

1933

## Annual Report 1933

University of Rhode Island

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tion of subject-matter material and plans of home gardens for their use.

In the program for the ensuing year greater stress will be placed upon the problems of the commercial grower, although with the present agricultural situation much attention must, of necessity, be given to the development of a larger supply of home grown vegetables in order to reduce the farm family expenditure for food.

*Outlook.*

Never in the history of extension work has the opportunity for service on the part of the extension staff to the rural population of Rhode Island been greater than at present with an ever increasing confidence in the work and teachings of the Extension Service and a better understanding of its aims and objectives through the development of long-time programs founded upon a study of local problems with small groups. The years immediately ahead give promise of closer relationships between groups than ever before, founded upon a better understanding of mutual problems.

No annual report of the Extension Service would be complete without an expression of appreciation of the spirit of cooperation shown by all of those who have been called upon to assist in the work during the past year.

Respectfully submitted,

G. E. ADAMS,

*Director.*

## Bulletin of Rhode Island State College

VOL. XXVIII, NO. 4

FOR FEBRUARY, 1933

### REPORT OF THE BOARD OF MANAGERS



KINGSTON, R. I.

1933

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PUBLISHED QUARTERLY BY THE COLLEGE  
MAY, AUGUST, NOVEMBER, FEBRUARY

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ENTERED AT KINGSTON, RHODE ISLAND, AS SECOND CLASS MATTER

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RHODE ISLAND STATE COLLEGE

CORPORATION

RHODE ISLAND STATE COLLEGE

CORPORATION

Term Expires  
Jan. 31

WALTER E. RANGER, Pres., Com. of Education, ex-officio, Providence

HARRY R. LEWIS, Com. of Agriculture, ex-officio, East Greenwich...

(Appointed by the Governor with the advice and consent of Senate  
for term of five years.)

ZENAS W. BLISS, Vice-President, Providence Co., Providence.....1933

ROBERT S. BURLINGAME, Clerk and Treasurer, Newport Co., New-  
port. . . . .1936

CHARLES ESTES, Bristol Co., Warren.....1934

THOMAS G. MATHEWSON, Kent Co., East Greenwich.....1935

MRS. L. MOWRY SCHLESINGER, Washington Co., Charlestown....1937

(Appointed by Governor from Alumni Association for term of four years)

WILLIAM C. CLARKE, 1898, Westerly.....1935

LUCIUS A. WHIPPLE, 1907, Pawtucket.....1937

# REPORT

*To His Excellency Theodore F. Green, Governor, and the Honorable  
General Assembly of the State of Rhode Island and Providence  
Plantations, at its January Session, 1933.*

I have the honor to submit herewith the Forty-fifth Annual Report of the Board of Managers of Rhode Island State College, as required by law.

WALTER E. RANGER,  
*President, Board of Managers.*

## REPORT OF THE PRESIDENT OF THE COLLEGE

*To the Honorable Board of Managers of the Rhode Island State  
College*

GENTLEMEN:

As President of Rhode Island State College, I have the honor to submit the annual report.

The year 1932 has been an eventful one at the Rhode Island State College. Many new projects have been undertaken. Some of them have been completed; others will have to be carried over to 1933; and still others will have to be continued throughout a period of years. The campus clean-up program is going forward rapidly. New buildings to the value of a hundred thousand dollars, at no expense to the state other than the land on which they stand, have been erected. Our men students are gradually reorganizing their system of student government. The sports programs have been entirely satisfactory. All in all, 1932 has been a very challenging year, and at times we, like many others, have had moments of anxiety for the future. But since none of us can do much to alter things, we have held steadily to the philosophy that doing our own job well is our best security.

The new curricular set-up which became effective with the first semester of 1932 is apparently meeting the expectations of the students and of the faculty. The new instructors added to the force are showing their mettle and are giving every indication of permanent success. The student enrollment has been increased from 797 in 1931 to 923 for 1932. This increase comes in the freshman and sophomore years, the very classes in which there have been a falling off in most colleges, and comes also at a time when the highest standards in the history of the college were set up for the incoming freshmen. Even with this condition prevailing, the demand made by the citizens of the state for additional admissions was too great for us to meet. The quota set for freshmen as the number the college could best handle was 300. Because of the many applications, however, this number was increased so that at the beginning of

the semester we matriculated 345 freshmen from a possible 600 applicants. It is interesting, although not significant, to note that the average age of the incoming class is exactly 18 years, 10 months, and 24 days—just one month older than the class which entered in 1931.

From the standpoint of the demands made on the college there is no depression. The great question is whether our fixed income will stand any further expansion. The budget of the college is in excellent condition. There is a slight surplus in our working fund; this condition is considered essential for effective administration of the college.

For the present period the Rhode Island State College proposes to attempt an even keel in a stormy sea. It is not planning to change its course nor to take on any new freight. It proposes to hold to its objectives—and these have been vocational in the main. It is a popular thing these days for educators, as reported by the public press, to extol cultural values and to point out that if we had not gone so far in science and technology we would not now be in this predicament. This attitude, it seems to me, is misleading. What is the good of scientific discovery unless there is an applied counterpart? There is no gainsaying scientific progress. Naturally, the human animal must devise ways and means of securing the benefits of his own discoveries. Rather than science and technology being to blame for the present confusion, culture should at least share the blame for its failure to adapt itself to a changed and more dynamic order of life. A study of the higher values of life can in no way be inconsistent with the study of those things that will help a man make a little better living. In nature they are one; in an academic atmosphere they are sometimes separated. This world needs ring-masters to translate the high purposes of culture into the language of the street. If the colleges of the nation should dedicate part of their programs to this objective, the world might become a safer place in which to live. To say the least, it will be more noble for a college to face the problems that the millions face in a machine age, than to counsel and teach some Utopian simplicity which none except the very select and favored can adopt.

A survey of the accomplishments of the year follows:

### New Buildings

Two very fine fraternity buildings were constructed during the year—Beta Phi and Sigma Alpha Epsilon. The Beta Phi fraternity, the finest dormitory building on the campus, was erected at a cost of approximately \$45,000. It is located just opposite the old Watson House on the road to the athletic field. The building is of brick construction, contains ample facilities for housing 40 students, is equipped with all the modern improvements that are desirable in fraternity houses, has provided a place for a kitchen and dining room, and ultimately will be a complete dormitory unit, catering to all the dining and rooming needs of its members.

This building is the first of a group of fraternity dormitories to be erected on a section of the campus that undoubtedly will be a most attractive part of the college grounds. The slope to the west, with its natural wooded and rocky landscapes, invites development.

The Sigma Alpha Epsilon fraternity building likewise is a very attractive structure. While it did not cost as much as Beta Phi—the cost being approximately \$29,000—it is just as complete in every respect. This building is located on College avenue between Rho Iota Kappa and Delta Alpha Psi and rounds out the fraternity building possibilities on this street. It is a frame building with clap-board weather boarding painted white. It makes a beautiful sight on the campus. The unique feature of this building, as I see it, is the dormitory, a second floor dormitory with open space clear to the rafters guaranteeing ample air for the forty men it accommodates.

These two buildings are a great boon in caring for additional students. In this connection the citizens of the village should be mentioned for they, too, through a building program, have increased the capacity of the college. A new apartment house with six apartments, and a half dozen or more residences have been built. A dormitory which is thoroughly equipped and has a capacity of 32 students was constructed by private capital. My prediction of a year ago is apparently coming true. If capital can see an advantage in an investment in real estate in the village because of a growing college, it will naturally seek Kingston for investment. I vision the time when all the dormitory needs for men may be taken care of.

by fraternities and by private rooming houses. The college will always maintain dormitories for girls, and in order to keep room rentals from rising unreasonably high men's dormitories are desirable.

The college has also constructed several smaller buildings—a small research laboratory on the East Farm and a rather large implement shed in the green house section of the campus are the most important—and has remodeled houses in the old poultry plant location as residences for employees of the college.

The carpenter shop, located between Lippitt and Bliss Halls, has been made over for a store. There is a very great need on the campus for a student supply store, and I feel that we shall have an attractive store catering to the needs of our students and one that will be under college regulation and control.

#### Campus Improvements

The clean-up program for the campus is going forward rapidly. The rocky field between the main gates and Ranger and Edwards Halls will be entirely cleared by September, and in its stead will be a large intra-mural athletic field, a rock garden, and several landscape effects which will add to the attractiveness of the campus. The initial impetus for clean-up received a tremendous push on Rhode Island Day—May 4. This day was claimed by the college as its own. All the students were given a holiday from classes but not from work. About 700 boys and girls were found engaged in campus beautification that day. Even the State Board of Public Roads had a hand in it by lending us equipment and giving us counsel. The boys and faculty dug up boulders, cut bull briers and poison ivy, grubbed brush, graded around the gymnasium, broke ground for three new tennis courts, and in every way cooperated in the program of campus improvement. The girls? Oh, yes, the girls, under the supervision of the Home Economics Department, fed the boys—and no small job it was!

This work was carried forward at odd times during the summer by our regular help. By the end of the summer a revolution was brought about in the appearance of the campus. It is our hope to have every part of the college grounds, from the area back of the

green houses and water tank to the plains, as an integral part of the campus. It carries with it the idea of clearing the arboretum once more and inaugurating a scheme of care-taking which will forever keep that available as a college picnic ground and recreation place.

The State Board of Public Roads has taken over the care of the trees along the campus roads. This service has been of very great value to us as it is an item of considerable expense to care for these elms. During the year gifts of shrubs and herbaceous perennials have been received from Commissioner Frederick S. Peck. These have been planted on various sections of the campus and have added greatly to the attractiveness. The Board of Public Roads constructed a new road extending from the cross road at The Press Club to the gymnasium back of South and Davis Halls; this road cuts across the ravine a bit east of the gymnasium where it connects with the lower road. It is a fine new macadam road, approximately 30 feet wide, and opens up the section of the campus down gymnasium-way. Next year we hope to have a concrete walk on one side of this road which will lead from the girls' dormitories to the gymnasium. And then the mud problem which troubled the college for so many years will be solved!

The landscaping of the section of the campus where the president's house is located is well under way. A service road has been built to the rear of the house and continues out to College avenue as a rather attractive drive. On either side of this drive there is a concrete walk to be flanked with elms or maples. A concrete walk, which will be extended to Ranger Hall next spring, has been built from the main gates to the library. All in all, about 2,000 feet of concrete walks have been laid during the year.

#### Heat, Light, and Telephone

A new high pressure steam line was laid during the summer between Lippitt and Ranger. Heat was extended from the gymnasium to Beta Phi, from South Hall to The Press Club (student publications headquarters), and from Bliss Hall to the college store. These extensions represent about the maximum of the load that the central

plant can carry. A recent survey indicates that steps should be taken immediately to enlarge the heating plant.

The telephone and light lines which formerly ran to the rear of Lippitt and in front of the gymnasium to the plains have been re-located back of the college buildings and reappear on the highway three or four hundred feet below Beta Phi. This was necessary because of the service to be rendered. At the same time it added greatly to the appearance of that section of the campus. Plans are under way to erect street lighting poles along the lower road. This section of the campus is rather dark and should be lighted for the proper handling of college problems. Large concrete poles for this purpose have been purchased at a very reasonable figure from the state prison.

### Personnel

During the collegiate year 1932-33, Mr. Everett Christopher and Mrs. Elizabeth Christopher, instructors respectively in horticulture and English, are on leave of absence for advanced study at Cornell University. By the end of the summer quarter in 1933 each one will have completed the residence requirements for the doctorate. This is a very praiseworthy undertaking for these young folks and is an example that should be followed by others among our younger faculty. It is regrettable that the college is not in position to encourage by financial aid leaves among its faculty for advanced study. Regardless of what the college may or may not offer, the young instructor cannot afford to rest on his oars. He should map out for himself a course of professional improvement. If the college which he is serving cannot offer him new and better opportunities for promotion because of his advanced study, there are always other institutions on the alert for good men. Neither the college, even though it lose the man, nor the instructor will suffer in pursuing a program of self improvement. As a goal, the college might well consider three years' training beyond the undergraduate degree as being a prerequisite for promotion to a full professorship.

Some among our teaching force took advantage of the summer period to continue their studies. Professor Edith Andrews, and Assistant Professor Elisabeth Stillman studied at the University

of Michigan and the University of Chicago respectively. Extension Professor Sara E. Coyne started her advanced work at Cornell, and Miss Josephine Lees pursued courses at the Pennsylvania State College. Assistant Professor C. D. Billmyer of the School of Engineering attended the Economic Session of the Society for the Promotion of Engineering Education at Stevens Institute. Mr. Robert Rockafellow, of the Department of Economics, continued his studies at the University of Pennsylvania, and Mr. Kenneth Wright, of the Department of Botany, completed his residence for the doctorate at the University of Ohio.

It is with very great satisfaction that I record the names of the following members of the faculty who received advanced degrees in June: Mr. R. K. Carleton, instructor in chemistry, Ph. D., from George Peabody College; Mr. F. K. Crandall, assistant research professor of agronomy, M. S., from Rhode Island State College; Mr. J. G. Fielding, research assistant in agricultural economics, M. S., from Rhode Island State College; Mr. L. A. Keegan, assistant professor of agronomy, M. S., from Rhode Island State College; Mr. Crawford P. Hart, assistant professor of poultry husbandry, M. Agr., from Rhode Island State College. Vice-President John Barlow, who has served the Rhode Island State College faithfully and loyally for more than thirty years, was granted the honorary degree of Doctor of Science by his alma mater, Middlebury College. The president of the college was the recipient of the honorary LL. D. from Northeastern University and the honorary Ed. D. from the Rhode Island College of Education.

The following teachers were added to the faculty for the year:

**Dr. Flaud Conroe Wooton** was appointed head of the Department of Education.

Dr. Wooton received his B. S. in education from the University of Oregon in 1925 and his M. A. in education in 1927. Stanford University granted him his Ph. D. in education in June, 1932. He has taught in elementary and high schools in both Indiana and Oregon; he has been instructor and special lecturer in education at the University of Oregon, and instructor in citizenship at Stanford University. Dr. Wooton became Director of Studies at the International School of Geneva, Switzerland, from 1928-30. Later he

conducted the Seminar in Adult Education at Stanford and became Chairman of the History Section of the Oregon State Teachers' Association. He was president of Phi Delta Kappa at both Oregon and Stanford, and is a member of Phi Beta Kappa.

**Dr. Irving Lester Churchill** was appointed assistant professor in English.

Dr. Churchill received his B. S. from Rhode Island State College in 1922. He taught mathematics at Whitinsville, Mass., and English at the University of New Hampshire and the University of Rochester. He was given his M. A. at Yale in 1927 and received his Ph. D. from Yale in June, 1932. During his college days at Rhode Island he was editor of the *Beacon*, editor of the senior year-book, and member of the glee club. He was adviser to the debating teams at Rochester.

**Mr. French Marion Hyre** was appointed to the position of Assistant Agricultural Economist on August 1, 1932.

Mr. Hyre was graduated from West Virginia University with a B. S. degree in agriculture in 1929. He worked a year as assistant county agricultural agent in West Virginia, resigning that position on July 1, 1930, to accept a temporary appointment with the Federal Farm Board to assist in carrying on a co-operative marketing survey. The survey was finished in July, 1931. He then entered Cornell, where he received his M. S. in 1932. Mr. Hyre is a member of Alpha Zeta (honorary agricultural fraternity).

**Miss Hope Jillson** was appointed instructor in English.

Miss Jillson received her degree of Ph. B. from Brown in 1924, and her A. M. in 1929. Last year she attended Brown on a special scholarship to do work in American literature, and at present she is working on the Harris Collection of American Poetry and Plays, preparing a biography of Maria Lowell for the second of a series of Brown University publications. She has been head of the English department of Kendall Hall, Prides Crossing, Mass., and an instructor in English at the Wheeler School for Girls at Providence. While a student at Pembroke she was president of the Komians, undergraduate chairman of the committee which raised the funds to build Alumnae Hall, vice-president of the Student Government, and re-

porter for the *Providence Journal* and *Evening Bulletin*. Miss Jillson is substituting for Mrs. Christopher who is on leave of absence.

**Miss Eunice Jenkins** was appointed instructor in home economics.

She received her B. S. from the Texas State College for Women in 1921. She has studied at the University of Texas, Austin College, Southern Methodist University, and has received her M. A. from George Peabody College. She is a candidate for Ph. D. from Columbia. Miss Jenkins taught in elementary school, was principal of a high school, was head of the clothing and textile department of Baylor College, and was associate professor of clothing at Oklahoma A. & M. She has participated in choral work, in basketball, in tennis, and in girls' baseball.

**Dr. Frank Leslie Howard** was appointed instructor in botany.

He received his B. S. from Oregon State College of Agriculture and his Ph. D. from University of Iowa. Dr. Howard studied at the University of California, was laboratory assistant at Oregon State, was research assistant in plant pathology at Cornell, and received the National Research Fellow in botany from Harvard University.

Dr. Howard has pursued excellent researches and has written many articles for publication. He presented five papers at meetings of the American Association for the Advancement of Science. He is a member of Sigma Xi, Alpha Zeta, Gamma Sigma Delta, Kappa Phi Delta, and Phi Kappa Phi. He belongs to the American Phytopathological Society, the Botanical Society of America, and the Iowa Academy of Science.

**Mr. Lester E. Erwin** was appointed instructor and research specialist in bacteriology and plant pathology.

He was graduated from the Kansas State College with a B. S. in agriculture. Mr. Erwin spent the years of 1927 to 1929 in graduate study at Iowa State College; he received the master of science degree in 1929. He was assistant professor of biology and track coach at Muskingum College, New Concord, Ohio, 1929-1931. He continued his graduate study in botany and bacteriology at Iowa State College in 1931-1932. During his college years Mr. Erwin



was a member of the track varsity. He was indoor and outdoor sprint champion of the Big Six Conference in 1923 and 1924, and was winner of the 100-yard dash at Drake Relays in 1923 and Kansas Relays 1923-24. He is a member of Scabbard and Blade and Kappa Sigma fraternities.

**Mr. J. Richard Jones** was appointed instructor in history and political science.

Mr. Jones matriculated at Whitman College in 1923. He took part in football and track there, and boxed for the Spokane Amateur Athletic Association. In 1924 he was runner up for the Pacific Northwest Amateur Middleweight Championship. In 1925 he transferred to the College of Puget Sound and in 1926 to the University of Idaho from which institution he was graduated in 1928. The following year Mr. Jones was appointed a teaching fellow at that University. He received his M. A. from there in 1929. He was elected to Phi Kappa Delta, honorary education society at the University of Washington. In 1930 he was appointed assistant instructor at the University of Pennsylvania where he continued his graduate work. Mr. Jones has completed the requirements for his Ph. D. with the exception of his thesis.

**Mr. Donald E. Stearns** was appointed instructor in mathematics and physical education.

Mr. Stearns received his B. S. from Alfred University in 1927. After receiving physical education credits from Cortland Normal during the summer he attended M. I. T. and received a B. S. in architectural engineering in 1930. He received his M. S. in civil engineering from Harvard, 1932. During his college years, Mr. Stearns was very prominent in activities—football, wrestling, glee club, college publications, etc. He taught mathematics and coached athletics at Canajoharie High School, New York, and he was Research Engineer for the Architectural Bureau of the National Council of the Y. M. C. A. for eight months.

**Mr. William J. Mowbray** was appointed instructor in electrical engineering.

Mr. Mowbray pursued night courses at Pratt Institute, at Brooklyn Polytechnic Institute during the time he was in charge of the test laboratory of the Brooklyn Edison Company, and at Brown.

He has invented various electrical measuring instruments now of wide application. Mr. Mowbray has been with the Edison Electric Illuminating Company of New York and with the Narragansett Electric Light Company of Providence. He has a wealth of theoretical and practical training which, together with his laboratory skill, makes him a very valuable man for the electrical engineering department.

**Mr. Nicholas N. Alexander** was appointed instructor in physics.

He was graduated from Michael Institute of Technology, Petrograd, with a degree equivalent to the American doctor of engineering. He was successively instructor in applied mathematics at the Naval Academy, Petrograd; consulting engineer of the Coast Artillery Division of the Russian Navy; assistant professor of applied mathematics at the Naval Artillery Officers Academy, Reval; chief of the Engineering Division, Coast Artillery, Russia. He has held positions as associate professor and professor of applied mechanics and consulting engineer, Paris, France; instructor in mechanical engineering, Mass. Institute of Technology. He came to Rhode Island from the Junior College of Connecticut.

**Mr. William D. Archibald** was appointed assistant in shop and mechanical engineering and instructor in swimming.

Mr. Archibald attended the Rhode Island State College for one year. He has been employed by the Warren Foundry Company, the Rhode Island Welding Company, Brown and Sharpe Manufacturing Company, Acme Foundry Company. During his employment with the Western Electric Company of Kearney, N. J., he instructed classes on the operation of mechanical and electrical testing equipment, he became engineering personnel executive and made up an Interviewers Textbook for supervisors, and he attained the rank of Department Chief.

Mr. Archibald holds the amateur New England Swimming Championship and for a period of ten years is a winner of many trophies for swimming in open competition throughout New England. He has instructed many classes in swimming.

**Mr. George Brown Nichols** was appointed part-time assistant in construction.

Mr. Nichols was graduated from Pratt Institute and pursued work in the Test Department of the General Electric Company, Schenectady. He was chief electrical draughtsman of the Building Bureau, Department of Education, New York City; office manager for five years for R. D. Kimball Company; chief engineer and Deputy State Architect for New York State for ten years. Among other positions he was consulting engineer and mechanical engineer in charge of awards and inspection of mechanical contracts for Harvard Business School.

**Dr. Margaret Merriman Parks** was appointed part-time instructor in chemistry.

She was graduated from Vassar College with the A. B. degree in 1925 and received the degree of M. A. from Columbia University in 1928. She was assistant in the Chemistry Department at Vassar College during the years 1925-1927, and held a Sutor Fellowship from Vassar College in 1928. Since 1927 she has been a graduate student in the Faculty of Pure Science at Columbia University. During 1928-1930 she was an assistant in chemistry in Columbia Extension. Mrs. Parks received her Ph. D. from Columbia in 1930. She is a member of Phi Beta Kappa and Sigma Xi.

**Mrs. Margaret Van Ingen** was appointed assistant librarian.

Mrs. Van Ingen took special work at Northwestern University for three years during which time she specialized in creative writing and short story courses. She worked on college papers, magazines, and year books, and edited the woman's edition of the college magazine. In 1912 she received her S. B. from Simmons College, and in 1913 she returned to Simmons College to assist in the library and the Library School. For three years she taught lettering and library handwriting, supervised practice work of students in the library, and revised student work for cataloging classes. She is a member of The American Library Association and a life member of the Chicago College Club.

**Mr. Harry Sumner McCready** was appointed visiting instructor in philosophy.

During the years 1897-1900, Mr. McCready was a special student at Brown University. He attended Newton Theological Institute and received the degree of B. D. in 1905. Mr. McCready has taken

graduate work in philosophy from Brown University through the University Extension courses, and pursued work in philosophy in 1932 at Harvard Summer School.

**Mrs. Lucy I. Rawlings** was appointed visiting instructor in education offering courses in dramatics.

Mrs. Rawlings attended the American Academy of Dramatic Arts in New York City and played on the stage for several years.

Only one resignation—that of **Ora Mae Luke**, instructor in home economics—was received by the college.

### Alumni

It is very gratifying to record a great revival of interest among the alumni of the college. Local associations have been organized in Providence, Newport, and Westerly, Connecticut, New York, and Pennsylvania, with nuclei in Boston, Schenectady, and Washington, D. C. The world-wide Rhode Island Night on May 4 met with universal favor.

The organization of the general association was recast somewhat to provide for certain changes. The two outstanding contributions made by the association during the year were the placing on the Board of Managers by legal enactment two members of the alumni body, and the re-establishment of the Board of Visitors composed of the executive committee of the general association and one representative from each local organization.

### The Library

The Board of Managers last year authorized an annual library charge of six dollars per student. With the amount of money accruing to the college from this source plus several thousand dollars from our current fund (not state appropriation) we have been able to change the situation in our library to such an extent that the library is an institution on the campus and is praised rather than criticized. Library service is available for faculty and students from 8 o'clock Monday morning to nine-thirty each day continuously throughout the week until Saturday noon. On Sunday evening the library is open for two hours. A trained library assistant has been added to the per-

manent personnel, and two student assistants are at the desks most of the time. Readjustments and changes have been made in the interior of the library itself, but no great development can take place within our present quarters. We are cramped for reading room space. Plans should be drawn up this coming year looking toward the construction of a real library building. Perhaps a combination administration building and library offers greatest possibilities for the Rhode Island State College.

Every institution and every library is confronted these days with the problem of theft. In spite of all precautions books have a way of disappearing. We have been able to minimize this by the erection of several safe-guards. The problem is with us, nevertheless, and is a constant drain on our financial resource.

About 2500 new volumes have been added during the year. These, in the main, have been in the fields of work that are handled by the college.

#### Health Service

Our Health Service during the year has been satisfactory. A grand total of 2394 cases were treated in the dispensary or the infirmary, which shows conclusively the great need for this service. We have been fortunate in that no epidemic has broken out among the students, and there have been few major cases of illness. During the first year of its existence the infirmary did not run a deficit and was enabled, therefore, to close the year's work—financially—satisfactorily. Two or three years will have passed before the Infirmary itself can with a fair degree of certainty be looked upon as self-supporting. We shall constantly keep in mind that improvement is the order for the Infirmary.

Eight beds are maintained and a trained nurse is on constant duty from nine o'clock in the morning until five o'clock in the afternoon. The doctor comes to the college every day at eleven o'clock and sees the students at the dispensary—or if the student is not able to come to the dispensary he calls on him at his rooming quarters. A tentative arrangement has been made with the South County Hospital whereby cases up to three per day are cared for. It seems more economical to send cases to the hospital than to attempt to hospitalize one,

two or three cases in our own Infirmary; after four cases are reached, however, it is more economical to keep them in our own Infirmary and hire an additional nurse. It is my opinion that the college is doing as much as it is morally obligated to do to care for the health of the students. The program in physical education is closely linked with our Health Service. The two working in harmony are beginning a program of health work that I predict will be worth watching.

#### Intra-mural and Minor Sports

The college has definitely set out on a program of enlarged physical education. Not only has there been a curriculum in physical education approved by the faculty, but also a program of exercise and recreation for all students has been approved. It is our feeling that exercise as recreation and sport is worth infinitely more than exercise merely to tone up the muscles. Three new thoroughly up-to-date concrete tennis courts were built last summer by the Department of Physical Education. This gives the college five tennis courts—a wholly inadequate number for our present student body but a great help, nevertheless.

The program calls for the development of intra-mural fields. Last summer that section of the campus between Edwards Hall and the President's house was graded, smoothed off a bit, and now is used by the girls for their hockey and other outdoor games. An intra-mural field is being developed between the President's house and the Alpha Epsilon Pi fraternity.

For a practice field in football it was necessary hurriedly to improvise a field in one of our rented pastures. While this is a makeshift, it was the only land available last fall. It is no easy matter to clear a field in the South County terrain. In the course of the next two or three years it is imperative that the college provide additional fields for athletics or fail to meet our full responsibility for the health of our students.

The professor-plus idea—that is, the individual who can teach an academic subject and at the same time coach some sport—appears to be working out satisfactorily. One of our young instructors in engineering is our coach in wrestling; another instructor in history and political science is likewise an instructor in boxing; an instructor in

shop is trained and thoroughly competent to teach swimming; the president's secretary is likewise instructor in girls' athletics, etc. Other instructors in academic fields assist in minor activities in physical education. There have been some critics of this plan, the main criticism being that a college teacher could not divide his time and render satisfaction in two fields. It seems to me that this very criticism calls attention to the glaring weakness in undergraduate teaching. The teachers themselves have become subject-matter specialists and have narrowed themselves to such an extent that all the world is made to revolve about their own field. If there is anything that will keep a teacher student-conscious it is an active association with students in their play-life on the campus. We shall at least attempt seriously to find instructors who have abilities that will enable them to make a contribution to a balanced program for the college.

The ideal of the college is recreation and games for all rather than games for a few favored ones. But this goal carries with it the unquestioned responsibility of the administration to support this program financially. Let no one mistake it; games for all cost more than games for the few.

#### Gifts, Prizes, and Scholarship

The major gifts to the college were a bronze plaque of President Edwards which has been located in the hallway leading to the auditorium—a presentation from Rho Iota Kappa; an Encyclopedia Britannica from Mr. William A. Needham; a beautiful American flag with standard from the Home Economics Committee of the State Grange; and \$400 in cash from the 1932 class and *Grist* staff for the purpose of building a walk toward the gymnasium.

The prizes consist of a loving cup given to the college by Zeta Pi Alpha, the local of the national organization now known as Sigma Alpha Epsilon, to be awarded annually to the fraternity having the highest scholastic average, and a medal and cash prize to approximate \$25 from the president of the college to that senior who shows the greatest relative gain in scholarship over a period of three years.

The most outstanding contribution to the college for the year, however, came as a legacy known as the Mary L. Robinson scholarship for girls, given by Anna D. Robinson, one-time resident of Wake-

field. The amount available to the college each year is the interest of a \$5000 trust fund. Because of the long time value of this gift the conditions are submitted herewith.

The Washington Trust Company of Westerly is directed (1) To pay the net income of said trust fund, annually, to the Board of Managers of the Rhode Island State College, located at Kingston, in the Town of South Kingstown, in said County of Washington. (2) Said Board of Managers shall use said net income, so paid over to them, as a Scholarship Fund for a worthy and needy girl student or students of said college, such student or students to be selected by the Board of Managers of the College, from year to year.

#### A Few Pressing Needs of the College

There are many things that the college could make good use of in its educational program for the youth of Rhode Island. The President of the college realizes that in this period only those things that are imperative should be requested. He is trying to adjust the program not to the needs but to the ability of the Board to supply the sinews of college education.

The greatest need of the college is land. It is a rather unusual situation that an institution which has as one of its major functions agriculture and the improvement thereof, is actually renting more land than it owns. This rented land lies at our very front and rear doors. We are hemmed in on all sides. The college cannot expand in accordance with its original purposes with a condition like this. If the President were allowed to make only one request it would be this: give us more land. With the land we now rent, the permanent property of the college, a forward program can be carried on.

Next is that of increased personnel. The teachers at Rhode Island State College are still carrying more than a normal load. This is true of chemistry, education, engineering, English, and physical education.

Another need which is developing rather pointedly is what might be grouped under the general term of the Water-Power-Sewage problem. It is becoming increasingly apparent that the wells on the plains cannot be counted upon as permanent sources of water. In cooperation with the State Board of Health a study of the sources of water supply in the vicinity of the college has been made. A report from

the Board indicates that our 30-acre pond promises to be the best permanent supply. This necessitates the building of a filter plant. But the water is an excellent test, and all in all, probably should be utilized within a very few years for our water supply.

Studies by our engineering school for the purpose of increasing the efficiency of our power plant operation indicate that a rather extensive addition will have to be made within the next year or two unless the college is willing to face a possibility of a complete shut-down of its source of heat. The dean of engineering is making a thorough study of the power situation, the results of which will be submitted to the Board later.

The problem of sewage disposal is not only a college problem, but also a village problem. The swamp immediately north of the college, unless there is misinformation abroad, is pretty largely a drain for the various septic tanks and cess pools of the village. The college fraternities immediately along the west side of this swamp are connected with the college sewer and all of their sewage is carried to our own disposal plant. Consequently the college is not an offender on this score. The fraternity buildings, however, on the other side of the campus have septic tanks. They are unsatisfactory. It is my opinion that septic tanks for fraternities are permanently unsatisfactory in the type of soil found on the Rhode Island State College campus. At times, when this campus becomes water logged, a stench arises from these tanks which is nauseating, and cries to heaven for correction. A survey will probably indicate that a larger sewage disposal plant is necessary, and that all dormitories and residences on the west slope of the college grounds be connected by sewers.

Respectfully submitted,

RAYMOND G. BRESSLER,  
President.

January 10, 1933.

TABLE NO. 1

## Report of the Registrar

## Attendance

Showing attendance by Classes during years 1928-1933

CLASS	1928-29	1929-30	1930-31	1931-32	1932-33
Graduate .....	2	1	2	7	21
Senior .....	96	98	97	127	121
Junior .....	120	110	152	147	165
Sophomore .....	130	201	162	184	239
Freshman .....	252	206	217	319	366
Irregular .....	7	6	15	13	11
Total.....	607	622	645	797	923

TABLE NO. 2

Showing Number of Men and Women and of New and Previous Matriculates, by Classes for Collegiate Year 1932-1933

CLASS	Sex		Date of Matriculation	
	Men	Women	Previous to 1932	1932
Graduate .....	19	2	18	3
Senior .....	79	42	121	0
Junior .....	132	33	164	1
Sophomore .....	190	49	235	4
Freshman .....	270	96	17	349
Irregular .....	4	7	2	9
	694	229	557	366

TABLE NO. 3

Showing Distribution of Undergraduates in the Various Courses during 1932-1933

CLASS	Agri.		Engineering					Sci.		Home Ec.	Bus. Ad.		Phy. Ed.	Total
	M.	W.	Civil	Chem.	Elec.	Mech.	Total	M.	W.	W.	M.	W.	M.	
			M.	M.	M.	M. & W.								
Senior .....	3	1	11	12	6	16	45	20	8	29	11	4	0	121
Junior .....	2	0	19	10	18	28	74	29	8	22	26	3	0	165
Sophomore ..	6	0	20	14	28	21	84	53	8	27	49	13	0	239
Freshman ..	31	1	.....	.....	.....	.....	91	75	29	49	62	17	11	366
Irregular ...	1	.....	.....	.....	.....	.....	2	1	6	1	.....	.....	.....	11
	43	2	50	36	52	65	296	178	59	128	148	37	11	902

Home Residence of Students Enrolled in Four-Year Courses

A. Resident outside of the State:

China:		Massachusetts:	
Shanghai .....	1	Agawam .....	1
	—	Attleboro .....	4
	1	Brockton .....	6
Connecticut:		Chicopee .....	5
Groton .....	1	Dorchester .....	1
Mystic .....	1	Fall River .....	11
Naugatuck .....	1	Fitchburg .....	1
New Haven .....	1	Foxboro .....	1
New London .....	1	Gardner .....	2
Old Saybrook .....	4	Holyoke .....	1
Poquonock Bridge .....	2	Hopkinton .....	1
Stonington .....	5	Lancaster .....	1
	—	Marlboro .....	1
	16	Mattapan .....	1
Illinois:		Melrose .....	1
Chicago .....	1	Middleboro .....	2
	—	Needham .....	1
	1	New Bedford .....	2

Massachusetts (Continued):

North Attleboro .....	4
Palmer .....	1
Plainville .....	1
Provincetown .....	2
Rehoboth .....	1
Revere .....	2
Roxbury .....	1
Seekonk .....	1
Springfield .....	2
Southbridge .....	1
Taunton .....	4
Templeton .....	1
Watertown .....	2
Webster .....	1
Willimansett .....	2
Worcester .....	2

New Jersey:

Farmingdale .....	1
Garfield .....	2
Hamburg .....	1
Hawthorne .....	1
Roselle Park .....	2

New York:

Amsterdam .....	1
Long Island City .....	1
Morris .....	1
Seneca Falls .....	1

Pennsylvania:

Childs .....	1
Hazleton .....	1
Pittston .....	1
Wilkes-Barre .....	1

Maine:

North Waterford .....	2
Portland .....	1
South Portland .....	1

Spain:

Barcelona .....	1
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B. Resident in Rhode Island by Counties and Towns:

Bristol:		Newport .....	63
Barrington .....	3	New Shoreham .....	2
Bristol .....	10	Portsmouth .....	3
Warren .....	10		—
	23		75
Kent:		Providence:	
Coventry .....	6	Burrillville .....	6
East Greenwich .....	18	Central Falls .....	11
Warwick .....	21	Cranston .....	77
West Warwick .....	9	Cumberland .....	5
	54	East Providence .....	38
Newport:		Johnston .....	1
Jamestown .....	6	Lincoln .....	9
Little Compton .....	1	North Providence .....	10
		Pawtucket .....	45
		Providence .....	266

Providence County (Continued):	Narragansett .....	4
Smithfield .....	North Kingstown .....	11
Woonsocket .....	Richmond .....	11
	South Kingstown .....	40
	Westerly .....	57
		<hr/>
Washington:		
Hopkinton .....		127
Total Attendance from within the State.....		782
Total Attendance from outside the State.....		109

**Preparatory Schools Represented in Freshman Class**

In Rhode Island:	Woonsocket:	
Bristol:	High .....	10
Colt Memorial High .....	St. Claire Academy.....	1
Burrillville High .....		<hr/>
Central Falls .....		294
Cranston High .....	In California:	
Cumberland High .....	Palo Alto High.....	1
East Greenwich Academy.....	In Connecticut:	
East Providence:	Groton—Poquonock Bridge ...	2
East Providence High.....	New London—Bulkeley High..	2
St. Mary's Seminary.....	Saybrook—Old Saybrook High	1
Newport:	Stonington High .....	1
DeLa Salle Academy.....	Suffield High .....	1
Rogers High .....	In Illinois:	
North Kingstown High.....	Chicago—Hyde Park High....	1
Pawtucket:	In Indiana:	
Sr. High .....	Grabill—Leo High .....	1
Sacred Heart .....	In Maine:	
Providence:	Bucksport—Bucksport Seminary	1
Classical High .....	Pittsfield—Maine Central Insti-	1
Commercial High .....	tute .....	1
Hope Street High.....	Portland High .....	1
La Salle Academy.....	South Portland High.....	1
Lincoln School .....	In Maryland:	
Sacred Heart Academy.....	Baltimore Polytechnic Institute	1
St. Mary's Seminary.....	In Massachusetts:	
St. Xavier's Academy.....	Agawam High .....	1
Technical High .....	Ashburnham—Cushing Academy	1
South Kingstown High.....	Boston—English High .....	1
Warren High .....	Brockton High .....	1
Warwick High .....	Dorchester High .....	1
Westerly High .....	Fall River—B. M. C. Durfee	
West Warwick .....	High .....	4

Fitchburg—St. Bernard's High	1	In New Jersey:	
Franklin—Dean Academy .....	3	Newton High .....	1
Holyoke High .....	1	In New York:	
Marlboro High .....	1	Amsterdam High .....	1
Mt. Hermon .....	1	New York City—Bryant High.	1
North Attleboro High.....	1	In Pennsylvania:	
Taunton High .....	1	Wilkes-Barre High .....	1
Worcester—Classical High ....	1	In Vermont:	
In New Hampshire:		Fairfax—Bellows Free Acad-	
Andover—Proctor Academy ...	1	emy .....	1
Marlboro High .....	1	St. Johnsbury Academy.....	1
Plymouth—Holderness High ..	1		

Total number of students received from high school.....	337
Total number of students re-classified and repeating work.....	21
Total number of students transferred from other colleges.....	8
	<hr/>
Total number of students classified as Freshmen.....	366

Average age of men and women, Oct. 1, 1932.....18 years, 10 months, 24 days  
 Age of oldest member of class, Oct. 1, 1932.....26 years, 25 days  
 Age of youngest member of class, Oct., 1932.....15 years, 1 month, 22 days

## REPORT OF THE TREASURER

R. S. BURLINGAME, *Treasurer, in account with the different funds of Rhode Island State College for year ended June 30, 1932*

## EXPENDITURES JULY 1, 1931, TO JUNE 30, 1932

	State	Current	Morrill 1890	Morrill 1862	Trust	Capper Ketcham	Smith Lever	Totals
Salaries . . . . .	\$108,534.53	\$261.00	\$50,000.00	\$5,389.67	\$3,408.32	\$19,160.09	\$9,416.47	\$196,170.08
Labor . . . . .	40,380.47	10,448.50			14,982.44		11.85	65,823.26
Special Services . . . . .	685.00	479.65			11.00			1,175.65
Postage . . . . .		1,182.93					205.52	1,388.45
Telephone and Telegraph . . . . .		1,552.53						1,552.53
Office Supplies . . . . .		1,288.25			31.80		1,146.10	2,466.15
Subscriptions . . . . .		682.61						682.61
Other Office Expense . . . . .		8.86						8.86
Printing and Binding . . . . .		1,806.09				241.25	102.37	2,149.71
Advertising . . . . .		226.59						226.59
Traveling . . . . .		3,495.59			687.48	138.56	2,419.74	6,741.37
Food . . . . .					35,093.08			35,093.08
Forage . . . . .		4,776.95						4,776.95
Fuel . . . . .	22,000.00	2,379.41			665.64			25,045.05
Light, Heat, Power, etc. . . . .		6,361.84			22.38			6,384.22
Motor Vehicle Expense . . . . .		1,892.15						1,892.15
Medical and Surgical . . . . .		491.38						491.38
Laundry Cleaning and Sanitary . . . . .		2,000.82			1,345.05			3,345.87
Educational Supplies . . . . .	4,500.00	4,256.82						8,756.82
Recreational Expense . . . . .		2,524.05						2,524.05
Agricultural and Botanical . . . . .		2,151.83						2,151.83
Miscellaneous Supplies and Expense . . . . .		4,199.83			22,523.81		155.14	26,878.78
Rental . . . . .	3,500.00	1,032.94						4,532.94
Freight and Express . . . . .		1,009.07			612.95			1,622.02
Refunds . . . . .		261.95			210.00			471.95

RHODE ISLAND STATE COLLEGE

	State	Current	Morrill 1890	Morrill 1862	Trust	Capper Ketcham	Smith Lever	Totals
Uncollectible Accounts . . . . .		132.05			79.85			211.90
Transferred to Trust Fund . . . . .		1,667.50						1,667.50
Repair Labor . . . . .	7,128.06	229.63			339.07			7,696.76
Repair Materials . . . . .	10,819.33	1,653.02			1,477.13			13,949.48
Repair Contracts . . . . .	1,808.00							1,808.00
Replacements . . . . .	244.61	113.37						357.98
Office Furniture and Equipment . . . . .	1,671.25	519.66			52.50	910.21	537.68	3,691.30
Household Furniture and Equipment . . . . .	107.82	1,962.48			239.60			2,309.90
Furnishings . . . . .		853.68			18.41			872.09
Medical and Laboratory Equipment . . . . .	244.45	405.37						649.82
Livestock . . . . .		1,400.00						1,400.00
Agricultural and Farm Equipment . . . . .	550.90	804.87						1,355.77
Educational Equipment . . . . .	3,033.80	2,138.75						5,172.55
Library (Books) Equipment . . . . .	462.87	1,849.56					40.54	2,352.97
Scientific Equipment . . . . .							27.29	27.29
Classroom Equipment . . . . .	1,029.70	151.20						1,180.90
Other Equipment . . . . .	399.21	238.00			3,480.77		19.44	4,137.42
Construction . . . . .		2,266.86						2,266.86
Permanent Improvements . . . . .	9,500.00	2,187.39						11,687.39
Construction New Building . . . . .	20,000.00							20,000.00
President's House . . . . .	\$20,000.00							
Total (State Maintenance) . . . . .	\$216,600.00	\$73,345.03	\$50,000.00	\$5,389.67	\$85,281.28	\$20,450.11	\$14,082.14	\$485,148.23

REPORT OF THE TREASURER



RECEIPTS JULY 1, 1931, TO JUNE 30, 1932

	State	Current	Morrill 1890	Morrill 1862	Trust	Capper Ketcham	Smith Lever	Reserve	Totals
Balance brought forward.....		\$9,010.49		\$2,654.67	\$7,730.81			\$4,000.00	\$23,395.97
Federal Appropriation .....			\$50,000.00			\$20,481.84	\$15,489.17		85,971.01
Interest for year.....				2,735.00					2,735.00
State Appropriation .....	\$216,600.00								236,600.00
(President's House) .....	20,000.00								
Dormitory Fees .....		10,389.77							10,389.77
Department Fees .....		2,828.38							2,828.38
Department Service .....		1,133.42							1,133.42
Department Sales .....		29,584.73							29,584.73
Interest.....		1,768.92							1,768.92
Tuition.....		6,250.00							6,250.00
Medical Fees .....		4,536.00							4,536.00
Scholarships.....		27.00							27.00
Incidentals.....		7,540.00							7,540.00
Laboratory Sales .....		4,732.87							4,732.87
Refunds.....		48.12			479.89				528.01
Boarding.....					53,115.13				53,115.13
Bookstore.....					18,074.05				18,074.05
Military Sales .....					4,510.65				4,510.65
Furniture Sales .....					1,162.50				1,162.50
Herd Testing .....					1,638.59				1,638.59
Poultry Testing .....					1,416.95				1,416.95
Transferred from Current Fund.....					1,667.50				1,667.50
(President's House) .....	\$20,000.00								
Total Receipts .....	\$216,600.00	\$77,849.70	\$50,000.00	\$5,389.67	\$89,796.07	\$20,481.84	\$15,489.17	\$4,000.00	\$499,606.45
(President's House) .....	20,000.00								
Total Expenditures .....	216,600.00	73,345.03	50,000.00	5,389.67	85,281.28	20,450.11	14,082.14		485,148.23
Balance on hand.....		\$4,504.67			\$4,514.79	\$31.73	\$1,407.03	\$4,000.00	\$14,458.22
Reverts to U. S. Treasury.....						31.73	1,407.03		1,438.76
Balance carried forward.....		\$4,504.67			\$4,514.79			\$4,000.00	\$13,019.46

AGRICULTURAL EXPERIMENT STATION

EXPENDITURES, JULY 1, 1931, to JUNE 30, 1932

	Hatch	Adams	Purnell	Miscell.	State Feeding Stuffs	State Fertilizer Control	Egg Laying Contest	Totals
Buildings and Land.....	\$630.55	\$164.09	\$2,153.30	\$1,400.07			\$302.71	\$4,650.72
Communication Service .....	109.61	11.50	344.34	47.91			98.55	611.91
Contingent Expenses .....				715.40		\$14.16	57.81	787.37
Feeding Stuffs .....	200.05	752.63	657.41	186.55			1,036.60	2,833.24
Fertilizers .....	99.65	185.51	488.21	1.20				774.57
Furniture .....	136.84		387.22	67.30			33.30	624.66
Heat, Light, etc.....	200.44	148.16	1,016.41	131.19	\$25.00		73.52	1,594.72
Labor .....	3,312.05	2,057.78	8,758.86	2,272.19			1,009.10	17,409.98
Library .....	237.97		347.00	36.26				621.23
Livestock .....	8.82	5.00	80.67					94.49
Publications .....	1,258.10		787.25	138.88	150.00	27.57	36.21	2,398.01
Salaries .....	6,522.01	11,216.43	40,986.72	308.34	1,000.00	3,702.50	1,469.24	65,205.24
Scientific Equipment .....	109.38	53.07	439.42			107.61		709.48
Scientific Supplies, Consumable.....	156.27	127.56	424.77	72.44	20.00	241.11		1,042.15
Stationery and Office Supplies.....	414.46	2.94	157.68	2.55	20.00		115.10	712.73
Sundry Supplies .....	770.08	117.85	766.01	191.99		34.29	158.36	2,038.58
Tools and Machinery.....	375.26	116.04	1,229.64	125.71		7.50	200.10	2,054.25
Transportation of things.....	165.21	20.29	159.48	68.95			6.33	420.26
Traveling .....	293.25	21.15	815.61	318.53	85.00	172.80	14.85	1,721.19
Total .....	\$15,000.00	\$15,000.00	\$60,000.00	\$6,085.46	\$1,300.00	\$4,307.54	\$4,611.78	\$106,304.78

AGRICULTURAL EXPERIMENT STATION  
TOTAL RECEIPTS, JULY 1, 1931, TO JUNE 30, 1932

	Hatch	Adams	Purnell	Miscell.	State Feeding Stuffs	State Fertilizer Control	Egg Laying Contest	Totals
Balance brought forward.....				\$196.82		\$20.07	\$88.83	\$305.72
Federal Appropriation .....	\$15,000.00	\$15,000.00	\$60,000.00					90,000.00
State Appropriation .....					\$1,300.00			1,300.00
Department Sales .....				5,578.55			3,463.72	9,042.27
Department Service .....				224.22				224.22
Department Fees .....						4,296.00	1,060.00	5,356.00
Interest .....				107.37				107.37
Rental .....				15.00				15.00
Refund .....				13.76				13.76
Miscellaneous .....				73.80			3.00	76.80
<b>Total Receipts .....</b>	<b>\$15,000.00</b>	<b>\$15,000.00</b>	<b>\$60,000.00</b>	<b>\$6,209.52</b>	<b>\$1,300.00</b>	<b>\$4,316.07</b>	<b>\$4,615.55</b>	<b>\$106,441.14</b>
<b>Total Expenditures .....</b>	<b>15,000.00</b>	<b>15,000.00</b>	<b>60,000.00</b>	<b>6,085.46</b>	<b>1,300.00</b>	<b>4,307.54</b>	<b>4,611.78</b>	<b>106,304.78</b>
Balance on hand and carried forward.....				\$124.06		\$8.53	\$3.77	\$136.36

I hereby certify that the above is correct and true, and truly represents the details of expenditures for the period and by the institution named.

R. S. BURLINGAME,  
Treasurer.

This is to certify that we, the undersigned, Auditing Committee of the Board of Managers of Rhode Island State College, have examined the accounts of R. S. Burlingame, Treasurer of said college, and find the same correct.

THOMAS G. MATHEWSON,  
CHARLES ESTES,  
Auditors.

**Summaries Dealing with Receipts and Expenditures  
For the Year Ending June 30, 1932**

Balance brought forward July 1, 1931.....	\$23,701.69
Total income during year.....	582,345.90
<hr/>	
Total.....	\$606,047.59
Total expenditures during year.....	591,453.01
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Balance on hand June 30, 1932.....	\$14,594.58
Unexpended balance reverting on Smith-Lever Fund... \$1,407.03	
Unexpended balance reverting on Capper-Ketcham Fund 31.73	
	<hr/>
	1,438.76
	<hr/>
Balance carried forward July 1, 1932.....	\$13,155.82

**INCOME**

Income from Students:	
Tuition fees .....	\$6,250.00
Matriculation and incidental fees.....	7,540.00
Dormitory fees .....	10,389.77
Medical fees .....	4,536.00
Dining halls .....	53,115.13
Store sales .....	18,074.05
Department fees .....	7,561.25
	<hr/>
	\$107,466.20
Income from State and Nation:	
State Maintenance .....	\$216,600.00
President's House (State).....	20,000.00
Morrill Act of 1890.....	50,000.00
Morrill Act of 1862.....	2,735.00
Hatch Act of 1887—Experiment Station.....	15,000.00
Adams Act of 1906—Experiment Station.....	15,000.00
Purnell Act of 1923—Experiment Station.....	60,000.00
Smith-Lever Act of 1914—Extension.....	15,489.17
Capper-Ketcham Act of 1928—Extension.....	20,481.84
	<hr/>
	\$415,306.01
Income from Other Sources:	
Department Sales and Service.....	\$39,446.84
Interest .....	1,768.92
Miscellaneous .....	2,222.51
	<hr/>
	\$43,438.27
Income from Experiment Station:	
Department Sales and Service.....	\$5,802.77
Interest .....	107.37
Miscellaneous .....	102.56
	<hr/>
	\$6,012.70

Income from Regulatory Funds:

State-Feeding Stuffs Inspection (Appropriation) ..	\$1,300.00	
State Fertilizer Control (Fees).....	4,296.00	
Egg Laying Contest, Fees and Sales.....	4,526.72	
	<hr/>	\$10,122.72

Total Income..... \$582,345.90

Receipts from Tuition:

Students taking course of one year or more.....	791
Students paying tuition (non-resident in Rhode Island) at the rate of \$50.00 per year.....	131
Amount of tuition paid.....	\$6,250.00

**EXPENDITURES**

Expenditures, exclusive of Experiment Station and Extension Service:

Agricultural and Botanical Supplies.....	\$2,151.83
Advertising in Publications.....	226.59
Construction .....	22,266.86
Equipment and Furniture.....	21,614.85
Forage and Veterinary Supplies.....	4,776.95
Freight and Express.....	1,622.02
Fuel .....	25,045.05
Laboratory Supplies .....	8,756.82
Labor .....	65,811.41
Light, Heat and Power.....	6,384.22
Motor Vehicle Expense.....	1,892.15
Office Supplies .....	1,320.05
Permanent Improvements .....	11,687.39
Postage .....	1,182.39
Printing .....	1,806.09
Provisions .....	35,093.08
Recreational .....	2,524.05
Refunds .....	471.95
Rental .....	4,532.94
Repairs and Replacements.....	23,812.22
Medical and Surgical.....	491.38
Salaries .....	167,593.52
Sanitary Supplies .....	3,345.87
Special Services .....	1,175.65
Subscriptions .....	682.61
Telephone and Telegraph.....	1,552.53
Traveling .....	4,183.07
Transferred from Current to Trust Fund.....	1,667.50
Uncollectible Accounts .....	211.90
Miscellaneous .....	26,732.50
	<hr/>
	\$450,615.98

Expenditures, Experiment Station .....	96,085.46
Expenditures, Extension Service .....	34,532.25
Expenditures, State Feeding, State Fertilizer and Egg-Laying...	10,219.32
	<u>\$591,453.01</u>

## ANALYSIS OF BALANCE, JULY 1

	1931	1932
Morrill Fund of 1890.....		
Morrill Fund of 1862.....	\$2,654.67	
Smith-Lever Fund—Extension Service.....		
Capper-Ketcham Fund—Extension Service.....		
Hatch Fund—Experiment Station.....		
Adams Fund—Experiment Station.....		
Purnell Fund—Experiment Station.....		
Miscellaneous—Experiment Station .....	196.82	\$124.06
State Feeding Stuffs.....		
State Fertilizer Control.....	20.07	8.53
State Egg-Laying Contest—Expt. Station.....		
Egg-Laying Contest .....	88.83	3.77
Current Fund .....	9,010.49	4,504.67
Trust Fund .....	7,730.81	4,514.79
Reserve Fund .....	4,000.00	4,000.00
	<u>\$23,701.69</u>	<u>\$13,155.82</u>

## STUDENT ACTIVITIES ACCOUNT

	Dr.	Cr.
By Balance brought forward from last year .....		\$2,844.62
Receipts during year:		
(a) Student Tax .....	\$14,990.00	
(b) Season Tickets .....	245.00	
(c) Interest .....	123.88	
		<u>15,358.88</u>
To Band .....	\$700.00	
Baseball .....	2,410.50	624.80
Basketball .....	2,825.07	1,256.26
Beacon .....	1,285.00	
Books .....	124.84	
Debating—Men .....	180.00	
Football .....	6,754.07	6,188.77
Glee Club—Men .....	140.52	10.00
Improvements .....	4,950.43	
Loans .....	18.00	361.00
Lectures .....	85.00	42.00

Orchestra .....	66.45	
Phi Kappa Phi.....	100.00	
Student Council .....	51.09	
Tax .....	3,530.21	124.59
Tennis .....	145.40	
Track .....	1,603.54	566.28
Wrestling .....	87.53	
Young Women's Ath. Assoc.....	459.60	47.60
Young Women's Christian Assoc.....	23.50	
Young Women's Debating.....	66.00	
Young Women's Glee Club.....	85.07	1.20
By cash on hand, August 31, 1932.....	1,734.18	
	<u>\$27,426.00</u>	<u>\$27,426.00</u>

## ALUMNI STUDENT LOAN FUND

	Dr.	Cr.
By amount of contribution to July 1, 1931.....		\$1,194.58
By amount of interest accrued to July 1, 1931.....		471.61
By amount of interest during 1931-1932.....		24.05
To Loans out, July 1, 1932.....	\$1,668.50	
Cash on hand.....	21.74	
	<u>\$1,690.24</u>	<u>\$1,690.24</u>

## CAMPUS CLOCK FUND

By gifts from Senior Classes, 1908-1919.....	\$226.41
By amount of interest accrued to July 1, 1931.....	263.02
	<u>\$489.43</u>

## FREDERICK ROY MARTIN STUDENT LOAN FUND

By amount of fund received June, 1925.....	\$150.00
By amount of interest accrued.....	32.42
	<u>\$182.42</u>
To loans out.....	179.50
	<u>\$2.92</u>

## SCHOLARSHIP AWARDS

Rhode Island State Grange.....	\$100.00
To Harry Reynolds Lewis, Jr., in Agriculture.....	50.00
To Catherine Ellen Regan in Home Economics.....	50.00
Rhode Island State Federation Women's Clubs.....	150.00
To Mary Ellen Clancy.....	50.00
Marjorie Barrows Preston.....	50.00
Virginia Burns Beard.....	50.00

Triangle Club of Kingston.....		50.00	
To Lynette Juanita Goggin.....	50.00		
Pawtucket Women's Club.....		50.00	
To Helen Mae Taggart.....	50.00		
Women's Student Government.....		25.00	
To Kathleen Ince .....	25.00		
Chi Omega Economics Prize.....		25.00	
To Marion Franklin Coggeshall.....	25.00		
Polygon Award .....		25.00	
To Joseph Gordon .....	25.00		
Edgewood's Woman's Club.....		50.00	
To Ethel Sara Johnston.....	50.00		
Hood Scholarship in Agriculture.....		200.00	
To Stanley Vaughn Madison			
Payable in 1932-1933			
First Semester .....	\$100.00		
Second Semester .....	100.00		
		200.00	
International Harvester Co.—Anniversary Award.....		1,000.00	
4 H Club Member			
To Virginia Bright McLaughlin			
Payable in 1932-33.....	\$400.00		
1933-34.....	100.00		
		500.00	
To Roland Marion Bishop			
Payable in 1932-33.....	\$400.00		
1933-34.....	100.00		
		500.00	
		<u>\$1,675.00</u>	<u>\$1,675.00</u>

## FORTY-FIFTH ANNUAL REPORT OF THE DIRECTOR OF THE AGRICULTURAL EXPERIMENT STATION\*

PRESIDENT R. G. BRESSLER,

*Rhode Island State College.*

Dear Sir:

I have the honor to submit to you the Forty-Fifth Annual Report of the Rhode Island Agricultural Experiment Station.

During the past year few changes have taken place in connection with the buildings and lands operated by the Experiment Station. Certain office space has been created in the poultry research hospital, and a new laboratory fitted up in cooperation with the School of Agriculture to take care of the B. W. D. routine testing work and to give additional research facilities. Land clearing has continued for the growing of small fruit on the East Farm. In Taft Laboratory one large room has been divided into offices thus taking care of some of the existing congestion in office space.

An outstanding development of the year has been the inclusion of Purnell project No. 24 entitled, "An intensive study of most economical and effective utilization of certain Rhode Island soil types," in the program of research work of the station. At present this study is being limited to Washington County. It consists of the cooperative efforts of the economist, agronomist, chemist, and physiologist, all aimed towards the gathering of a mass of facts which will give ground for prediction as to the most effective uses of the agricultural and other lands of our state. During the short time which this project has been operative we have had the cooperation of the United States Department of Agriculture Soil Survey and an up-to-date soils map of Washington County is being compiled. A land-cover map showing present vegetation has been begun and a farm management survey of the county is under way. Aerial photographs have been found to be of great use in all the phases of this work and it is much regretted that a complete aerial survey of the state is not available. In this connection our gratitude should be expressed to the members of the Rhode Island State Board of Public Roads for the privilege of using such aerial photographs as they have in their possession.

\* Contribution No. 435. In Bulletin of Rhode Island State College, Vol. XXVIII, February, 1933.

Through good cooperation with the Extension Service the results of our research work have continued to reach the public. This seems to be accomplished most effectively through the market-garden notes, radio talks, and other publicity prepared by members of the staff. A third annual field day for greenkeepers and those interested in lawns was held with most satisfactory results as regards attendance and intelligent interest. The appreciative response from those interested in grass culture would seem to warrant continued efforts on the part of our staff in connection with research problems on turf culture. As a result of this opinion Purnell project No. 32 entitled, "A study of the response of certain lawn and fine turf grasses to fertilizer nutrients when closely clipped," was begun during the year.

A reorganization has been effected in the poultry research work of the station. The Department of Animal Breeding and Pathology has been discontinued and in its place the Department of Poultry Husbandry has been substituted. For years the need of work on plant diseases has been apparent. Due to the above reorganization, work in research bacteriology was discontinued and the services of L. E. Erwin, plant pathologist, have been secured. One half of his time will be devoted to research problems in plant diseases.

Appreciating the many problems of farm economics and especially the need for increased efforts in the solving of marketing problems in Rhode Island, it was deemed wise to strengthen the work in agricultural economics. Accordingly French M. Hyre was engaged as assistant agricultural economist. He will devote his entire time and efforts to aiding in the solution of local problems of farm economics.

### RESEARCH WORK

The more important lines of work to which members of the research staff have given attention during 1932 are discussed. Where possible, reports of progress and results of research are given. Many of the latter, however, can be regarded only as trends or impressions until established by further experimentation.

#### Agricultural Economics

*Studies in Connection with the Providence Milk Supply.* Bulletin No. 237 entitled, "A study of the milk and cream supply of Greater Providence, 1929-1931," has been published. This study was made

by J. G. Fielding as part of the requirements for a Master's degree at Rhode Island State College. In the following table is shown the quantities of milk coming into Greater Providence from different states during the 3-year period.

#### *Milk Supply of Greater Providence by States of Origin, 1929-1931*

(In thousand quarts, *i. e.*, 000 omitted)

State	1929	1930	1931	Percentage change 1929-1931
Rhode Island .....	28,727	30,876	26,935	-6.24
Connecticut .....	9,535	10,582	9,727	2.01
Massachusetts .....	7,942	8,994	9,088	14.43
Vermont .....	6,518	8,050	13,737	110.76
New Hampshire .....	0	2	240	—
Maine .....	694	0	0	-100.00
Total .....	53,416	58,504	59,727	11.82

During this period the Grade "A" supply was about 20 per cent of the total. Of this, more than one-half was Grade "A" Raw. The sales of Grade "A" Raw decreased somewhat relative to the sales of Grade "A" Pasteurized.

The sources of cream were becoming more and more distant. The supply from New England and New York decreased considerably, while Tennessee, Indiana, and Alabama showed increases.

*Grading Studies with Vegetables.* A study of the costs and returns from grading certain vegetables is nearing completion. In this study the returns from vegetables packed as the farmers have been accustomed to pack them were compared with the returns from vegetables packed according to exacting grade requirements. In the accompanying table are shown the results for 1930 and 1931 of packing hothouse tomatoes under both methods. In each year the average sales prices were slightly higher for the farmers' pack. The costs of handling the graded tomatoes were somewhat more, which increased the difference between the two methods of packing.

*Average Prices Received and Costs of Grading Hothouse  
Tomatoes in 5-Pound Cartons*

	1930		Farmers' pack	
		Sized, graded, labelled		
Average sales price.....	.....	\$ .707	.....	\$ .726
Costs: Labor .....	.....	\$.027	.....	\$.019
Labels, etc. ....	.....	.003	.....	.0
Total costs .....	.....	.030	.....	.019
Net price .....	.....	.677	.....	.707
	1931			
Average sales price.....	.....	\$ .674	.....	\$ .688
Costs: Labor .....	.....	\$.024	.....	.017
Labels, etc. ....	.....	.003	.....	.0
Total costs .....	.....	.027	.....	.017
Net price .....	.....	.647	.....	.671

In addition to hothouse tomatoes, field tomatoes, bunched beets, bunched carrots, cucumbers, and peppers were also packed under both methods and comparisons made. There was a relationship between the percentage of the crop which met the grade requirements and increased returns from grading. Contrary to the usually accepted opinion, the returns from grading were better when prices were relatively high or, in other words, when the market was not glutted. In general, the superior grading did not bring a higher return to the farmer when the additional costs of such grading were taken into consideration.

*Consumer Demand for Eggs.* A survey of the consumers' knowledge of, and preferences for, eggs was made in 1928 and the questions were repeated in the same sections of the City of Providence in 1932. Comparisons between the two periods show that a larger percentage of housewives' purchases were made from farmers and from chain stores in 1932, than in 1928. The quantity of eggs purchased at one time showed some increase. When asked if they purchased a less expensive egg for cooking purposes, fewer housewives reported that they did in 1932, than in 1928. This was due to buying less expensive eggs for all purposes, as the replies to a question on what was an economical price for fresh eggs were about 54 cents per dozen in 1928 and only 34 cents in 1932. There

was a large increase in the number of persons preferring their eggs in cartons.

*Costs of Producing Milk.* A study of the cost of producing milk on Rhode Island farms for the year beginning February 1st, 1932, was undertaken. The net cost on 73 farms for the first three months of this period (February, March, and April, 1932) averaged \$3.13 per 100 pounds or \$0.067 per quart. The gross cost was \$3.52 per 100 pounds, while the credit for manure produced and the net inventory increase was \$0.39 per 100 pounds. The estimate includes the cost of maintaining the herd bull.

In the 73 herds there were 1,358 cows and 64 bulls. Production averaged 1,704 pounds of milk per cow for the three months. This is 18.9 pounds or 8.8 quarts per cow per day.

Feed amounted to \$1.93 per 100 pounds and was 55 per cent of the gross cost. The average quantities of feed required per 100 pounds of milk were 77 pounds of corn silage; 6 pounds of beet pulp; 2 pounds of mangels and turnips; 99 pounds of hay; and 43 pounds of grain.

Man labor was 21 per cent of the gross cost. It required 2.5 hours for each 100 pounds of milk. At \$0.30 per hour the cost was \$0.75. Man labor per cow per day averaged 28 minutes.

Overhead costs for interest, taxes, depreciation, insurance, and repairs averaged \$0.34 per 100 pounds. The average investment per cow in the dairy enterprise was \$244. The investment in buildings was \$98 per cow; in dairy equipment \$13; in cows and bulls \$113; and in feed and other items \$20.

The net cost of replacements averaged \$0.29 per 100 pounds of milk. The net cost was obtained by subtracting the value of the cows and bulls sold, and of the calves born, from the value of the cows and bulls purchased, and of the heifers freshening for the first time.

Electricity, truck use, veterinary, bedding, and other minor costs averaged \$0.21 per 100 pounds.

*Dairy Herd Replacement Study.* The purpose of this study is to collect and analyze statistical data which will show the various methods of dairy herd replacements used by Rhode Island farmers

and the economic results obtained by each method. The sources of data will include Dairy Herd Improvement Association record books, figures compiled by the State Department of Agriculture, and a detailed farm survey. When the study is completed, it should be of material value in helping farmers of Rhode Island to select the method of making dairy herd replacements which is best suited to their conditions.

### Agronomy

#### (Experiments with field crops, market-garden crops, and grasses for lawns and golf courses)

The 1932 season, except for a dry spell during July, was favorable for nearly all crops grown in the experiments both from the standpoint of rainfall and temperature. There were no severe late frosts in the spring nor any early fall frosts that caused appreciable damage. In some cases exceptional yields were obtained, largely due to the favorable weather conditions at certain times during the growth of the crop.

*Soil Organic Matter.* The various experiments noted in previous reports in which green manures are substituted in whole or part for stable manure, were continued. Pepper varieties were grown on two plats where stable manure has been applied over a long period of years in comparison with commercial fertilizer and green manures. As in 1931, the peppers on the green manure-chemicals plat outyielded those on the manure-only plat. The plants on the manure-only plat did not start off as well as where the chemicals were applied. Subsequent growth was also much poorer.

The yields of the early crops of spinach, beets, tomatoes, and cabbage were increased where the amounts of manure-compost applied were increased from 8 to 16 and 24 or 32 tons per acre. Early lettuce and tomatoes did not respond consistently when applications above 16 tons were made.

The late or second crops of carrots, cauliflower, celery, and spinach responded but little to the residues from the highest manure-compost applications made to the early crops. Late beets yielded more where the early application was 24 tons than where it was 16 tons. Eight tons of stable manure with green manure gave yields

of early cabbage and late celery which were but little less than with 24 tons of manure. A like amount of fertilizer was used with both treatments. Early tomatoes did not yield as well with the low amount of stable manure.

*Fertilizer Requirements of Crops.* A third-year hay crop was cut on the plats used as checks on the fertilizer requirements of the different rotation plats. Where different levels of nitrogen were used the yields varied according to the amount of nitrogen applied. Where extra potash was used the legumes persisted much better than on the other plats and the yield was 50 per cent greater. Differences in the amount of phosphorus used did not affect the yield of hay to any appreciable extent. The yield of hay was decreased by 20 per cent when the amount of fertilizer used was decreased from 900 pounds per acre to 600 pounds. The yields were increased 20 per cent when the amount of fertilizer was increased to 1,200 pounds. The yields of hay on these three levels were 2.25, 2.83, and 3.29 tons per acre on the dry-matter basis.

When the standard application of about 1,500 pounds of fertilizer was increased 75 per cent, yields were increased but little, if any, with the exception of late spinach, late celery, and the early cuttings of cabbage. The other crops in this test were early tomatoes, early lettuce, and late beets. A further increase to 100 per cent gave an increase with beets only.

The applying of two-thirds of the nitrogen as two side-dressings and one-third before planting was compared again with putting on all previous to planting or setting the crop. This was tried with vegetables mentioned in the preceding paragraph. Results were all in favor of applying before planting excepting with late spinach. This yielded a little more where side-dressed.

Corn, potatoes, and cabbage were grown on the plats where different phosphorus carriers are compared. Rock phosphate again proved inferior to other carriers both on the basis of equal amounts of phosphorus per acre or on the equal cost basis. On the more acid plats it was relatively more effective than where the plats have been limed. This was especially true with potatoes. In this case the vines remained green for a considerably longer period where



the rock phosphate was used than with any of the other carriers. Basic slag is the most effective carrier for the acid plats when all crops are considered.

*Soil Amendments.* Manganese continues to show striking effectiveness on certain crops when grown on soil that has been heavily limed. This is especially true where no manure has been used. Spinach was a complete failure without manganese treatment on plats where different kinds of lime are compared. Potatoes and tomatoes showed no response to manganese under these same conditions this year. On the market-garden plats, where manure is used, the differences were not as noticeably in favor of manganese as they have been in some previous years.

Potatoes were increased in yield by 25 to 50 per cent where magnesium was added to the fertilizer on certain of the non-limed plats. Magnesium deficiency is increased by additional potash under these conditions. Corn also showed a marked stimulation from small applications of magnesium on these plats, but the apparent differences in growth were not reflected in increased yields to the extent that the potato yields were increased.

*Soil Acidity and Liming.* On a co-operative experiment with one of the local potato growers, high magnesium limes were the most effective on potatoes where the soil had become highly acid.

Excessive liming has produced a condition of manganese deficiency on certain plats, while lack of lime has produced a magnesium deficiency on other plats. In order to obtain the most efficient results from liming it is necessary to take into consideration the kind of lime used, the degree of soil acidity, the kind of crops grown, the soil magnesium, and the manganese availability.

*Crop Effects on Succeeding Crops.* Only minor differences in crop yields were in evidence this year on the 16 crops following four different crops two years previously. This was the second year of the various crops. These will be followed by four uniform crops over the entire area next year.

A uniform crop of mangels was grown in the experiment where different levels of nitrogen fertilization are used. The preceding crops were mangels, onions, rye, buckwheat, and redtop. The best

yield on all levels of nitrogen followed redtop and the lowest yield followed mangels in all cases.

*Seed Sources and Varieties.* In the potato seed-source test the northern-grown seed was much superior to home-grown seed. Potatoes were used that had been grown locally from one to four years. In a test of one year home-grown seed from differently fertilized plats, only minor differences in yield were evident.

Spanish Gold sweet corn was the leading variety in a test including the same seven varieties as grown in 1931. Golden Gem was the earliest but produced only a small yield. California Wonder was the leading pepper variety among the five compared.

Eureka ensilage corn produced the largest yield of silage per acre. Lancaster and West Branch Sweepstakes were next in order. Cornell 11 was the lowest yielder, but with the exception of Rhode Island Flint, it was the earliest to mature. Eureka had reached only the early milk stage when harvested. The yields of green material ranged from 13.7 to 23.0 tons per acre.

*Ornamental Shrubs.* Among approximately 60 different kinds of shrubs planted in 1928 where sulphate of ammonia is being compared with nitrate of soda, about 30 have shown preference for one or more of the treatments. Some others have changed from one preference to another during the test and the remainder have grown either well or poorly on all treatments alike. Examples of shrubs which have shown markedly better growth for the respective treatments are as follows: Heather, an acid soil; lilac, a limed soil; many of the evergreens, sulphate of ammonia; and Japanese barberry, nitrate of soda. Occasional differences in amount of bloom or autumn coloring of the foliage have been evident.

*Plant Breeding and Selection.* Several crosses were made between selfed strains of alfalfa. The season was very favorable for alfalfa seed production and selfed seed from nearly all strains was obtained. A number of segregating forms have been obtained by means of continual selfing.

Selfed seed was obtained from about 20 different strains of iceberg and butterhead types of head lettuce. Some of these selections

have been selfed for three years and are showing special characteristics.

About 40 different strains, varieties, and selections of eggplants are under test. Selfing is followed here also as a means of isolating strains. Several crosses were made this year. One of the crosses obtained from Japan seems promising from both yield and disease resistance standpoints.

*Pasture Improvement.* Different chemicals were used on plats laid out on a rough, brush-covered, hillside pasture for the purpose of testing their value for killing the brush. The chemical treatments were compared with various mechanical ways of eradicating the brush. Two special types of brush harrows proved the most effective and economical.

*Grass and Turf Experiments.* In connection with the seven lawn plats seeded in 1905, and never reseeded, there has been no sign of the turf thinning out. These and newer plats represent a comparison of sulphate of ammonia and nitrate of soda. In this test and another test of these carriers of nitrogen on Rhode Island (Colonial) bent at various pH levels, the sulphate of ammonia has been much superior during the warmer part of the season but during cool weather the nitrate plats have been better than the sulphate.

*Seed Production of Bent Grass.* Among 12 species and varieties of bent grass allowed to produce seed, the creeping bents have been the first to die out. The strains of velvet bent have differed greatly in the permanence of stand and yield of cleaned seed. Rhode Island and Oregon-grown Colonial bent strains have both been more permanent in stand and have yielded well during the four years the test has been under way.

During the same time it has been shown by another test that Rhode Island (Colonial) bent seed yields have been much the best where the fertilizer carried approximately 90 pounds per acre per season of nitrogen. This would require 1,500 pounds of a fertilizer analyzing six per cent nitrogen. Only slight differences have been found in yield of seed due to the varying ratios either of phosphoric acid or potash.

It has been found tentatively that varieties of bent grasses which are usually planted vegetatively will produce a similar turf when planted with seed.

### Chemistry

*Soil Nitrates and Vegetable Crops.* The project having to do with the optimum soil nitrate levels for vegetable crops was continued. Celery plants were set in cylinders containing seven inches of soil above a two-foot layer of sand, and the desired nitrate levels were maintained by bi-weekly analysis of the soil and replacement of nitrate losses by applications of nitrate of soda in solution. Sufficient superphosphate and sulphate of potash were added to make a 5-8-7 fertilizer when used with the greatest quantity of nitrogen that it was estimated would be required to maintain the higher levels. The growth season of celery was divided into three approximately equal periods and 21 different combinations of low (10 parts of nitrogen per million of soil), medium (25 p. p. m.) and high (50 p. p. m.) levels of soil nitrate nitrogen were compared on the basis of salable bunches of celery. The number of plants in each cylinder was the same as that grown on an equal area in the field.

The results of the first year in growing celery in cylinders show a correlation between the total seasonal application of nitrogen and celery yields. The best yields were obtained where the soil nitrate nitrogen levels were maintained at a high level throughout the season. Contrary to the previous beet results, the maintaining of a high level of nitrate nitrogen during the last period of growth with celery gave beneficial results.

*Soil Nitrate Levels and Certain Fractions of Nitrogen in Plant Juices.* To obtain a greater insight on the conditions of plant growth, the estimations of reducing sugars and sucrose were added to the determinations which have usually been made. Because the amount of sugars present are small it was necessary to adopt some new methods for these fractions. Four methods have been tried; three colorimetric and one volumetric. All methods appear to give consistent results for reducing sugars. Sucrose is determined by difference, first inverting by the use of invertase, and then estimat-

ing the total reducing sugars. All three colorimetric methods gave equal results, but those obtained by the volumetric method are usually high.

During the summer of 1932, beets were grown on one-thousandths acre areas with 10-25-50 p. p. m. nitrate levels in the soil. Analysis of the expressed juice gave results comparable to those of previous years. The nitrates in the leaf-juice followed the variations of the soil nitrates, while ammonia showed no such correlations. There appears to be a relationship between plant nitrates and carbohydrates. This relationship is different for reducing sugars and sucrose. Reducing sugars tend to be present in amounts directly opposite to nitrates, *i. e.* as nitrates decrease reducing sugars increase and *vice versa*. Sucrose appears to follow rather closely the variations of nitrates, sucrose increasing and decreasing along with the nitrates. Further work is, however, necessary to corroborate these results.

*The Readily Available Phosphate in the Soil.* Certain phases of the work already reported have been repeated and as a result some previous conclusions have been changed, but in general the results previously reported still hold.

Phosphorus dissolved from the soil by Truog's solution at a pH value of three correlates very well with crop yields from plats which have received applications of superphosphate, double superphosphate, and bone. From such plats as have received rock phosphate this solution indicates excessive amounts of readily available phosphoric acid.

It is apparent that applications of lime have the effect of increasing the solubility of soil phosphates on this solution, but the differences are not large. At the present time the effect of long continued applications of phosphate on the solubility of aluminum in Truog's solution is being studied. Since the pH value of this solution is considered to be about the same as that of the soil solution which bathes the root hair, and it is also slightly above the precipitating points of iron and aluminum phosphates, an opportunity is afforded for determining the quantities of aluminum present under somewhat normal conditions.

*Crop Measurements.* The purpose of this study is to show which of the three methods in use for measuring growing plants *in situ* gives the most accurate results. The plants were measured with an ordinary meter stick in the following manner: Method 1, height alone; method 2, width alone; method 3, height and width which was expected to give a representative area which would nullify the effect in either method 1 or 2 caused by a very tall and thin, or a very short and stocky plant.

A calculation of the probable error and per cent it is of the mean concerned for each group of measurements, shows in every case that method 3 is most inaccurate of all. In four cases out of seven, the method where width alone is used is the least accurate. In most cases no great difference is apparent between the method of height and that of width.

#### Home Economics

*The Rural Homemaker in Washington County, Frequency of Paid Work and its Effects Upon Her and Her Home.* In so far as possible personal visits have been made to every homemaker in Washington County who is carrying on work for financial gain, and data concerning her work and living conditions have been secured. The results from 624 usable records have already been recorded and tabulated. It has been found that 244, or 39 per cent, of this group carried on their work at home. This includes those who take in laundering, who do certain types of finishing for some of the neighboring mills (such as the making of garters for the elastic tape mills or cutting or ripping lace apart for the lace mills), and those selling cooked foods, or craft products, such as hand made rugs, quilts, etc. The women who accommodate tourists, as well as regular boarders, are also included in this group. Forty per cent reported full time employment at the time when they were visited. In normal financial conditions a larger number would have been in this group. Although 75 per cent have husbands and five per cent more have some male relative living with them, 56 per cent say that they are working solely for necessities. In some cases this is because of the fact that the man of the family is either incapacitated or unable to find work, but the remark was frequently made that one pair of hands

cannot now bring home enough to provide for a family. The most important of the other reasons given for earning by the homemaker were to help pay for the home, to provide conveniences and equipment, and to educate the children.

Some interesting correlations have already been found. For instance, the usual relationship between amount of education and the money earned holds good with the group studied. Less than two-thirds of the women could give definite figures for the amount earned annually because of the variableness of the amount of work or of their ability to sell products made for sale. In the group of 333 women who stated their earnings, it was found, however, that the average weekly income was \$17.79. Nearly all of those having the very low income are found in the 10 per cent who had less than a fourth grade education. The curve showing the income distribution of the 20 per cent of women having had an education equivalent to the fourth or fifth grade reaches its peak next above the lowest income group, and this correlation holds good for the 42 per cent with an eighth grade education, the 26 per cent who had one or more years of high school, and the two per cent who had been college students.

*Influence of Fertilizer Treatment on the Vitamin Content of Spinach.* This project, which has been carried on co-operatively with the chemistry and agronomy departments of this station and the Department of Biochemistry of the Pennsylvania State College, continues largely negative in results. The spinach, grown on Rhode Island experimental plats with variations in fertilizer, phosphorus, potassium, nitrogen, and manganese, which has been washed, dried, and packed under standardized conditions, has been tested for vitamin A content by feeding experimentally to rats. The only noteworthy positive result of these tests has been the evidence of a smaller amount of vitamin A in chlorotic spinach produced on the low manganese plats.

*Comparison of the Methods of Refrigeration in the Rural Home in Rhode Island.* Facts have been secured from 72 records, kept by families in different parts of the state, concerning the methods of keeping foods cool. These include five spring houses, one well, and

seven cellars, as well as refrigerators chilled by ice and kerosene and electric mechanical refrigerators. These are supplemented and compared with the results of laboratory experiments carried out on several different refrigerators of each type loaned by manufacturers or distributors. The laboratory tests were made to approximate home conditions by placing of a sample load of food in each and the removal and replacing of part of it three times a day. From the latter experiments it was found that the operation cost of the kerosene refrigerator was much less than of the ice at local ice prices, and also that of the other mechanical refrigerators. It averaged only two cents a day while the next in cost of operation was an electric refrigerator at  $11\frac{1}{4}$  cents per day at local electrical rates. The refrigerator showing the highest operation cost, was an iced one which averaged about  $19\frac{1}{2}$  cents. When the purchase cost is added to that of operation, however, the iced refrigerator would usually be found to cost the least over the period of years during which it could be used satisfactorily. In efficiency of temperature, both in degree and in evenness, the mechanical refrigerators had the advantage. Once again the kerosene operated refrigerator, after adjusting to prevent freezing the foods, showed greater speed in freezing the ice cubes, and the maintenance of a lower temperature.

*Food Habits of Rural Rhode Island Children.* It is planned to study the present use of milk, vegetables, and fruits as standard representative foods for an adequate diet by children in communities in several different parts of the state. Data secured from the schools concerning the childrens' absences for illness will be studied in relation to their food habits. Forms have been drawn-up for recording the availability of fruits, vegetables, and milk for each family and their cost, so that the practicability of the usually accepted standards may be determined.

### Plant Physiology

#### (Glasshouse Experiments)

*Winter Tomato Culture.* In August, 1932, Bulletin No. 236 entitled, "Relative efficiency of various organic supplements in the growth of greenhouse tomatoes," was published. This publication gives the results of three years of experimental work in the grow-

ing of Carter's Early Sunrise and Waltham Field Station forcing tomatoes with different sources of organic materials used as substitutes for horse stable manure. In all four crops, and with the two varieties, the better yields were obtained by the use of horse manure, cow manure, or Adco-treated oat straw. Peat and vegetable compost gave much lower yields. Attempts were also made to control the zones of soil nitrate nitrogen and thereby influence the growth of plants, but these failed due to the excessive liberation of nitrates from the large quantities of nitrogenous organic materials used.

The 1931-32 crop of Carter's Early Sunrise tomatoes was grown using three amounts of cow manure as the sources of organic matter. The zones of nitrate nitrogen were controlled with greater ease than before with the lower amounts of manure, and the best yields were obtained with a medium amount of manure and in the 10-20 p. p. m. zone of nitrate nitrogen

*Winter Gladiolus Culture.* The use of artificial light to lengthen the day was tested on a more elaborate scale. One entire greenhouse was fitted up with lights and screens arranged between the beds so that tests could be made on the effect of varying candle power as related to blooming of the various gladiolus varieties. From this preliminary test, lights with 100-candle power kept burning from 5 to 10 P. M. during October to January, gave as good results as those of higher power. As before noted the greatest increases in flower production were obtained with the large flowered varieties and in particular Los Angeles and Virginia.

*Availability of Certain Phosphatic Fertilizer.* As a continuation of the work in 1930-31 with ammoniated superphosphate, a cooperative experiment with the U. S. Department of Agriculture, Bureau of Chemistry and Soils, was established. This consisted in growing barley in triplicate pot cultures supplying the phosphorus in the form of various unusual chemical compounds prepared or secured by the Bureau of Chemistry and Soils. Two soils were used; Merrimac silt loam which has a known high fixing power for phosphorus and Warwick sand with a low fixing power for phosphorus. Various acidity levels were also established on these

two soils. In brief the first years results substantiate the previous experience (See Annual Report 1931) as to the value of ammoniated superphosphate as a phosphate and nitrogen carrier.

*Nutrient Needs of Grasses.* Red clover, timothy, redtop, and Rhode Island bent were grown in soil-sand mixtures in triplicate pot cultures. The soil was obtained from field plats of this station, the history of each of which is known, showing some distinct deficiency in one nutrient element. To each set of pots varying and increasing amounts of each of the three main fertilizer elements were added. The growth which each set of plants made was measured by dry-weight measurements at the end of the growth period. Each was harvested in the seed-forming stage. Since this is only the first trial of these grasses in soil cultures, the results cannot be taken as more than indicative. Clover responded to larger applications of potash; timothy, redtop, and Rhode Island bent to increased nitrogen applications; and red clover, timothy, and Rhode Island bent to larger quantities of phosphorus.

### Pomology

*Fertilizer Experiments With Grapes.* Two crops of grapes, which may be regarded as approximately normal and therefore as yielding results significant in answering the inquiry proposed in the experiment, have now been harvested from the plain plats.

While it is yet too early to draw definite conclusions, it would appear that grapes are responding somewhat similarly to the absence of potash as did red raspberries (Bulletin No. 229). Requirements of nitrogen and phosphoric acid appear also to be similarly indicated.

*Graftage Congeniality of Vinifera Grapes.* Attempting to profit by our experience of the previous year, when grafts were heeled in out of doors as soon as made, but failed to make good unions except when covered with a thick coating of hard wax, we planned to follow the European practice of placing grafts in a warm room where the temperature could be maintained uniformly at a relatively high degree favorable to the callousing of the graft union. The greenhouse seemed to offer the nearest available approach to the temperature requirements recommended, and grafts were therefore covered

with peat moss in boxes and set under the greenhouse benches. After about three weeks it became apparent that conditions were not right for the expected callousing, probably because of rather wide fluctuations in temperature and the somewhat lower average temperature than that found most effective by European workers. Relatively few grafts showed even slight callousing when transferred to the field, and the plants which started were weak and made little growth during the season.

*Blackberry Breeding Experiments.* Space for the growing of plants became available in the greenhouse during the winter and it was therefore possible to put additional emphasis on the greenhouse work. Forty-two plants were prepared in the fall by taking them out of the field and placing them in 10 and 12-inch pots. The pots were plunged in the ground in a sheltered place until the third week in January when they were taken into the greenhouse.

The plants grew well from the start, and pollination work was begun March 21st and continued up to June 10th. Early pollinations resulted in about the expected number of ripe fruits of fair size, but later operations were not so successful because many branches bearing pollinated clusters withered and died back with the advent of warm weather.

Efforts were also made to make crosses in the field. On most of the varieties which we planned to use, there were few flowers and it was difficult to obtain pollen at any time of day or any day during the blossoming period. The berries secured were few in number and abortive in development and size. The reason for this is difficult to determine unless it was due to the somewhat protracted period of dry weather which prevailed at the time of blossoming.

The plants have the thornless character of the dewberry and exhibit some of the robustness and erect growing habit of the thorny parent. It is hoped that flowers for backcrosses and matured fruit for examination as to size and quality may be secured another season.

*The Fertilization of Red Raspberries.* This experiment conducted in the south field on the East Farm is making fairly satisfactory progress, except for the severe washing of soil, resulting from ex-

ceptionally heavy rains this fall. Fertilization in accordance with the outline of the project was made last spring, and a small crop was harvested. It was not, however, regarded as a representative yield and records were not kept. The plants made good growth during the past summer although some of the plats, notably the check plats, are markedly less vigorous than others. A crop, significant in part, of results from different treatments, may be expected another season. But the records obtained will probably be affected to a considerable extent by the severe washing of the finer soil and plant nutrients from one plat to another and from the entire area to lower land by the excessively heavy rainfall of September and October of this year.

*Farm Woodlot on East Farm.* The farm woodlot areas planned for the south half of the center field were measured and staked off to provide nine one-fifth acre plats running east to west in three series of three plats each. A complete inventory of the stand was taken and, during the past spring, plats were planted as follows: Two to white pine alone; two to Norway pine alone; two were set to white and red pine in alternate rows, and one was planted to white and red pine with spaces for interplanting of Norway spruce; two were left to serve as checks and will be maintained as hardwood stands.

Some of the more specific questions to be studied in these plats relate to methods of converting a hardwood to a softwood stand; methods of maintenance of both types, including thinning, weeding, harvesting; relative cost of operation for the various types of planting; rapidity of growth in under-planted stock; relative effect of shade on red and white pine and Norway spruce; effect of shade on prevalence of disease and on insect activities, and the relative financial returns of hardwood and softwood stands over a period of years.

#### Poultry Husbandry (Experiments with poultry)

*Coccidiosis.* Various drugs and chemicals have been tried as a means of control of this infection. The materials that have been used are: tartar emetic, sodium bicarbonate, hexylresorcinol, di-

hydranol-resorcinol, iodine suspensoid, ferric chloride, iodine and milk (English method), proprietary medicine (two different brands), alpha-naphthol, beta-naphthol, and quinine sulphate. None of these preparations were found to be of any curative value against *Emeria tenella* infection.

Attempts were made to artificially establish an immunity or resistance to this species by the use of alcohol, ether, and water extracts of dried, finely-ground caeca of chicks that had died from *Emeria tenella* infection. Results from the use of this material were negative.

The ability of unsporulated oocysts to sporulate in various chemical agents was investigated. Of the chemicals used only beta-naphthol seemed to inhibit sporulation to some extent.

*Blackhead.* The study of the cause of blackhead has resulted in the isolation of a protozoon *Histomonas meleagridis* as the organism responsible for this disease (see Bulletin No. 233).

Many efforts have been made using drugs under controlled experiments, in an attempt to find some means of controlling the infection. The various therapeutics tried were iodine suspensoid, resorcinol, ethyl alcohol, proprietary medicine, turpentine, nicotine sulphate, diamine (hypodermic injections), alpha-naphthol, and beta-naphthol. All have proven valueless or of questionable value.

The clamping off of the caeca by means of aluminum clamps was tested as a means of control. This is an operation somewhat similar to caponizing. Three groups of turkeys operated on, at three weeks of age, resulted in a mortality of 20 birds out of 105 operated on. One group of 23 birds operated on at six weeks of age, but suffering from coccidiosis, resulted in 20 deaths out of 23 operated on. One group of 54 poults operated on at seven weeks of age resulted in a mortality of five birds from the operation. It is as yet too early to predict as to the effectiveness of this method as a means of control.

Serological tests were conducted this past year, using the precipitin method, but the findings were negative.

*Fowl Pox.* An experiment using a commercial fowl pox vaccine, prepared from pigeons, has been used to determine the degree of immunity conferred on chickens vaccinated at 6, 8, 10, 12, and 14

weeks of age. These birds were tested for immunity by using virulent fowl pox virus four months following vaccination. The results show that the birds failed to develop any great degree of immunity, as they were susceptible to both contact infection and artificial inoculation of virulent fowl pox virus. Birds were also vaccinated while in production and the results indicate that there is a decrease in production following the use of this vaccine. The use of pigeon pox vaccine cannot be recommended at present.

*An Unrecognized Respiratory Infection in Chickens and Pheasants.* During the past summer, a virulent form of a respiratory disease came to our attention, differing in clinical aspects from any similar infection heretofore described. Thus far, filtrates of the nasal exudates have failed to prevent the passing of the virus. Bacteriological findings have been negative so far as the isolation of bacteria and the reproduction of the disease is concerned. The investigation of this disease is continuing with the cooperation of the U. S. Department of Agriculture, Bureau of Animal Industry.

## OTHER ACTIVITIES

### Feed and Fertilizer Control Services

The usual routine feed and fertilizer inspections as required by law have been made during the year. Free copies of circulars describing the results of these inspections will be furnished upon request. There were 219 samples of feeds and 191 samples of fertilizers analyzed. The results indicate that in the great majority of cases the products found on sale in the state fully met the guaranties. Such findings should be sources of satisfaction to the users of these products.

### Egg-Laying Contest

The second Rhode Island State Egg-Laying Contest closed its 51st week on September 21, 1932, with an average record of 208.15 eggs and 214.51 points per bird. The fifty pens produced 104,090 eggs, representing a total of 107,254.90 points, giving a production for the contest year of 58.32 per cent.

The contest ranged second among the eighteen standard contests in the United States and had the largest egg size among these contests.

In addition, it contained the second highest S. C. Rhode Island Red pen, second highest S. C. White Leghorn pen, and highest pens in Barred Plymouth Rocks, Rose Comb Rhode Island Reds, Jersey White Giants, and Jersey Black Giants.

A Rhode Island Red hen established what is considered a new world's record on the standard point basis by scoring 354.05 points in the production of 342 eggs in 51 weeks. This bird was held over for a complete 365-day record, scoring 361.15 points.

A total of 8 birds laid over 300 eggs but more important was the fact that 14 birds scored over 300 points in the standard 51 weeks of the contest.

### Weather

The growing season of 1932 was generally favorable for nearly all crops grown. There were no severe late frosts in the spring nor any very early ones in the fall. The rainfall was below normal for the first four months of the growing season and above normal during the months of August, September, and October. The last frost in the spring occurred on April 28 with a temperature of 24° F\*. The first killing frost in the fall occurred on October 14 with a temperature of 22° F. Lettuce, celery, and cauliflower were damaged by this frost. There was a killing frost on May 23 over much of the state but the experimental fields escaped it.

During the latter part of June and early July there was an extended dry spell that hindered somewhat the development of crops. During September the rainfall was unusually high and an all-time record was established.

The following table shows the departure from normal in rainfall for the growing season:

Month	Normal Inches	1932 Inches	Departure Inches
April .....	4.71	1.90	-2.81
May .....	4.17	2.76	-1.41
June .....	3.33	2.40	-.93
July .....	3.47	2.81	-.66
August .....	4.31	5.40	+1.09
September .....	3.50	12.36	+8.86
October .....	4.18	7.82	+3.64

\* Climatological Data, New England Section, of the U. S. Department of Agriculture Weather Bureau.

### Publications

The relative effect of single and fractional applications of soluble nitrogen on nitrates in soil and plant and on the yields of certain vegetable crops. Jour. Amer. Soc. Agron. 24: 203-221.

Flower production from gladiolus corms harvested at different stages of ripening. Plant Physiol. 7: 309-314.

Report on high analysis fertilizer. Jour. Assoc. Off. Agr. Chem. 15: 272-277.

Etiological studies of blackhead (*entero-hepatitis*) in turkeys. R. I. Agr. Expt. Sta. Bul. 233, 15 p.

The effect of the lack of available manganese in the soil on crop yields. Jour. Amer. Soc. Agron. 24: 622-626.

Forty-fourth annual report of the station. Bul. of Rhode Island State College 27: 40-62.

Substituting fertilizers, green manure, and peat for stable manure in the growing of vegetables. R. I. Agr. Expt. Sta. Bul. 234, 53 p.

Fertilizer replacement tests with potatoes. Amer. Potato Jour. 9: 125-128.

Comparison of existing methods for the determination of ammonia nitrogen and their adaptability to plant juice. Plant Physiol. 7: 685-695.

Inspection of feeds. Annual Feed Circular, May, 1932, 12 p.

Crop yields and financial returns in a 5-year rotation of crops. R. I. Agr. Expt. Sta. Bul. 235, 16 p.

Relative efficiency of various organic supplements in the growth of greenhouse tomatoes. R. I. Agr. Expt. Sta. Bul. 236, 15 p.

A study of the milk and cream supply of Greater Providence, 1929-1931. R. I. Agr. Expt. Sta. Bul. 237, 40 p.

Inspection of fertilizer. Annual Fertilizer Circular, September, 1932, 17 p.

Influence of rye and oat straws upon the growth and yield of certain vegetables. Soil Sci. 35:115-122.

Respectfully submitted,

BASIL E. GILBERT,

Director.

Kingston, R. I.,  
January 1, 1933.



**RHODE ISLAND STATE COLLEGE  
REPORT OF  
THE EXTENSION SERVICE  
1932**

PRESIDENT RAYMOND G. BRESSLER,  
*Rhode Island State College,  
Kingston, Rhode Island.*

SIR:

As by law required I am presenting herewith the annual report of the Extension Service of the Rhode Island State College for the year 1932 as conducted in cooperation with the United States Department of Agriculture and the three Rhode Island farm bureaus. The report covers the principal activities for the thirty-first year of agricultural extension work in Rhode Island.

Owing to the economic condition of the country and its influence upon the income of the rural people of the State, the Extension Service has been called upon during the year to assist in the solving of more widely varying problems than ever before since its establishment. As a part of the National Extension Service, we are, by law, obligated to work in rural communities and with rural people. Owing, however, to the business depression we have this year assisted directly and indirectly many groups and agencies which ordinarily we would not be expected to serve.

As in years past the work is in the immediate charge of a Director who is serving as State Leader of County Agricultural Agents and Dean of Agriculture in the college. At present the staff consists of two full time State Leaders, one in charge of home demonstration work; the other, boys' and girls' club work; seven part time specialists, together with local agents, employed cooperatively with the farm bureaus, consisting of three agricultural workers, three home demonstration agents and three boys' and girls' club agents.

*Cooperation.*

At the request of the Chairman of the Rhode Island Agricultural Conference and the Local Dairymen's Cooperative Association, Incorporated, a study of the cost of milk production was undertaken jointly with the Experiment Station.

As in years past a series of evening schools were conducted in cooperation with the State Board of Vocational Education. This year fifty-six sessions were held with an enrollment of 541. These schools were conducted as dairy feeding schools, poultry schools and soils and crop management schools.

As in former years the State Department of Agriculture has assisted in the development of programs of work, especially in connection with the poultry industry.

The Director of the Experiment Station and his staff have cooperated in the preparation of circular letters and material for radio broadcast.

*Sources of Revenue.*

The income for the fiscal year ending June 30, 1932, as reported to the United States Department of Agriculture comprised the following items.

Federal Capper-Ketcham funds.....	\$20,481.84
Federal Smith-Lever funds.....	15,489.17
State Smith-Lever funds, Offset.....	1,680.24
United States Department of Agriculture funds allotted to Rhode Island and paid direct from Federal Treasury:	
County Agent Work.....	\$2,510.00
Home Demonstration Work.....	2,510.00
Boys' and Girls' Club Work.....	2,130.00
	\$7,150.00

The local farm bureaus receive \$6,500.00 from state funds on a matching basis. Practically all of the funds used in meeting the requirements of the law are appropriated by the towns, which appropriations, together with membership fees and a few donations constitute the income for the maintenance of the county workers' offices, including office supplies, clerical assistance and expense accounts.

*Equipment.*

The equipment for use by the agronomist in testing of soils has been increased in efficiency by the purchase of apparatus for the pH determination of soils. An old model addressograph has been re-

placed by an up-to-date machine, additions made to the filing equipment, and additional bookcases have been purchased.

#### *Personnel.*

The only changes in personnel for the fiscal year July 1, 1931, to June 30, 1932, were the addition of Dr. Roger B. Corbett and Dr. John L. Tennant as part time extension economists.

#### *Publications.*

Four bulletins and one circular have been published during the past year.

Bulletin No. 58, Annual Report of the Extension Service, 1931, G. E. Adams. April, 1932.

Bulletin No. 59, Rhode Island 4-H Clothing Clubs, prepared in cooperation with Ora M. Luke, Instructor in Clothing. April, 1932.

Bulletin No. 60, Rhode Island 4-H Clubs Health Rules and Records, L. F. Kinney, Jr. May, 1932.

Bulletin No. 61, Rhode Island 4-H Clubs Foods Program and Records, prepared in cooperation with Margaret Whittemore, Dean of Home Economics. June, 1932.

Circular No. 6, Program of Annual Farmers' Field Day, July 8, 1932.

The series of monthly mimeographed sheets have been continued as in previous years. During the year there has been added a monthly sheet entitled "Monthly Economic Letter," which is sent to a relatively small number of individuals. In addition to the general mailing list separate lists are maintained for the home economics workers, boys' and girls' clubs and market gardeners.

During the year the Extension Service has given broadcasts six days a week at 12:45 P. M. from Station WJAR, in Providence. These broadcasts have been given under the name of "Housekeepers' Chats" on Monday, Wednesday and Friday, and as "Farm Chats" Tuesday, Thursday and Saturday. The material used has been in part that furnished by the Radio Service of the United States Department of Agriculture and contributions by members of the college staff.

Total number of broadcasts, December 1, 1931, to November 30, 1932.....	281
Housekeepers' Chats .....	143
Farm Chats .....	138

The staff of the Experiment Station prepared the material for twenty-eight of the Farm Chats, presenting timely information in relation to the investigational work. All other local material was prepared by members of the extension staff.

In addition to the local broadcasts the Extension Service assisted with two national broadcasts of the Federal Extension Service.

#### *Agent Work Within the Counties.*

The following table summarizes the general activities of the nine agents who have been maintained in the counties during the past year:

Total number of farm visits.....	1,419
Number of different farms visited.....	1,050
Total number of home visits.....	1,563
Number of different homes visited.....	724
Number of calls relating to extension work:	
Office .....	1,894
Telephone .....	3,245
Number of days agents spent in office.....	1,099
Number of days agents spent in field.....	1,484
Number of news articles published.....	404
Number of individual letters written.....	7,877
Number of different circular letters prepared.....	492
Number of radio talks made.....	264
Meetings held .....	1,517
Number of 4-H Clubs.....	168
Number of different 4-H Club members enrolled:	
Boys .....	890
Girls .....	1,467
Number of different 4-H Club members completing:	
Boys .....	702
Girls .....	1,273

#### *County Agricultural Agents:*

The county agent work has during the past year stressed the following problems.

In dairy husbandry, development of strong dairy herd improvement associations and reduction in the cost of producing milk. The

latter problem has been approached as a joint project with the agronomy and animal husbandry specialists. Efforts have been made to reduce the feeding cost through the improvement of the quality of hay produced and fed on the farm and by lengthening the pasture season. During the year the amount of annual legume seed sown on Rhode Island farms has been more than one hundred per cent greater than in 1931.

In the pasture improvement work several carefully conducted demonstrations have shown that where a proper sod is selected, the application of fertilizer will frequently be paid for in the first month of the grazing season, leaving all of the increase in pasturage for the balance of the season and the residual effect of the fertilizer applications as profit.

The poultry problem, as in years past, has been one, to a very great extent, of health of the flock. A marked decrease in the percentage of reacting birds to the test for the pullorum disease has been seen since the development of the poultry flock improvement associations.

#### *Home Demonstration Work.*

With the reduced family income and the consequent necessity for practicing economy wherever possible the home economics workers have during the past year stressed the work in clothing and clothing renovation, the three agents having devoted 291 days and held 257 meetings in connection with this work. The next most important activity has been the work in foods and nutrition. In this work particular emphasis has been placed upon the use of more foods grown at home. An intensive home garden campaign was planned which resulted in the growing of a larger supply of vegetables for use on the table and to be canned for winter use than for many years. Two hundred six days were devoted to this project and 174 meetings held. Home management work was the third most important item in the home demonstration program, 193 days being devoted to this phase of the work. The local leader training schools and the establishment of local committees for assisting in determining the problems which should be included in the program of work have continued to prove their worth.

The fourth State Camp for Women was held at the College on July 5, 6, 7 and 8, with a total attendance of 932.

#### *Boys' and Girls' Club Work.*

The club work has continued to show improvement and the standards have been materially raised during the past year. For the first time all of the club agents have held county-wide adult leader training meetings, regular junior leader training meetings, older member conferences, county-wide achievement days and county-wide agricultural project meetings.

The past year the enrollment and preparation of local plans of work were completed much earlier than ever before. The progress in club work may be measured by the following points:

#### Progress in 4-H Club Work, December 1, 1932

	Before November 1	
	1931	1932
Prompt submission of plans of work, Written.....	33	77
Prompt reorganization and enrollment, Members.....	1,290	1,817
Number of project completions.....	3,086	3,387
Quality of Completions. Meeting Honor standards.....	561	1,508
Number of 4-H Clubs meeting Honor standards.....	45	88
Increase in older members. Number 16-20 years.....	168	302
Number of adult men leaders.....	27	38
Number of men assistant leaders.....	15	23
Number of adult women leaders.....	129	127
Number of women assistant leaders.....	36	92

Particularly gratifying has been the increase in older members and in the number of adult men and women leaders and assistant leaders.

#### *Agricultural Economics.*

Owing to limited funds the Extension Service is able to employ an economist on approximately a one-quarter time basis. With a limited amount of time available the work has during the past year been confined almost entirely to assisting in an advisory capacity the work of cooperative organizations. Much assistance has been rendered in connection with the marketing problems of the dairy and turkey industries and in assisting the market gardeners' association of the State in their efforts.

The most important work in connection with this project has been the study of the cost of milk production which was inaugurated February 1st in cooperation with the Experiment Station. From this study it was found that for the months of February, March and April, 1932, it cost seventy-three farmers 6.7c to produce a quart of milk.

#### *Agronomy.*

The agronomy project has particularly stressed this year the growing of larger acreages of high protein crops, using low lime requirement plants. As a result there has been an increase of more than one hundred per cent. in the amount of vetch and wheat seed sown for hay and pasturage in the State this past year.

The pasture improvement work has been stressed and the number of people doing pasture improvement work along either the lines of fertilization, cutting of brush or reseeding has been larger than in any year since the pasture improvement work was inaugurated.

Work conducted with potatoes has shown that frequently the yield was reduced owing to a lack of sufficient magnesium in the soil. In order that it might be determined whether this deficiency were a controlling factor in connection with potato growing in Rhode Island, tests were conducted in two of the farm bureau districts. In one case the yield, due to the addition of dolomitic limestone, was increased by sixty-three bushels per acre. In another case where magnesium sulphate and different grades of dolomitic limestone were used, the yield, per acre, was increased from 340 bushels on the check plot which received no magnesia but 2,000 pounds of 4-8-8 fertilizer, to a maximum yield of 458 bushels per acre when 500 pounds of magnesium limestone were added to the fertilizer application. In no case where magnesium sulphate or dolomitic limestone was used, was the increase in yield less than seventy-seven bushels of potatoes per acre.

#### *Animal Husbandry.*

Particular stress has been placed upon the necessity of adequate feeding of home grown protein for the most economical production of milk. Two dairy herd improvement associations have completed their second year's work. Twenty herds in Southern Rhode Island

had an average production of 6,606 pounds of milk testing 3.9 per cent fat. The feed cost of producing 100 pounds of milk was \$1.72. The average production of thirty-one herds in the Northern Rhode Island association was 8,110 pounds of milk testing 3.7 per cent butterfat. The total cost of feeding a cow in this association was \$139.00 with a feed cost of \$1.71 per hundred pounds of milk, the difference in feed cost being only 1¢ per hundred pounds between the two associations.

From reports received at this office better feeding practices have been adopted by 180 farmers during the past year, nearly ten per cent of the dairy farmers in the State.

#### *Fruit Growing.*

The most important work in connection with the fruit growing project this year has been the continued development of the spray service in which 117 growers were enrolled. The growers enrolled were advised as to the time of applying seven sprays for the control of insects and diseases. Notices were sent by mail and also broadcast over radio station WJAR of Providence. As a result of the spray service, eleven growers requested that fruit of one or more varieties be examined for eligibility to the 90% Clean Apple Club. Eight growers became eligible for membership in the club on account of having produced fruit of one or more varieties which showed less than ten per cent insect or disease injury.

As in previous years, by far the greatest amount of damage was caused by curculio, with the red bug being a close second as to the amount of damage caused.

Pruning and grafting demonstrations were conducted by the fruit specialist whenever requested.

#### *Poultry.*

Continued efforts are being made to reduce the loss caused by the pullorum disease in poultry. Progress is constantly being made along this line. During the past year several flocks were found free from the disease.

The Grow Healthy Chicks Campaign was modified by reducing the number of points in the program from eight to four. Those who followed the program in all details suffered, on the average, a

mortality loss from all causes in their chicks of only 4.8 per cent, while those who omitted the one point of obtaining eggs for incubation or young stock from tested flocks and used eggs or chicks from untested stock suffered a loss of 13.6 per cent.

In the home egg laying contest more accurate records have been kept than in former years. The number enrolled in the home egg laying contest at the beginning of the year was sixty-four, with sixty-three reporting monthly during the year. From a study of these reports it was found that on the average 7.5 pounds of feed were required to produce one dozen eggs.

#### *Vegetable Gardening.*

The work in vegetable gardening has consisted very largely in furnishing to commercial growers advice regarding the control of fungous diseases and insect pests in the garden, and in the development of planting plans for home vegetable gardens.

The home vegetable garden work has been conducted quite largely in cooperation with the home demonstration workers.

The most interesting part of the work in connection with vegetable growing has been the contacts made as chairman of the Subsistence Gardens Committee of the Governor's Conference on Employment and Relief. Although this committee was not appointed until April 22, yet it was able to assist in the development of a number of vegetable gardens for the unemployed of the State. The gardens may be grouped under four heads: (a) Home gardens, of which there were 173. As indicated by the name, these gardens were on the home grounds. Assistance given this group included the furnishing of lists of varieties, with cultural directions, and in many cases assisting in making contacts whereby they were enabled to obtain seed and fertilizer.

(b) Community gardens, ten in number, divided into 537 individual plats. The use of the land for these gardens was donated and all of the expenses in connection with the preparation of the land, purchase of fertilizer and seed were provided for by public donations or by the directors of public aid.

(c) Industrial gardens, five in number, divided into 399 plats. The cost of these gardens was borne by five of the manufacturing

companies of the State, who furnished the land and paid for all material necessary for the conduct of the garden. Plats in these gardens were available to employees or former employees of the firms maintaining the gardens.

(d) Municipal gardens, four in number. These gardens occupied relatively large areas and were cultivated as a part of the campaign for the aid of unemployment. Those working in the gardens were paid by the hour and the produce raised was distributed to the needy by those in charge of this work.

At the close of the season cards were sent to all of those having plats in the community gardens and reports were received from the management of the industrial gardens. Reports from those having plats in the community and industrial gardens indicate the following as the quantity of food produced: beans 1,199 bushels, beets 591 bushels and 320 bunches, cabbage 43,463 pounds, carrots 614 bushels and 288 bunches, corn 4,586 dozen, cucumbers 11,675 dozen, potatoes 6,766 bushels, pumpkins 1,230, squash (summer) 2,294 pounds, (winter) 2,800 pounds, tomatoes 2,036 bushels, peppers 125 bushels, turnips 960 bushels, onions 21 bushels.

In addition to the above, other vegetables reported as having been grown by one or more totaled twenty kinds. If these people had been obliged to purchase in the stores and markets the food grown in these gardens, in the small quantities which they, from necessity, would have been obliged to purchase, the cash expenditures would have amounted to at least \$11,000. In addition to the cash value of the produce grown, the gardens furnished part time employment and an opportunity for friendly rivalry in the work. The best answer to the question as whether it was worth while is the opinion of those who had gardens and were asked the two questions, "Did the garden pay you?" and "Will you plant a garden next year, if given the chance?" To the first question ninety per cent of those who replied said, "Yes." To the second question, ninety-nine per cent answered in the affirmative. More than 5,000 individuals have received part of their food this year from these gardens as indicated by the average number in the family of those having garden plats.

*Outlook.*

With practically every agricultural commodity produced within the State having sold at a price either below or only slightly above the cost of production during the past year the request for assistance from the Extension Service has been greater than ever before, especially in connection with those services which would assist in the reduction of cost of production of crops. From the homemakers, the requests were largely for assistance in reducing the cost of purchased food and clothing.

Entering the new year with very little, if any, improvement in the agricultural situation, we are already being approached with requests for assistance in relation to many problems of agricultural production for the ensuing year. Increased confidence in the extension work is being shown in all lines of agricultural activity. Especially marked is this increased confidence in the case of the commercial vegetable growers.

It is probable that the financial support of our local farm bureaus will be somewhat reduced during the coming year, but not to an extent that will in any marked degree hamper the development of the extension program.

In closing this report, I wish to again express my appreciation for the sympathy with and support of the extension program by all of those who have been requested in any way to assist in its development during the past year.

Respectfully submitted,

G. E. ADAMS,  
*Director.*

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