the Elizabethan mind dwelt largely in the perceptual realm rather than in the realm of ideals and rational actions. One need not believe that they were incapable of suspensions and distant ends, but one must admit that their lives—social, individual, political, or religious—did not call strongly for these things.

Various fields were then suggested which should receive further investigation in order to establish belief in the proposition advocated and argued.

MARCH 11, 1935

N. B. ADAMS. Sir Walter Scott and the Spanish Romantic Novel.

Sir Walter Scott was widely read and extensively imitated in Spain, especially in the eighteen-thirties. Although the "original" Spanish novels of that period followed Scott's romance in general plan and technique, and in some cases even borrowed plot and episode, their spirit and their tone were usually different. The historical novel in Spain was more personal, more lyric, more plausible in the presentation of human emotion.

GEORGE M. GREGORY, Duke University. The Authorship of Shirley's *The Traytor*.

Dyce, in his edition of James Shirley's works, asserted, without giving details of his reason for so doing, that Motteux's ascription (*Gentleman's Journal*, April, 1692) of *The Traytor* to Anthony Rivers was erroneous, but several subsequent scholars (Halliwell, Baker, and Schipper, for instance) left the matter of authorship open to doubt.

At a glance one finds justification for a strong assumption in Shirley's favor. The play was licensed for the stage as Shirley's, entered in the *Stationers' Register* as Shirley's, and included by Shirley in a list of his works appended to his volume entitled *Six New Plays*, published in 1653. None of these was apparently contested at the time.

Beyond such evidences are others, revealed either by a comparison of *The Traytor* with certain plays unquestionably Shirley's, or by a comparison of the 1692 *Traitor* with the 1635 *Traytor* printed for Shirley.

In the first place, the tone, language, and verse structure of *The Traytor* are definitely Shirleian; also the political theme of *The Traytor*, involving a wicked court favorite, is unusually common in Shirley.

By actual comparison of the 1692 play and the 1635 play, one finds that the 1692 printing follows that of 1635 substantially word for word, with omissions of many passages, the language of which is obscure in the earlier play; moreover, the later printing retains the punctuation of the earlier, even though the omissions have changed the structure in such a way as to require different pointing. For instance, where the 1635 play has a long series of coordinate interrogative clauses separated from each other by commas and punctuated at the end with a question mark, the 1692 play, omitting the last few clauses, has a comma incorrectly at the end of the question, in the exact place where the comma was correctly used in the 1635 play to separate two clauses, not to close the question. A similar mechanical incongruity is the omission of certain words in the 1692 play, but the retention as they stand in the 1635 play of subsequent words which refer to the matter which has been omitted. In one place, where 1635 lines are not present in the 1692 play, an obvious stage direction has been made a part of the dialog. Such matters create a strong presumption that the 1692 play was set up from a copy (perhaps a prompter's copy) of the 1635 play, with lines hastily deleted here and there.

Granting this, there still may be the possibility that both the 1635 play and that of 1692 were taken from some earlier original, but a glance at Shirley's unquestioned plays preceding his *The Traytor* reveals situation similarities which are significant and the habitual use of certain unusual phrases which can leave no doubt of Shirley's authorship. For instance, we find in *Love Tricks* (1624-25) the words *send you all off with a powder* spoken (1) in Act III, Scene i; (2) by a low character; (3) in prose, though the play is in verse; (4) to a non-existent jury; and (5) with a humorous intent. In *The Traytor* we have the words *send the duke to heaven with a powder* spoken (1) in Act III, Scene i; (2) by a low character; (3) in prose, though the play is in verse; (4) to a non-existent jury; and (5) with a humorous intent.

In *The Maid's Revenge*, (1625-26) we find a similar phrase used by a blunt character, in prose, and with humorous intent.

An existing multiplication of such striking parallels in plays preceding Shirley's *The Traitor* should satisfactorily establish his claim to the play.

MARCH 26, 1935

A. E. ZUCKER, University of Maryland. A Reconstruction of the Staging of the Redentin Easter Play.

The *Redentin Easter Play*, written by a clergyman, probably Peter Kalf, in 1464, was in all probability performed in the market place of Wismar. A reconstruction of its staging may well be prepared by conjecture from the stage directions, the text, and analogies from other plays. Such an exercise serves to show that the author possessed, in addition to his widely recognized literary skill and originality, great force and economy as a dramatist. This play avoids the usual weaknesses of medieval plays, e.g., lack of unity, failure to establish any connection between sequent scenes, and a disregard of probability; in the *Redentin Easter Play* each scene follows directly and logically upon the other and actual time is even foreshortened for the sake of powerful dramatic effect.

MAY 7, 1935

W. M. DEY. The Pessimism and Optimism of Alfred de Vigny.

Certain circumstances and occurrences of Vigny's life were discussed which would tend to explain his pessimism: the type of education which he received and the treatment accorded him by his fellow-students; the disappointment experienced in his military career through lack of action; his marriage to a young English girl, Miss Lydia Bunbury, who was continually ill; his disastrous liaison with an actress, Marie Dorval. The result was that Vigny felt himself aloof from people, this idea being expressed in his majestic poem, *Moïse* (1822); that he found everywhere disillusion and despair (*Stello*, 1832, and *Servitude et grandeur militaires*, 1835); that he considered woman a treacherous being (*La Colère de Samson*, 1839).

After his mother's death—a sorrow which affected him deeply—Vigny's ideas seem to have changed gradually. First, there was a period of transition, characterized by a feeling and an expression of stoic resignation (*La Mort du loup*, 1843, and *Le Mont des Oliviers*, 1844). The later poem of Vigny's posthumous volume, *Les Destinées*, shows an evolution in his thought and feeling. The following poems were analyzed: *La Maison du berger* (1844), *La Bouteille à la mer* (1854), and *L'Esprit pur* (1863). In these poems Vigny celebrates solitude, revery, poetry, and love; he expresses his faith in the destiny of the *Idea*; and he reaffirms his belief in the lofty mission of the poet.

Vigny was a romanticist, but his poetry is different from that of his contemporaries. It is a poetry of ideas, setting forth his thought and not displaying his life. He is the first representative of a philosophical poetry in France.

SOCIETY OF THE SIGMA XI

The principal activities of the North Carolina Chapter of the Society of the Sigma Xi during the year were as follows:

The first meeting of the year was addressed by DR. W. DEB. MACNIDER of the Pharmacology Department of the University of North Carolina. His subject was: The Acquired Resistance to Injury of Fixed Tissue Cells.

DR. HAROLD C. UREY, Professor of Chemistry at Columbia University and Nobel Prize Winner in Chemistry for 1934, was the second speaker. His subject was: The Separation of Isotopes.

The third speaker of the year was DR. D. H. ANDREWS, Professor of Physical Chemistry at Johns Hopkins University. His subject was: Atom Models.

The annual lecture was delivered by DR. E. K. MARSHALL, Professor of Pharmacology of Johns Hopkins University. His subject was: The Significance of the Agglomerular Kidney.

The final meeting was addressed by DR. L. C. MACKINNEY of the History Department of the University of North Carolina, who spoke on the subject: Science in the Middle Ages.

During the year nine full and sixteen associate members were elected to the Chapter.

RESEARCH PUBLICATIONS

JOURNAL OF THE ELISHA MITCHELL SCIENTIFIC SOCIETY

VOLUME L, 1 AND 2—DECEMBER, 1934

The Elisha Mitchell Scientific Society: Its History and Achievements. <i>Archibald Henderson</i>	1
Adaptation: The Fourth Property of Protoplasm. <i>Ivey F. Lewis</i>	14
Proceedings of the Thirty-third Annual Meeting of the North Carolina Academy of Science.....	21
Proceedings of the Elisha Mitchell Scientific Society.....	56
Galls and "Galls." <i>B. W. Wells</i>	65
Contribution to Knowledge of North American Fresh-water Harpacticoid Copepod Crustacea. <i>Robert E. Coker</i>	75
Reaction of Some Fresh-water Copepods to High Temperatures. <i>R. E. Coker</i>	143
Mathematica Praetermissa. <i>Archibald Henderson</i> and <i>John W. Lasley, Jr.</i>	160
A Study of the Action of Sodium Sulfide on Polymethylene Halides and the Formation of "Polythiophanes." <i>R. W. Bost</i> and <i>M. W. Conn</i>	182
New North American Species of Mayflies (Ephemera). <i>Jay R. Traver</i>	189
Technique in the Preparation of Coleoptera. <i>J. M. Valentine</i>	255
Rhythm, Synchronism, and Alternation in the Stridulation of Orthoptera. <i>B. B. Fulton</i>	263
Anatomy of the Transition Region of <i>Helianthus Annuus</i> . <i>Albert F. Thiel</i>	268
The Development of the Fruiting Body of <i>Arachnion Album</i> . <i>Carolina A. Lander</i>	275
A Taxonomic and Morphological Study of the Genus <i>Cuscuta</i> , Dodders, in North Carolina. <i>Budd Elmon Smith</i>	283
Publications in the Field of Science from the University of North Carolina (1795-1934). <i>Alma Holland</i>	303

STUDIES IN PHILOLOGY

VOLUME XXXI, 3—JULY, 1934

A New Source for Lancelot's Madness. <i>Dorothy Winters</i> .	
The Reputation of Crashaw in the Seventeenth and Eighteenth Centuries. <i>Austin Warren</i> .	
Grottoes, Geology, and the Gothic Revival. <i>Robert A. Aubin</i> .	
Dancing and Pantomime on the English Stage, 1700-1737. <i>Emmett L. Avery</i> .	
Scientific Rationalism and James Thomson's Poetic Art. <i>Herbert Drennon</i> .	
Shelley's Biography: The Primary Sources. <i>Newman I. White</i> .	
Byron's Last Poem. <i>Frederick L. Jones</i> .	
Interpreters of the Age of Swift. <i>William Alfred Eddy</i> .	

VOLUME XXXI, 4—OCTOBER, 1934

- Some Light on Metaphysical Obscurity and Roughness. *Robert Lathrop Sharp.*
 Eighteenth-Century Replies to Pope's Eloisa. *Lawrence S. Wright.*
 Wordsworth's *Prelude*: An Intimation of Certain Problems in Criticism. *Bennett Weaver.*
 The Literary Opinions of Charles Brockden Brown. *Ernest Marchand.*
 Robert Browning and William Allingham. *M. L. Howe.*
 Browning's Dark Mood; A Study of *Fifine at the Fair*. *William O. Raymond.*
 A Check List of Matthew Arnold's Letters. *T. H. Vail Motter.*

VOLUME XXXII, 1—JANUARY, 1935

- The *Consais a'Amours* of Richard de Fournival. *William M. McLeod.*
 Let Him Buy You Who Does Not Know You. *Ralph S. Boggs.*
 A Decade of Notes on Spanish Poetry. *Joseph G. Fucilla.*
 The Rhetorical Inconsistency of Chaucer's Franklin. *Benjamin S. Harrison.*
 Rhetoric in Gower's *To King Henry the Fourth, In Praise of Peace*. *R. Balfour Daniels.*
 The Sources of *Eikonoklastes*: A Resurvey. *George W. Whiting.*
 Three Notes on "Graveyard" Poetry. *Robert A. Aubin.*
 The Paradox of Burns' Character. *Robert T. Fitzhugh.*
 An Echo from Browning's Second Courtship. *Kenneth Leslie Knickerbocker.*

VOLUME XXXII, 2—APRIL, 1935

- Newes Out of Munster*, A Document in Spenser's Hand. *Raymond Jenkins.*
 Spenser's *Fowre Hymnes*: Addenda. *Josephine Waters Bennett.*
 Spenser's Theory of Friendship: An Elizabethan Commonplace. *Charles G. Smith.*
The Anatomie of Absurditie: A Study in Literary Apprenticeship. *Don Cameron Allen.*
 The Non-Shakespearian *Richard II* and Shakespeare's *Henry IV, Part I*. *John James Elson.*
 Shakespeare's Debt to Hall and to Holinshed in *Richard III*. *Edleen Begg.*
 The Aesthetic Significance of Shakespeare's Handling of Time. *Thomas M. Raysor.*
 Title-Page Mottoes in the *Poetomachia*. *Robert Boies Sharpe.*
 Milton and the Third Person of the Trinity. *Maurice Kelley.*
 Terminal Pause in Milton's Verse. *John I. S. Diehoff.*
 The *Kommos* of Milton's *Samson Agonistes*. *William R. Parker.*
The Faerie Queene, "First Part"—in *Variorum*. *William Flint Thrall.*
 Recent Literature of the English Renaissance. *Hardin Craig and David Patrick.*
 Italian Renaissance Studies in 1934. *Walter L. Bullock.*

VOLUME XXXII, 3—JULY, 1935

- The Elizabethan Dramatic Parasite. *E. P. Vandiver, Jr.*
 The "New Astronomy" and English Literary Imagination. *Marjorie Nicholson.*
 Two Augustans Cross the Alps: Dennis and Addison on Mountain Scenery. *Clarence D. Thorpe.*

Wordsworth's "Hermitage": Racedown or Grasmere? *David H. Bishop*.
 A Probable Paracelsian Element in Shelley. *Elizabeth Ebeling*.
 Notice: Spenser Bibliography.

THE NORTH CAROLINA LAW REVIEW

VOLUME XIII, 1—DECEMBER, 1934

The American Law Institute's Restatement of the Law of Contracts, in Part, Chapters I-VII, Sections 1-177, with North Carolina Annotations. *M. T. Van Hecke*.

VOLUME XIII, 2—FEBRUARY, 1935

Rescission of Bargains Made on Sunday. *Walter Wheeler Cook*.

VOLUME XIII, 3—APRIL, 1935

State Action under the Federal Estate Tax Credit Clause. *E. M. Perkins*.
 Property, Mortgaged Land, and the Frazier-Lemke Act. *F. Carlisle Roberts*.
 An Annotator's Reflections upon the Restatement of Contracts. *M. T. Van Hecke*.

VOLUME XIII, 4—JUNE, 1935

A Survey of Statutory Changes in North Carolina in 1935. *Members of the Law School Faculty*.
 A Blue Print for the Certified Check. *Roscoe T. Steffen* and *William F. Starr*.

SOCIAL FORCES

VOLUME XIII, 1—OCTOBER, 1934

Vitality and Formalism in Government. *Arthur E. Morgan*.
 The Case for Regional-National Social Planning. *Howard W. Odum*.
 Where Regionalism and Sectionalism Meet. *Donald Davidson*.
 The Prospect for Optimum Regional Production in the Southern Regions. *Milton S. Heath*.
 The Agricultural Backgrounds and Attitudes of American Presidents. *Earle D. Ross*.
 The Subregions of the Southeast. *T. J. Woofter, Jr.*
 Twelve other articles in the department of Teaching and Research in the Social Sciences; Public Welfare and Social Work; Community and Neighborhood; Race, Cultural Groups, Social Differentiation; Government, Politics, Citizenship; Social Industrial Relationships.

VOLUME XIII, 2—DECEMBER, 1934

Questions for Sociology: An Informal Round Table Symposium. *L. L. Bernard*, *R. Clyde White*, *Dwight Sanderson*, *Henry Pratt Fairchild*, *Thomas D. Eliot*, *Arthur Evans Wood*, *Charles A. Ellwood*, *Howard E. Jensen*, *James H. S. Bossard*, *H. C. Brearley*, *E. T. Krueger*, *Arthur J. Todd*, *W. P. Meroney*, *Wilson Gee*, *Frank H. Hankins*, *E. B. Reuter*, *Stuart A. Queen*, *Hornell Hart*, *J. J. Rhyne*, *Emory S. Bogardus*, *Malcolm M. Willey*, *Maurice T. Price*, *Stuart A. Rice*.

Nine other articles in the departments of Teaching and Research in the Social Sciences; Community and Neighborhood; Race, Cultural Groups, Social Differentiation; Government, Politics, Citizenship; Social Industrial Relationships.

VOLUME XIII, 3—MARCH, 1935

The Letters of Albion W. Small to Lester F. Ward: II. *Bernhard J. Stern.*
Some Results of Quantitative Analysis of the Institutional Patterns of Churches. *F. Stuart Chapin.*

The Changing Culture of the City. *Walter J. Matherly.*

The Balance of Social Forces in the Administration of the Pure Food and Drug Act. *E. Pendleton Herring.*

Is Art the Product of Its Age? *John H. Mueller.*

Eleven other articles in the department of Teaching and Research in the Social Sciences; Public Welfare and Social Work; Marriage and the Family; Race, Cultural Groups, Social Differentiations; Government, Politics, Citizenship; Social Industrial Relationships.

VOLUME XIII, 4—MAY, 1935

The General Development and Present Status of the FERA Research Program. *Howard B. Myers.*

The Contribution of Research to Rural Relief Problems. *Dwight Sanderson.*
State and Local Statistical Studies Conducted as Work Relief Projects. *Frederick F. Stephan.*

From Description to Research. *Clark Tibbits.*

The AAA and the Cropper. *Harold Hoffsommer.*

Opportunities for Rural Research under the FERA. *E. D. Tetreau.*

Statistical Induction in Rural Social Research. *Samuel A. Stouffer.*

Prospects and Possibilities: The New Deal and the New Social Research. *A. Stephen Stephan.*

Personality and Cultural Research in the Tennessee Valley. *William E. Cole.*
Ten other articles in the departments of Public Welfare and Social Work; Community and Neighborhood; Marriage and the Family; Race, Cultural Groups, Social Differentiation; Government, Politics, Citizenship; Social Industrial Relationships.

THE UNIVERSITY NEWS LETTER

FEATURE ARTICLES

Education and The Child in North Carolina.

Public Libraries and The Citizens' Library Movement.

Living Cost of Teachers in North Carolina.

Taxable Wealth and Tax Rates in North Carolina.

Trends in Property Valuation and Tax Rates in North Carolina.

Retail Trade in North Carolina, 1933.

Unemployment Insurance for North Carolina.

Cost of All Government in North Carolina, 1932.

- Taxation and The Schools in North Carolina. A digest of our tax system, recent trends, and with special attention to the effect on education.
- State Highway Construction in North Carolina, 1921 to 1934.
- Industry in the United States and in North Carolina, 1933.
- Motor Cars in North Carolina, 1934.
- Increase and Decrease of Farms in North Carolina, 1910-35.
- Industry in North Carolina, by Counties, 1933.
- Retail Distribution in The United States, 1933.
- Births and Infant Deaths in the United States, by States, 1934.
- Increase of Farmers in the United States, 1930-35.
- Federal Income Tax Returns in North Carolina.
- Farm Income in the United States and in North Carolina.
- Value of Farm Land and Buildings in North Carolina, 1935, and Recent Trends.

PART II

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RAYMOND ADAMS. The Species and Variety of Thoreau. *The Anvil*, XXXII: 18-23. 1934. "The Stream I Go A-Fishing In." Concord, Mass.: The Social Circle Publications. 1934.

SUSAN G. AKERS. A Decade of Teaching Subject Headings. Catalogers and Classifiers *Yearbook*, 4:85-92. Chicago: American Library Association. 1935.

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LEE M. BROOKS. The Rural Child's Leisure and Esthetic Interests. *Recreation*, XXIX: 341-343. 1935. (With W. C. SMITHSON.)

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INDEX

	PAGE
Abernethy, Cecil	37
Adams, Margaret E.	77
Adams, N. B.	73, 74, 98
Adams, Raymond	31, 41, 107
Addlestone, J. A.	13
Akers, Susan G.	107
Alexander, A. L.	14
Allen, Lillian G.	77
Allred, C. E.	80
Anderson, Charles M.	19
Anderson, E. H.	18
Andrews, D. H.	101
Arnold, Fred A.	17
Arthur, John M.	65
Bagby, English	93
Baker, Ray Palmer	108
Baldwin, Roger	48
Ballou, F. W.	48
Barker, E. F.	63
Barr, E. S.	63, 64
Barrett, J. A.	73
Barrett, L. L.	73
Baskerville, W. H.	10
Bayroff, A. G.	71
Beale, H. K.	47, 48
Bearden, J. A.	65
Beckrath, H. von	83
Beers, C. D.	85, 86
Belcher, R. H.	14
Bernstein, E. M.	19
Berwanger, Sybille K.	71
Bice, Harry V.	72
Blanchard, Phyllis	88
Boggs, R. S.	74, 107
Boliek, Mildred Irene	86
Bond, Richmond P.	33
Boone, W. E.	50
Booth, W. R.	54
Borgmann, C. W.	29, 95
Boroughs, C. K.	32
Bost, Ralph W.	13, 14
Branscomb, Harvie	55
Brawley, D. J.	12
Breckenridge, M. S.	53, 91
Breit, G.	65
Brezeale, F.	63
Brooks, Lee M.	84, 107
Brown, D. A.	34
Brown, Roy M.	88, 89
Browne, E. T.	56
Bryant, Loy Y.	37
Buchanan, D. H.	18
Buffalo, Mary	34
Burlage, Mrs. H. M.	8

	PAGE
Burlage, H. M.	59, 93, 107
Burwell, Connie J.	61
Caldwell, W. E.	49
Cameron, E. A.	56
Cameron, Frank K.	10, 11
Carmichael, Colin	29
Carroll, D. D.	91
Castillo, Carlos	107
Causey, James Y.	74
Chadbourne, J. H.	53
Chang, Y. Z.	32
Christenbury, E. S.	24
Clifford, A. T.	10
Coates, Albert	54
Cobb, Collier	93, 94, 95
Cobb, Whitfield, Jr.	61
Coenen, F. E.	45
Coffman, George R.	32
Coker, R. E.	84, 107
Coker, W. C.	8, 95
Congleton, J. E.	34
Conn, M. W.	13
Connor, R. D. W.	51
Cosby, B. O.	14
Costello, D. P.	86
Couch, John N.	8, 9, 93
Cowden, Dudley J.	20, 107
Cox, E. H.	32
Craig, Hardin	97
Craig, Marjorie	37
Crane, H. W.	72
Craven, C. J.	66
Crittenden, C. C.	51
Crockford, H. D.	12, 13, 93
Cummings, P. H.	73
Curti, Merle E.	48
Daniel, Ella Mae	108
Dashiell, J. F.	70, 71
Davis, B. W.	16
Davis, Charles W.	25
Devol, Lee	62
Dewing, Henry B.	16
Dey, W. M.	73, 78, 100
Di Costanzo, N.	56
Diggs, Mary	16
Douglas, T. B.	12
Douty, H. M.	18, 20
Downs, R. B.	55
Drake, William E.	25
Driscoll, R. L.	63
Edmister, F. H.	12, 108
Edwards, R. A.	43, 70
Eliason, Mary	32
Elliott, Rosalie C.	38
Emory, S. T.	43, 44
Engstrom, Alfred G.	78
Ericson, E. E.	39
Evans, J. G.	20

	PAGE
Evans, Wilfred	97
Ezell, W. C.	72
Farr, H. O., Jr.	12
Farrar, Preston C.	108
Fesler, James W.	69
Fletcher, James F.	17
Fore, Dan, Jr.	14, 15
Frost, John Davis, Jr.	78
Fussler, Karl H.	62, 65
Friedrich, W. P.	45
Garrett, M. B.	46, 52
Gaskin, Grover C.	25
George, W. C.	7, 93
Geyer, J. C.	30
Giduz, Hugo	22, 108, 110
Githens, Sherwood, Jr.	63
Godwin, Jewel	16
Gordon, Gertrude K.	51
Gordy, Walter	66, 93
Green, F. M.	51
Gregory, George M.	99
Groves, E. R.	83, 87, 88, 108
Grubbs, H. A.	110
Gwynn, J. Minor	20
Hampton, Frances	83, 89
Hancock, E. D.	80, 84, 90
Hanft, F. W.	53, 54
Harbison, T. G.	8
Harland, J. Penrose	16
Harrer, G. A.	15
Hatch, W. R.	9
Haydon, Glen	57
Hayes, F. C.	73, 74
Hazelman, Herbert	58
Heath, M. S.	19
Heer, Clarence	72, 88
Heffner, H. C.	109
Henderson, P. de F.	44
Heironimus, J. P.	48
Henderson, Archibald	55
Herring, Harriet L.	81, 82, 88, 89, 90, 91
Hickerson, T. F.	27, 28, 31, 95
Hildebrand, Cornelia I.	38
Hill, M. A., Jr.	56
Hobbs, R. J. M.	17
Hobbs, S. H., Jr.	79
Holmes, H. W.	48
Holmes, Urban T.	75, 77, 78, 79
Holder, B. B.	17
Holt, Jeanne M. V.	78
Honeyman, H. L.	49
Hood, Robin	18, 91
Hornbeck, Ross	42
Horne, M. K., Jr.	19
Howard, George	24, 25, 26
Howell, A. C.	33, 108
Howell, James	32
Howerton, H. B.	68

	PAGE
Hoyle, Hughes B.	56
Huddle, John W.	43
Hudson, Arthur P.	33, 37, 38, 96, 108
Hudson, C. C.	11
Huffman, E. O.	10, 11
Hume, Robert D.	39
Hunter, Elwood C.	22
Hunter, J. E.	11
Hunter, W. F.	14
Huskins, C. C.	51
Jacobs, M. L.	59
Jenkins, Sadie F.	36
Jenkins, W. S.	68, 70, 87
Joche, Katharine	82, 89
Johnson, Mrs. Cecil	8
Johnson, Guion G.	90
Johnson, Guy B.	83, 89, 90, 108
Johnson, J. Herman	90
Johnson, W. R., Jr.	43, 44, 95
Johnston, W. R.	14
Jones, Martha D.	39
Jordan, A. M.	22
Kattsoff, Louis	60
Kleemeier, J. A.	55
Kimmel, Herbert	23
Knight, E. W.	20, 23
Koch, F. H.	42, 108
Koo, Tsu Yuan	30
Kyker, G. C.	10
LeBaron, P. M.	42
LeConte, J. N.	10, 95
Lacy, Dan M.	51
Lang, A. G.	13
Lanham, Louise	34
Lasley, John W., Jr.	55, 56, 93
Latham, D. H.	9
Leavitt, Sturgis E.	73, 75, 97, 109, 110
Lefler, H. T.	47
Leland, Waldo G.	96
Lockmiller, David A.	69, 92
Loftin, J. C.	12
Lyons, J. C.	77
MacCarthy, Gerald R.	42, 43
MacKinney, L. C.	46, 47, 101
MacLean, J. A.	29
MacNider, W. deB.	33, 60, 93, 101
McCain, J. W.	32
McCain, Lurline H.	39
McCall, F. B.	54
McCall, J. V.	73
McCanless, Rosamond	40
McCay, M. S.	62
McChesney, E. W.	67, 68
McDowell, D. F.	74
McFerrin, John B.	17
McIntosh, A. C.	54
McLeod, W. M.	75
McKenzie, B. W.	68

INDEX

115

	PAGE
McKinney, W. M.	31
McKnight, W. A.	73
McNairy, Lyles G.	18
McNeir, W. F.	32
Macormac, A. R.	11
Mack, Edward, Jr.	9
Mackie, E. L.	56
Mangum, Charles S., Jr.	54
Marshall, E. K.	101
Marvin, James Robert	31
Martin, Irving L.	43
Maxfield, Frederick A.	62
Meade, Robert D.	49
Metzenthin, E. C.	45
Meyer, Harold D.	82, 89, 109
Miller, W. J.	31
Millsaps, Vera	9
Moore, M. A.	34
Morgan, E. C.	34
Morrison, Roy W.	24, 27
Mourane, Maxalynn	79
Mulder, J. E.	54
Muse, Montie M.	26
Newell, Olive E.	40
Newsome, A. R.	46, 52
Nicholes, P. M.	13
Nicholson, Frank	14, 15
Noblin, Stuart	52
Noe, T. P.	28, 29, 30
North, Neville C.	40
Odum, Howard W.	80, 81, 82, 87, 89, 109
Olive, W. J.	32
Owen, Anne M.	16
Owens, John J.	18
Paine, Gregory L.	37, 40
Parker, Frederick B.	84
Parker, William G.	26
Peacock, E. E.	16
Pegg, C. H.	49
Perkins, E. M.	53, 55, 91
Perry, W. A.	30
Pfeiffer, Carl	33
Phillips, M. O.	17
Pickler, D. A.	11
Pierson, W. W.	51, 52, 68, 69, 92, 109
Pinney, M. E.	84
Pittman, C. L.	33
Plesset, M. S.	65
Plyler, E. K.	63, 64, 66, 67
Popper, Estelle	52
Powell, E. C., Jr.	12
Preston, Carleton E.	109
Prouty, W. F.	42, 93
Rankin, Henry	34
Rice, Janie C.	27
Robson, C. B.	68, 70
Rose, A. S.	95
Royal, Sabra Loré	41

	PAGE
Russell, J. C.	48
Ruark, A. E.	62, 65, 96
Sanders, Wiley B.	72
Sanford, Anna Mary	75
Sawyer, George L.	27
Schinhan, J. P.	58, 59
Schwenning, G. T.	18
Seawright, Claude	35
Selden, Samuel E.	109
Sharpe, Robert B.	34, 37, 38, 39, 40
Shaw, Chandler	49
Shivers, Lyda	81
Sillman, Hunton D.	109
Simmons, Norwood L., Jr.	10, 12
Sink, Woodford G.	12
Smith, G. Wallace	29
Smith, H. P.	80
Smith, James W.	44
Smith, Sherman E.	9
Smith, William L.	62
Smith, W. P.	75
Smithson, W. C.	107
Spruill, Julia C.	91
Staab, H. H.	108, 110
Stabler, Lewis B.	75
Stainback, Raymond F.	30
Steele, P. J.	67
Stone, Olive M.	80, 91, 92
Stoudemire, S. A.	74, 109, 110
Straley, H. W., III	43, 44, 95
Stuhlman, Otto, Jr.	62, 63
Suskin, Albert I.	16
Svendsen, James K.	41
Swalin, Benjamin F.	58
Swedenberg, H. T.	34
Tanner, Howard A.	9
Taylor, Cecil G.	76
Taylor, G. C.	32, 35, 36, 39, 40, 41
Taylor, Malcolm D.	19, 110
Terry, Annie W.	41
Thompson, J. A.	74
Thrall, W. F.	32
Totten, H. R.	8
Townsend, Valence	35
Trimble, R. M.	29
Truslow, Alice	108
Urey, Harold C.	101
Valentine, J. M.	57, 96
Van Hecke, M. T.	53
Vance, Rupert B.	83, 87, 88, 89, 90, 91, 92, 110
Vogler, R. D.	56
Wager, Paul W.	80
Wagstaff, H. McG.	50
Wall, Bennett	92
Wardlaw, J. L., Jr.	63
Warfield, Calvin N.	62
Way, Katherine	65
Weaver, W. R.	73

INDEX

117

	PAGE
Webster, J. W.	52
Wells, Edna Metz	9
Western, Forrest	62
Wettach, R. H.	54, 55
Wheeler, A. S.	10
Wheeler, John A.	65
White, A. McLaren	29
Wickens, Delos D.	71
Wideman, S. A.	13
Wilder, F. S.	19
Wiley, W. L.	74, 76, 110
Williams, Alton	42
Williams, Arnold	34
Williams, C. C.	56
Williams, F. D.	63
Williams, H. H.	61
Williams, L. L.	86
Williams, W. W.	15
Williamson, Johnnie Lou	79
Willis, E. C., Jr.	53
Wilson, Hilliard B.	72
Wilson, H. V.	84, 86, 93
Wilson, Mrs. Lester	8
Winkler, Edwin W.	31
Winslow, R. S.	19
Wolf, H. D.	18, 91
Wood, J. H.	15
Woodworth, R. N.	82
Woosley, J. B.	17, 110
Woofter, T. J.	83, 88, 89, 90
Workman, J. H. A.	24
Wright, T. E.	74, 75
Yancey, Myra L.	74
Yapar, Nihat Ferit	19
Yost, F. L.	65
Zimmerman, E. W.	17
Zucker, A. E.	44, 100



