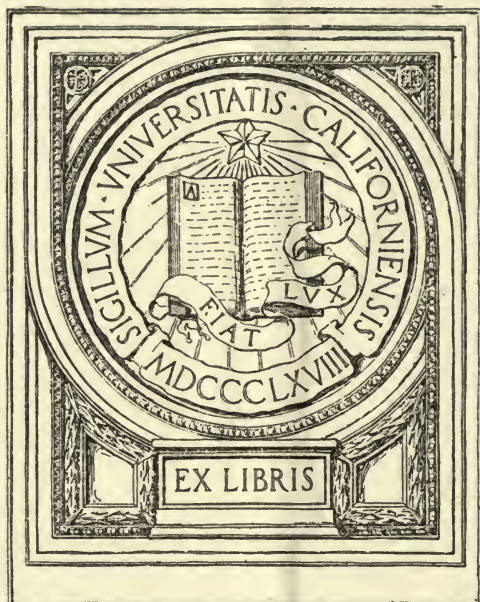


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BUREAU OF EDUCATION
INDIA

PAMPHLET No. 4

*Extracts from the Report of the Commissioner of
Education, Washington, 1916,*

REGARDING

VOCATIONAL EDUCATION, ETC.



DELHI
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
1918

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CHAPTER

VOCATIONAL EDUCATION, ETC.

1918

U.S. GOVERNMENT PRINTING OFFICE

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PREFACE.

THE report of the Commissioner of Education, Washington, for the year ended June 30th, 1916, contains some chapters which are of particular interest in India at a time when much is heard about the future of vocational education and when the Government of India have just distributed an imperial allotment for purposes of technical and agricultural instruction. The report (volume I) contains 692 pages and, treating as it does of a variety of problems fascinating to the educationist, deserves a wide dissemination. There are likely, however, to be many to whom it will not be available and some whose interest will be confined to certain of its chapters.

I therefore thought it would be useful to republish certain extracts from it, connected by brief summaries. The inconveniences of such a method of reproduction have been described in the preface to Pamphlet No. 3. But here, as there, it was deemed better to risk them than to reprint whole chapters, portions of which have but little application in India.

The extraction and summaries on agricultural education and school gardens are the work of Mr. J. MacKenna, M.A., C.I.E., I.C.S., Agricultural Adviser to the Government of India. I am much indebted to him for his assistance in producing this pamphlet.

H. SHARP,

*Educational Commissioner with the
Government of India.*

July 1918.

PREFACE

This book is the result of the author's experience in teaching English in the United States and in the Philippines. It is intended for the use of students in the United States and in the Philippines who are preparing for the examination in English in the Philippines. The author has endeavored to present the subject in a clear and concise manner, and to give the student a good knowledge of the English language. The book is divided into two parts, the first part dealing with the English language as it is used in the United States, and the second part dealing with the English language as it is used in the Philippines. The author has endeavored to give the student a good knowledge of the English language in both parts of the world. The book is intended for the use of students in the United States and in the Philippines who are preparing for the examination in English in the Philippines. The author has endeavored to present the subject in a clear and concise manner, and to give the student a good knowledge of the English language. The book is divided into two parts, the first part dealing with the English language as it is used in the United States, and the second part dealing with the English language as it is used in the Philippines. The author has endeavored to give the student a good knowledge of the English language in both parts of the world.

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Extracts from the Report of the Commissioner of Education, Washington, 1916.

Vocational Education.

The chapter on vocational education is written by Mr. William T. Bawden, Specialist in Industrial Education. General
progress.

Mr. Bawden thus summarises the directions in which progress in the States is taking place :--

(1) In place of the conception of vocational education as a comparatively simple matter, which prevailed a few years ago, there is an evident tendency to see in it a very complex problem, for the solution of which there must be much patient investigation and the cordial co-operation of all possible educational and social agencies. (2) There appears to be a growing recognition of the fact that vocational education will not of itself solve all the problems of life or of vocation, but that it must take its place as an essential part of a complete plan of education that provides for all legitimate interests and activities of the individual. (3) There has been almost unprecedented interest in the proposed Federal aid for vocational education ; it is doubtful if any other educational bill before Congress ever attracted an equal amount of popular attention. (4) The serious objections urged against vocational education have been stated in somewhat more definite and tangible form and the answers to these objections suggested. (5) There has been noticeably less interest in the unit-versus-dual-control controversy, the preponderance of opinion appearing to be against the organisation of special independent boards for the control of vocational education. (6) In the States which have organized departments for the promotion of vocational education on a State-wide basis the greatest progress noted during the year appears to have been in the development of the day continuation school for young employed workers. (7) Recognition of the importance of proper machinery for insuring a supply of adequately trained teachers, including an effective plan of certification, is gradually making itself felt, though much ground still remains to be traversed. (8) The emphasis on language work in vocational schools, and the high grade of results of such work as exhibited in numerous school papers and magazines written, edited, and printed by students, afford ample evidence that the cultural possibilities of vocational education are not being neglected and that the necessity of a thorough grounding in the fundamentals of education is clearly recognized. (9) In the vocational guidance field the important progress of the year has been a further development of interest on the part of the public school and the resulting beginnings of modification of school

methods and courses of study. (10) In convention deliberations and in magazine articles there has been increasing emphasis on the significance of art in industry and the great importance of more adequate attention to this matter in all plans for education. (11) Within the past year or two there have been several notable instances of the employment of a trained director, with instructions to make a careful study of conditions before buildings or courses of study are planned—in contrast with which has been a rather common practice in other types of school in the past, namely, to erect and equip the building and then seek a principal. (12) The extension of the survey idea to the field of State-wide investigations, in which the Bureau of Education has done pioneer work, has for the first time been applied to a State-wide vocational education survey in Indiana, where a study has been inaugurated by a group of agencies working in co-operation. (13) There has been much discussion, as well as actual development, in the field of so-called prevocational education. (14) There has been a noticeable development of new types of work in the manual-training shops in the effort to meet the demand for courses that shall be more practical and that shall have more real value in preparing the way for specific industrial education. (15) There has been a noticeable tendency in the direction of a more sympathetic and sane appraisal of the values of the manual arts in the public schools on the part of the partisans of so-called real vocational education.

Objections
met.

The writer next deals with such serious objections as have been brought against the vocational education programme by "educational conservatives." It is objected, for instance, that such education may fall under the control of sinister or selfish interest. Publicity and popular understanding of the situation are put forward as the best correctives of such tendencies. The popular demand will probably be irresistible that vocational education be developed in connection with and as a part of the public-school system, and it appears to be generally accepted "that the logical scheme of administration centres in a single board of public-school trustees the responsibility for all forms of education supported by public taxation." Another objection arises from the belief that the programme sets up narrow aims. Such a judgment, it is urged, is based on the performance of certain money-making private institutions, and is wholly mistaken. Recent legislation and the practice in the various States show that the narrow conception will not prevail. A third objection is that an attempt is being made to divert children at an early age into careers which hold no promise for the future. It is replied that there is no question of such education as a direct preparation for a specific calling during the time of compulsory school attendance,

i.e., from 6 to 14 years of age nor has any serious proposal been made to curtail existing opportunities for advanced education. Further, there are many who, even if the facilities for high and college education were doubled, would not go there. The new scheme is an attempt to help those who are not helped by existing institutions; and it cannot be asserted that future advancement will be denied to those who resort to them. Against the further objection that vocational education cannot be adapted to the rapidly changing conditions of commerce and industry, it is urged that any training for a useful occupation is an asset; the mastery even of the obsolete technique of an occupation gives confidence in dealing with new demands; the education is intended to do more than fit the individual for a particular "job;" industry is likely to adjust itself to the conservation of human values; and to call a halt because of mere difficulties is unbecoming. Finally, it is objected that vocational education is expensive. But Mr. Bawden points out that there is no great outcry against the still more expensive education required for medicine, law or engineering.

A bill proposing Federal aid for vocational education passed the Senate in 1916 without a dissenting vote. Under this measure national grants will be given to the States for stimulating vocational education in agriculture and in trades and industries, the objects being the training of teachers in these subjects and the payment of part of the salaries of the teachers, supervisors and directors in these subjects. The grants are as follows* :—

Legislation and grants.

(In thousands of dollars.)

	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22	1922-23	1923-24
For salaries of teachers, supervisors and directors of agricultural subjects.	500	750	1,000	1,250	1,500	1,750	2,000	2,500	3,000
For salaries of teachers of trade and industrial subjects.	500	750	1,000	1,250	1,500	1,750	2,000	2,500	3,000
For training of teachers of agricultural, trade and industrial subjects.	500	700	900	1,000	1,000	1,000	1,000	1,000	1,000
For the work of the Federal board for vocational education	200	200	200	200	200	200	200	200	200
TOTAL	1,700	2,400	3,100	3,700	4,200	4,700	5,200	6,200	7,200

* Report of the Commissioner of Education, Washington, 1914, Volume I, page 240.

The grant thus rises to 7,200,000 dollars (approximately Rs. 2,16,00,000) in 1923-24 and will be continued on this scale thereafter. An important provision of the measure is "that for each dollar paid from Federal grants allotted to any State for the salaries of vocational teachers, or for the training of vocational teachers, the State or local community or both shall expend an equal amount for the same purpose and shall in addition meet all other costs of plant, equipment and maintenance, including the salaries of all teachers necessary to complete well-rounded courses of instruction." The ultimate effect, therefore, will be to add 14,000,000 dollars (approximately Rs. 4,20,00,000) to the funds available for this purpose, as well as Rs. 2,00,000 dollars (approximately Rs. 6,00,000) for the expenses of a board formed for the administration of the grants and the furnishing of information and advice to the States.

Facilities for
soldiers.

An event of much significance was the passage of the following amendment to the Army bill:—

In addition to military training soldiers while in the active service shall hereafter be given the opportunity to study and receive instruction upon educational lines of such character as to increase their military efficiency and enable them to return to civil life better equipped for industrial, commercial, and general business occupations. Civilian teachers may be employed to aid the Army officers in giving such instruction, and part of this instruction may consist of vocational education either in agriculture or the mechanic arts. The Secretary of War, with the approval of the President, shall prescribe rules and regulations for conducting the instruction therein provided for, and the Secretary of War shall have the power at all times to suspend, increase, or decrease the amount of such instruction offered as may, in his judgment, be consistent with the requirements of military instruction and service of the soldiers.

Certification
of teachers.

The writer next briefly describes the advance made in different States and then deals with the question of the classification of teachers. It is now generally allowed that special skill is required of a teacher of special subjects, such as machine shop practice, printing, orchestral music, etc. But there seems to be a disposition to entrust the certification of the special teacher to those who themselves are not specialists and to the result of answer papers.

“ One of the most notable features characteristic of the year’s progress,” says the report, “ is the increasing number of instances of successful co-operation between school and other agencies for the accomplishment of definite educational ends.” Certain selected instances of this are quoted, of which the two following are particularly interesting as showing the readiness of commercial firms to assist in the training of teachers and the employment of students.

Co-operation
between
educational
institutions
and
employers of
labour.

(i) At Chicago the Lewis Institute and the extension division of the Portland Cement Association co-operated in conducting a short course for the training of instructors, which included lectures on the materials and processes employed, demonstrations and practical laboratory work in all of the important phases of cement and concrete construction, and was calculated to enable the instructors to introduce practical laboratory courses in concrete instruction in their schools.

(ii) At Minneapolis trade agreements were made between organizations of employers and employees and approved by the Minneapolis Board of Education, the Minnesota State Federation of Labour, the Minneapolis Civic and Commerce Association and the trustees of Dunwoody Institute. These organizations are to co-operate in planning and supporting certain vocational courses to be offered in Dunwoody Institute, the Girls’ Vocational High School, and the Technical Department of the Central High School. “ The support of employees takes the form of agreement to utilise the graduates of the proposed courses as their first sources of supply of new workers ; in certain cases minimum wages for such workers are established ; in certain trades periods of instruction are scheduled for the dull season, the apprentices to receive one half of regular wages while in school ; representatives of employees will assist on advisory committees for the purpose of organising courses of study and maintaining proper standards. The support of organised labour takes the form of agreement to require apprentices to attend such courses of instruction as are offered in various trades, and to recognise the instruction given as a definite part of the apprenticeship requirements ; representatives of the unions will also serve on the proposed advisory committees.”

The attitude
of the
American
Federation of
labour.

The activities of various organizations interested in vocational education are next dealt with. Specially interesting are the attitudes adopted by labour and by the Chamber of Commerce.

(i) The American Federation of Labour has again emphasised its co-operation with the movement. The officers of the federation regard two principles as of paramount importance.

(1) The agitation for the reorganization of the public school system, in order to make it serve more efficiently the real needs of boys and girls and young people, must not be permitted to take the form of, or result in, a movement to diminish or abridge in any way existing opportunities for general education. The reorganization of the schools now in process of development, involving the introduction of various kinds of courses designed to meet the needs of all types of children, is believed to be progress in the right direction in the main.

Under existing conditions all children cannot attend colleges and advanced technical schools, and become doctors and lawyers and engineers; consequently there is a real demand that the educational system shall recognize other legitimate and worthy aims besides that of preparing for college and the higher professions. Nevertheless, it is held, the newer types of courses that are developed in the attempt to meet these recognized needs must not pre-suppose any inevitable limitations upon the prospects of future advancement of the young people who avail themselves of the opportunities offered. The representatives of labour properly maintain that the door of educational opportunity and advancement must always be kept open, and every individual should be permitted to progress just as far as personal ability and willingness to apply himself will carry him. In this view, vocational education is not to be thought of as a substitute for general education, but as an essential part of it. To every one should be vouchsafed the opportunity for a broad all-round education that makes for complete manhood or womanhood, which should be supplemented by adequate preparation for a chosen occupation.

Second, it is maintained "that whatever is attempted at public expense under the form of vocational education should be under public and not private control, and, further, that the control of all types of school supported by public taxation should be centred in a single authority responsible directly to the will of the people, that is, the local board of public-school trustees in a city or town and the State department of public instruction in a State."

The views of President Gompers (President of the American Federation of Labour) are quoted as follows.

“To assure every child equal free opportunities for the kind of education which meets his needs and talents is the only basis for genuine equality of opportunity—the only condition upon which democracy will function.

“The old cultural ideals of education, dealing with the abstract only, denied to the great majority of children an education adapted to their minds and natures, and hence failed to fit them for the duties and possibilities of the work of life. There have come ideals of an education that teaches out of life and work; that deal with the concrete materials of environment and the duties and activities of life. This education seeks to put into the lives of all that understand appreciation of the significance of service performed in all the relations of life—an appreciation that shall illuminate all of work and life.

“Because the wage earners have been taught by life that equal educational opportunities, adapted to the needs of all, are a condition requisite to equal economic opportunities, they have been foremost in pressing demands for the incorporation of industrial education and vocational training as a part of our public-system.”

(ii) The Chamber of Commerce of the United States adopted resolutions endorsing the principle of Federal aid and encouragement in the establishment of vocational schools of manufacture, commerce, agriculture and home industries. It also supported legislative measures.

The attitude of the Chamber of Commerce.

Allusion is next made to some of the surveys (reports of special investigations) which have been published on this subject. The following passage is quoted from one of the nine volumes of the Cleveland survey—that which deals with the building trades as showing the recommendations made regarding the age for commencement of specialization.

Proper age for commencement of specialised studies.

The report recommends that vocational training for boys who will enter the building trades be started not later than the seventh year in school, in order that something worth while may be accomplished before the termination of school life at the end of the compulsory school period. It is doubtful whether satisfactory courses can be offered in existing elementary schools, since the number of boys is usually too small to permit of the necessary differentiation of courses. The junior high school is recommended as a partial solution of the problem.

offering a general industrial course, which should give much emphasis to applied mathematics, greater variety in shopwork than is now given, and more attention to elementary science, mechanical drawing, and economic and industrial conditions in wage-earning occupations. Since less than 2 per cent. of the graduates of the Cleveland technical high schools become artisans, the report recommends the organization of a special two years' industrial course to fill the gap now existing between the end of the compulsory school period and the entering age in the skilled trades.

Vocational
guidance.

Any considerable expansion of specializing activity involves some attempt at vocational guidance of the pupils.

The most notable evidences of progress in the field of vocational guidance are found in the increased interest in the subject in public schools and in colleges and universities. During the pioneer stages much of the constructive work in vocational guidance was done by semi-public or private agencies, but now that the way has been blazed to a certain extent, more and more educational institutions are recognizing their responsibilities and their opportunities.

The Board of Education of Chicago has taken over the vocation bureau which was previously under private management. Employers testify to the value of the service rendered in sifting and classifying boys and girls who seek positions. Though the bureau insists on a higher initial minimum wage than that usually paid to beginners, employers are glad to patronise the bureau. A state employment bureau has been established in Pennsylvania. When a boy or girl between 14 and 18 years of age applies for work the application is referred to the vocational education division of the public schools. Information regarding the candidate and the opportunities available are compared and the bureau is then in a position to advise as to the most promising direction in which to look for employment and to suggest ways of preparing for more efficient service and promotion.

Pre-vocational
education.

Connected with this subject is the much-discussed question of pre-vocational education. Vocational education being understood as that which is designed to make a pupil more efficient in some specific chosen vocation, an important service can be rendered, before a choice is made or vocational education begins, by acquainting him with knowledge about a number of typical and important groups of occupations. The experiment has accordingly been tried in some localities of causing pupils actually to engage "in the fundamental activities characteristic of a variety of possible occupations, with the accompani-

ment or an examination of the meaning and relationship of these activities, with related studies in language, mathematics, science and civics."

As an example, the courses offered in the Menomonie (Wisconsin) public schools are mentioned. The arrangement with the Stout Institute has permitted arrangement for 16 lines of work, each of which is given for two periods daily, five days per week for nine weeks. Thus all boys in the seventh and eighth grades and the first two years of high school change subjects in a scheme of rotation every nine weeks. The courses are:—

Seventh grade: Architectural drafting, bricklaying, carpentry, plumbing.

Eighth grade: Mechanical drafting, cabinet making, forge shop, printing.

First year high school: Freehand drawing, joinery, wood turning, printing.

Second year high school: Mechanical drafting, pattern-making, foundry, machine shop.

During the third- and fourth years of the high school the students are permitted to specialize in any one of the following eight elective subjects, the choice being made presumably on the basis of the experiences of the four years preceding: Machine drafting, foundry, machine shop, forge shop, carpentry, plumbing, bricklaying, printing. The subject chosen may be taken for two periods daily, five days per week, for the two years.

A change in attitude is reported towards manual training, whether regarded as a part of a general education or as a factor in the vocational education programme. Some years ago a commission created to study industrial education in an eastern State criticised a certain formal type of manual training as consisting of the "fads and frills" of education. These statements gained currency and were applied to manual training in general without investigation of the work deemed worthy of condemnation. "It was inevitable," writes Mr. Bawden, "that there should be a readjustment in both popular and expert educational opinion, since there are many places in which work of demonstrated value in the manual arts has been carried on for years. The earlier experiments showed, furthermore, that some understanding of the place and possibilities of the manual arts in the schools is essential to any adequate grasp of the problems of vocational education, and quite logically many of the leaders in the latter movement have been drafted from among those who had done notable work in the

Manual
training.

former field." Among other evidence are quoted the recommendations of a committee of experts which considered the part of the Minneapolis Vocational Education Survey dealing with this subject. Some of these are as follows:—

- (1) Reorganization of the elementary schools so as to offer a wider variety of manual activities for all children;
- (2) pre-vocational courses in the upper grades of the elementary schools in order to (a) interest and hold motor-minded children, (b) furnish new avenues of expression in learning and doing, (c) aid in proper training in book subjects, and (d) help young people to select the kind of training and the kind of occupation they desire to follow;
- (3) further development of the intermediate school or junior high school;
- (4) a considerable variety of elective short vocational courses in the high school, under a liberal arrangement of entrance requirements;
- (5) co-operation of representatives of workers and employers with the school authorities in developing plans for vocational education.

II.—Engineering Education.

The chapter on engineering education, by Mr. C. R. Mann, of the Carnegie Foundation for the Advancement of Teaching, deals with some novel aspects of the subject. Mr. Mann points out that such education is a thoroughly modern venture; that sudden industrial development drove men to accept for the engineer whatever training could be had at the moment, "without waiting for the slow development of centuries, which had shaped the educational methods of the older professions," that the engineering schools were organised and controlled by men who had derived their ideas from experience in teaching the learned professions, and that, while instruction in law, medicine and theology had always been controlled by the leading practitioners on those professions, practising engineers have seldom been put at the head of engineering schools. He considers this the less surprising in view of doubt as to what constitutes an engineer and perplexity as to the training required, and refers to various investigations, culminating in that of the Carnegie Foundation for the Advancement of Teaching.

The staffing
of engineering
schools..

Mr. Mann proceeds as follows :—

Since the fundamental purpose of every professional school is to train men to succeed in the profession, the first problem for every such school is to determine what factors make for success. Accordingly, the Carnegie Foundation sent a circular letter to practising engineers asking what characteristics were most needful for success in engineering. The result of this enquiry showed that, in the opinion of the 7,000 engineers who replied, such personal attributes as character, integrity, responsibility, initiative, judgment, common sense, efficiency, thoroughness, industry, and understanding of men have a weight of 75 per cent. in determining the success of an engineer, while knowledge of his subject and of the technique of practice and of business constitute the other 25 per cent.

Practical
methods.

Inasmuch as college methods of instruction have been developed mainly for the purpose of imparting knowledge of subject matter and have paid little conscious attention to the development of personal character, it is clear that progress in engineering education consists in devising methods of instruction which give a mastery of subject matter and at the same time develop in the student those personal attributes that make up three-quarters of the engineer's equipment for success. The solution of this problem can be found only by experiment. Therefore, a real insight into the progress of engineering education

may best be obtained from a study of some of the educational experiments that are now being made for this purpose.

One of the most interesting experiments in developing engineers who shall possess the necessary factors for success is being made at the University of Cincinnati, under the direction of Dean Herman Schneider. In 1903 the engineering school entered into a co-operative arrangement with the industrial plants of the city whereby each student spends half his time at the university and the other half in actual engineering work. The students are divided into two groups, which alternate with each other in bi-weekly periods, so that the shop and university are always full-manned. In this way the practice of engineering is taught under actual commercial conditions, while the science underlying the practice is taught in the university. The course is completed in 5 years of 11 months each, so that each student has 27 months of university instruction. Since the regular four-year course in other schools never gives more than 36 months of actual instruction, this plan merely substitutes 27 months of practical work for 9 months of the usual instruction.

This 27 months of practical work is controlled by the university and is so organized that the student progresses regularly from the cruder and rough work to the more difficult and responsible positions. Thus a civil engineer will probably begin with pick and shovel as a member of a track gang repairing track. If he remains at railroad work, in course of time he will become foreman of the gang, working with the regular foreman. Before he is through with railroading he will have worked in the switch and signal department, on bridge work, on general engineering work in the engineering department, and on evaluation work. He will also have definite experience in ferro-concrete construction. He will learn the operation of regular trains and work trains; he will know how to place and operate the equipment for construction, calculate cuts, and fills, and so on, all as a part of the regular work on a 'real railroad.'

When a student begins a new job he is given a set of 'work observation sheets.' These contain from 50 to 200 questions concerning the details of the job and direct the student to sources of information where he can find the answers. He is required to be prepared to answer these questions during the 'co-ordination periods,' which come two or three times a week while he is at the university. By the time he completes the work he has not only learned how to do it correctly, but has been made to work out many problems of machine design, and has learned that success depends on the accuracy with which all the details have been fitted together. Much of the information required can be obtained only from fellow workmen, with whom he must therefore keep on friendly terms. His shop time is therefore not consumed in merely becoming a competent operator of a machine, but is mainly occupied in gaining an understanding of the meaning of shop practices and in learning to know workmen.

Through the elimination of the 'practice shop,' the university is spared the expense of maintaining shops which are at best imitations of commercial shops

and whose equipment soon becomes obsolete. The students also benefit financially, because the co-operating firms are glad to pay them regular wages for their shopwork; and this makes a college training possible for many students who possess the necessary qualifications, but who would otherwise be barred because of its expense. Thus the work that enables the boys to stay in college is also helping to educate them for their future careers.

Experience has also shown that this frequent change of occupation tends to keep the student mentally and physically vigorous and does not distract and scatter his attention.

The faculty, too, benefit by the constant contact of the students with the practical world. For while a class that is face to face with multitudinous practical questions soon comes to appreciate the value of sound theory, it will not permit the professor to feed it long on problems that are simply made up to be problems, or on thinking that merely leads to more thinking. In Cincinnati theory is taught for the sake of its use; and if at any time in his course a student is found unable to use some theory that he has studied, he may be sent back to repeat that special work. The mechanics teacher may 'flunk' students in calculus, or the professor of machine design may 'flunk' them in mechanics. Nothing is finally passed until the diploma is granted.

Such effects as these cannot be secured without constant study of the problem as a teaching problem by the faculty in a spirit of sincere co-operation. The tradition of departmental autonomy is here entirely destroyed, and the faculty spends two hours every Saturday morning discussing not only the details of administration, but also the general aims and purposes of the course as a whole, and the practical contribution which each department can make to the entire result. The co-operative study of their school problem as a problem in teaching by a whole college faculty is by no means the least encouraging and suggestive part of the Cincinnati experiment.

The faculty at Cincinnati is not only studying its teaching problems in a scientific manner; it is also experimenting with a system of vocational guidance for its students. The idea on which this experiment is based is that a man is most efficient when his work gives him the greatest satisfaction and he gets this satisfaction when he has found the job for which he has inborn talents. Therefore work should not be classified according to the materials or the product, but according to the human characteristics necessary for success in it. The students are also analyzed according to their inherent dispositions as settled or roving, directive or dependent, original or imitative, deliberate or impulsive, dynamic or static. The student is then guided into the type of job for which he seems to be temperamentally fitted.

The next subject of which the report treats is a system of chemistry teaching which Professor Bird is developing at the University of Virginia. While previously working for a number of

Problem
teaching in
chemistry.

years in an industrial plant, he had been impressed by the fact that young graduates who come to the factory to work never seemed to know how to attack a problem. "They had not been taught to work on their own initiative and responsibility, but had carefully followed the directions given in their laboratory manuals and texts. They knew the atomic weights of the various elements and other such facts which are ready for use in any book on chemistry. But when they were confronted with the kind of problems that arise daily in practical work and that require real investigation rather than the mere verification of known results, they lacked the ability to find the proper avenue of approach to a solution. This lack of initiative and resourcefulness was a great handicap to their progress."

Professor Bird's plan is to give the student from the beginning substances with which he is more or less familiar and let him discover for himself means of identifying them through their physical and chemical properties. Chemical facts and laws are gradually revealed through the solution and discussion of a series of problems of which the report gives examples. The best results are said to be secured by having pairs of students competing with one another in the manufacture of chemicals, each pair devising its own method and charging up costs including their own time.

The essential point in Professor Bird's experiment is that the problems which he gives are not merely made-up problems, but have in them some really unknown quantity which can be discovered only by making an experiment in the laboratory. Therefore the laboratory is for the freshman exactly what it is for the research scientist—a place to find out things that cannot be found out elsewhere. This treatment fosters the growth of a genuine spirit of investigation in the freshman and strengthens his initiative and resourcefulness, besides giving him a practical working knowledge of chemistry. It must, therefore, be a more efficient method of training men for research than the current method of storing their heads with information for several years before bringing them face to face with questions that cannot be answered without investigation and experimentation.

Similar experiments, we are told, are being made in a number of schools not only in chemistry but also in mechanics, mathematics, shop-work, machine design, thermo-dynamics, bridge design and other scientific and technical subjects, the intention underlying all being the

discovery of a method of presentation that will make the student really want to do the work while he is doing it.

Mr. Mann records it as a striking fact that the study of teaching problems has received so little attention in institutions of college and university grade. "The academic spirit seems to regard such innovations as dangerous intrusions, rather than as sources of new power." Certain institutes are mentioned which make good use of it and teachers in secondary schools have pursued the study with real success for a number of years.

Two other original topics are treated. One is the teaching of English. Some have tried to vitalise the work in engineering schools by allowing students to select technical subjects for themes. "This," says Mr. Mann, "is an obvious improvement over assigning to freshmen in engineering topics such as socialism, the proper dress for girls on the campus or the dates of Shakespeare's plays; but it does not tend to give the technical man that love of good reading which is so valuable an asset to him." An experiment is being made at the Massachusetts Institutes of Technology based on very different principles—that an engineer is first of all a man, that literature interprets life and that "English is bigger and better than technical English."

The first hour with a new class is usually spent in discussing with each student why he came to College and what he expects to get out of it. Many different view points are expressed. The problem of what a college is for is defined and the class is asked to read portions of Arnold's *Sweetness and Light*, or Newman's *Knowledge its Own End*, or Huxley's *Science and Culture*, and to be prepared to discuss them the next class hour. After two or three hours of discussion with intervening reading, each member of the class is asked to write out his own conclusions. Each of the resulting themes is criticized at a 15-minute personal conference with the author. Further discussion and further efforts to make personal interpretations of writers like those mentioned or of Ruskin, Carlyle, and Wordsworth furnish ample material for much practice in composition.

It is claimed for this method that it makes direct appeal to the human instincts, that it restores literature to its normal functions, that the student secures his technical skill under conditions that make thinking a necessity and involve an appreciation of social relations, and

that this kind of work fosters the growth of those personal characteristics which constitute three-quarters of the engineer's equipment for success.

The second experiment, similarly aimed at securing a broader outlook, is the study of welfare activities and the living and working conditions in American industries and attempts to render useful service to working men. The original object was to bring students into friendly contact with workers and to develop a feeling of mutual confidence and good will. The work is under the guidance of the Young Men's Christian Association and has created a demand for instruction on the human problems with which the students come into contact. In response, an outline has been issued of a "suggested college course on the human side of engineering."

Industrial service of this kind differs from social welfare work in aiming less at the benefit of the workmen than at the widening of the student's outlook. The methods of engineering work proper have been standardised. But little attention has yet been paid to the scientific study of the organization and control of the forces of men. "These problems of the conservation of human resources are as much engineering problems as are those of the conservation of material resources."

III.—Commercial Education.

The chapter on commercial education, written by Mr. F. V. Thompson, Assistant Superintendent of Schools, Boston, states that in 31 cities of a population of 100,000 or over, from which reports have been received, an average of one-third of the pupils are in commercial courses. High school organization for conducting commercial education shows a tendency toward the separate school. Though most of the cities still maintain commercial courses in general schools, ten have special commercial high schools. Commercial pupils are not segregated by sex nor separated from other pupils while pursuing related academic work. The commercial pupil receives specialized instruction only in technical subjects such as stenography, book-keeping and type-writing. Commercial education is conceived primarily as general education. The most noticeable extension of the course is the incorporation of salesmanship as a subject.

An embarrassing difficulty is the demand for clear definition of aims. "There is apparently some incompatibility between a definition of aims in terms of business needs and in terms of school practice." The general statement used to suffice that the college course in high schools prepared for college, the general courses for life and the commercial course for business. Clearer statements are now called for, but are no easier to give them in the case of other school curricula. The usual arrangement has been a course, first, of the general cultural kind ; second, calculated to enable the student to see his work from an enlightened and intelligent point of view as regards the whole ; third, intended to enable him to succeed in his first humble position. Hence commercial education has developed no distinct individuality. "It is not a thing, it is a part of a thing." The commercial course is not a separate entity.

It is, on the contrary, almost invariably a collection of school subjects which might be classified as, first, general subjects, such as English, history, mathematics, foreign languages ; second, more or less remotely related subjects, such as economics, commercial geography, business law ; third, technical or vocational subjects, such as stenography and book-keeping. The general subjects absorb the greatest proportion of time about 50 per cent. Even the special high schools

of commerce are not so far removed from this situation as to be free from a similar characterization.

Where there is inadequacy of aim is the failure to analyse clearly the sub-divisions to be found in each of the generally recognised needs of commercial employers (*i*) general office work (including book-keeping), (*ii*) stenography, typewriting and the operation of machinery such as the multigraph, (*iii*) secretarial work (which is described as belonging rather to the college stage) and (*iv*) salesmanship. Thus book-keeping is taught largely on the assumption that each pupil will at once exercise the function of a head book-keeper, and theory and power are emphasised. As a matter of fact, he will begin as a "piece worker" when speed and accuracy are required in rather automatic processes. The writer considers that more time might be given to these "immediate business values," without neglecting the range of instruction intended to equip the pupil for ultimate leadership. He points out that many jobs in business are becoming specialized and urges a more intensive practice in the unit demands of business and better equipment of the schools with commercial machinery.

It has also been suggested that more attention should be given to the terminology of commercial education. But there are difficulties about this, since terms are at present confused in business; *e.g.*, the word "clerk" is particularly indefinite. The chief means of giving commercial education being found in the general schools, it would be well if the commercial course were frankly segregated. Such high schools might eventually consist of aggregations of sharply differentiated courses, after the analogy of a university composed of a number of distinct schools and faculties.

Special commercial schools have been founded to provide additional accommodation and to increase the effectiveness of instruction through specialization. But they have been founded in too ready-made a fashion to have far out-distanced in effectiveness commercial courses in general high schools.

On the other hand some of the newer post-graduate courses show a closer analogy with the methods of industrial education. The Boston

Clerical School attempts no general training. "In this school the methods, practices, standards, qualifications of teachers, school terms and similar details are those of vocational education and are not those of general education. The success of the idea exemplified in this and similar schools shows the advantage of attempting general and special education successively, instead of simultaneously."

Mr. Thompson next reviews the prospects of reform under the heads of the three kinds of subjects taught in commercial schools. As regards the general subjects he concludes that it is in the methods of teaching rather than in the selection of material that change is required. "The general subjects should not be taught purely on the basis of deferred values, like college preparatory work. . . . The value of the career motive can be made to operate even in general dissociated subjects. It is necessary consequently to segregate commercial pupils into distinct divisions (in general high schools) for purposes of non-vocational instruction." As regards the related technical subjects (such as business correspondence, commercial geography and law, economics and business organization), the tendency is to emphasise application rather than theory. As regards the vocational group, the failure to recognise additional functions of business is criticised. The schools have hitherto trained clerical workers. But only about 15 per cent. of the force in standard business organizations is clerical, and about 35 per cent. or more is in the service section and deals with selling, merchandise, etc. The author suggests courses different for boys and for girls, provision in clerical courses for the specialized demands of office procedure, better equipment and the realization that only that portion of effective commercial preparation should be attempted which the resources of a school permit. In the matter of salesmanship a practical programme is being adopted, whose features are the securing of teachers technically and practically trained, the adoption of a part-time method and the active co-operation of business houses.

The article closes with observations on investigation, the standards of achievements and miscellaneous suggestions. The passage upon after-careers and the estimation of values is particularly interesting.

It is known that a large proportion of commercial graduates now secure positions to which their training has not been directed and for which their capacities are not suitable. The importance of follow-up work of commercial graduates is being recognized and attempted, in so far as the meagre resources available for the schools will permit. Follow-up work of graduates can be made of the highest value to commercial education in two ways: first, for the pupils, in securing convincing evidence about business needs and opportunities; second, for commercial teachers in obtaining accurate and definite information about the worth of commercial subjects. Commercial education has been obliged to estimate its values from the theoretical standpoint of the school, and not from the practical judgment of business. No time should be lost in furnishing our commercial schools with the resources necessary for the proper guidance, placement, and follow-up work of pupils. The plan will involve the increasing of present corps of instructors to the extent of adding placement secretaries; or better still, a kind of teacher known as the vocational assistant should be secured, who is familiar with business conditions as well as with school environment, one who has the training and capacity to organize and conduct effectively the varied activities constituting the service comprised in the term vocational guidance. Commercial education can never in any sense be made vocational until this function is added. It is useless to state that present teachers should perform this service, for they do not possess the time, the opportunity, or the knowledge of the problem to achieve effective results.

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IV.—Agricultural Education.

The subject of Agricultural Education is dealt with by Messrs. A. C. Monahan and C. H. Lane. The former is Specialist and the latter Chief Specialist in Agricultural Education, United States of America Bureau of Education. The Bureau of Education attempted during the spring of 1916 to collect definite and complete information concerning the teaching of agriculture in public high schools and in special agricultural schools of secondary grades. The enquiry elicited that 2,175 public high schools teach agriculture. The number of male teachers of agriculture was 2,007 and 247 female and of these 1,021 or 45 per cent. had a special training in agriculture. The number of students of secondary grade studying agriculture was 24,743 boys and 16,312 girls.

Agriculture
in secondary
schools.

There are 68 special secondary agricultural schools supported in whole or in part by the State.

The school instruction in elementary agriculture is becoming more and more closely correlated each year with boys' and girls' agricultural club work. The most popular form of these clubs is the field and garden club project.

Agricultural
club work.

The general plan is as follows: A plot is selected by each pupil, in consultation with his parents, as near the house as possible, varying in size from one-tenth to one acre, according to the child and the crop to be raised. The amount of rent to be paid is fixed, the pupil being required to pay rent whether the crop is on land owned by the parent or not. The child then must stake out and measure and draw a diagram of the plot. This is verified by the country-life director on his first visit. The child and the father decide what to plant. The cultivation is done by the child, under the joint direction of the parent and the country-life director. The crops raised are usually marketed by the fathers with their own garden truck, although in several instances boys market their own produce. An itemized account of all receipts and expenditures must be kept by the child as directed by the county-director. Notebooks are furnished by the county superintendent; each pupil includes in his book a diagram of his plot, an expense account showing all receipts and expenditures, and a chronological record of the work of cultivation, including the time spent in labour. When the crop has been disposed of, the accounts are balanced and the net profit or loss computed. The net profits belong to the pupil and must be accounted for in the notebook. They are to be banked, loaned, or wisely expended, as determined by the parents. Each pupil is

required then to write an account or story on his school-home project. The notebook, essay records, and reports are all taken into account in determining the pupil's standing."

Other club projects are the poultry project with a view to training the pupil in the business handling of poultry and the cow-testing project which is open only to boys of 12 years of age or over. All the various records connected with the efficient management of a dairy must be maintained by the pupil.

The question of the administration of the agricultural club work in the various States is receiving more and more attention.

There seems to be a rapidly growing opinion that for pupils attending school the club work, when undertaken, should be a definite part of the regular school work, and that it should be under the administration of the educational authorities, with the co-operation of the agricultural colleges. The colleges should furnish the technical agricultural information necessary for conducting the work. The club work would then become the practicum for the school instruction in agriculture. If agriculture is to be taught in elementary schools, some kind of practice work is necessary, and the club work or some other form of home-project work seems to be the best kind. Incidentally, it would still have value as extension teaching, as does the home-project agriculture in vocational agricultural schools.

This question is but a part of the general question of what should constitute a State system of agricultural education and how it should be administered.

In his annual report for 1916, President K. L. Butterfield of the Massachusetts Agricultural College lays down what he considers should be the characteristics of a State-system of Agricultural Education.

1. *It should have definiteness of aim.*—Fundamentally it is the province of agricultural education to help solve the rural problem: the rural problem consists in the improvement or progress of the rural people. Hence the training of rural problem solvers is the main purpose of agricultural education.

2. *It should be inclusive in its human reach.*—It will reach all ages from the child to the graduate: those out of school both young and old. It will serve chiefly the people who must make a living by

Administration of Agricultural Clubs.

Some characteristics of a State-system of Agricultural Education.

farming but it must also train specialists or professional experts. It must also reach the people in the city.

3. *It should be broad in its vocational scope.*—Teaching not only the technical and productive process and farm management but the wider economic questions of credit, land tenure and co-operation. It will emphasise a fuller community life through the home, health, recreation, beauty, morals.

4. *It should be comprehensive in its activities.*—Teaching is the backbone of any system of education but research and experiment are vital to good teaching, especially in agriculture.

5. *It should be liberal in its spirit.*

6. *It should be complete in its correlation of parts.*

7. *It should be an organic part of the State educational system.*

President Butterfield next deals with the groups of persons to be reached by a State system of education. They are:—

Persons to be reached by a State-system of Education.

1. *Pupils in the 'grades' of the public schools.*—The material which enters into agriculture in its simpler forms is capital material for general educational use among pupils ranging in age from 8 to 14. They may profit thereby not because they wish to become farmers, but because they may gain a part of their education by means of agricultural school gardens, home gardens, nature study, poultry clubs and corn clubs; those various types of work with plants and animals that are the beginning of agriculture should become an organic part of our school system, and available to all pupils under 14 years of age.

2. *High school pupils desiring general agriculture.*—The subject might be optional. The teaching should be very concrete and practical concerned not merely with the processes by which plants, animals and all nature's forces are subordinated to human uses but with the processes by which the business and life of rural people are related to the business and life of the nation as a whole.

3. *Boy farmers.*—The class of pupils to be offered agricultural study rather definitely for the purposes of future vocational activities. President Butterfield questions whether 'vocational' agriculture should begin before 14 years of age.

4. *The young agriculturists between the ages of 14 and 17 to 18.*—These can be provided for either by agricultural departments of public high schools more or less highly differentiated, or by a system of county, district or special schools. The 'junior extension service' of agricultural colleges promises to be of great value. It has been proved that a course in agriculture or home economics, given an hour a day over four years in connection with other high school subjects, can be made to yield remarkably successful training for boys and girls preparing for agricultural practice and rural home life. President Butterfield, however, predicts that the Massachusetts plan of agricultural departments in which the pupil gives about half his time to agriculture will become a very important and vital part of the State system of agricultural education, so far as pupils of high school age are concerned.

5. *Candidates for county agricultural schools.*—County or district agricultural schools must find a place in a complete system of agricultural education. They are expensive and may encroach on the work of the agricultural college.

Their final place in the system of agricultural education is likely to be in advanced and specialized work for pupils of high school age who have had perhaps two years in the agricultural department of the high schools, or for those who have finished the work of such a department, but are not prepared for college.

6. *The college student of agriculture of 18 years and over.*—Some will return to the land; others will go in for agricultural research and teaching, some will not pursue agriculture in any form after they leave college.

But in the main the agricultural college is to be considered a professional school, or at least a semi-professional school and it is here that there is an opportunity for the training for leadership in solving the larger problems of agriculture and country life.

7. *The graduate student.*—In connection with the agricultural college there is room for the development of a graduate school of agriculture. Not only room, but great need, for neither research nor teaching can be vitalized or pushed to its full measure of development unless constantly reinforced by men of the highest training.

8. *The demand for short courses.*—This comes from youths who have had an agricultural course at school and wish to attend a course [of from 3 months to a year at an agricultural college in order to come in touch with recognised specialists in particular subjects. To such pupils this work would be something of a graduate course.

9. Finally for *the youth at work on the farm and for the man in the furrow* there is a need for extension schools of agriculture, meeting in the evenings after the day's work is over.

President Butterfield gives the following synopsis of his scheme :—

Suggestion concerning the necessary Machinery for Agricultural Education.

I. THE PUBLIC SCHOOLS.

Presenting agricultural material as one means of education, through—

1. Boys' and girls' agricultural clubs : Supervision by farm bureaus and the college.
2. School subjects : Nature study ; elementary agriculture (?).
3. Courses in agriculture in the high school : Three to five hours per week for one to four years.

II. THE PUBLIC SCHOOL.

Teaching agriculture for vocational ends, through—

1. Agricultural departments of the high school : To reach pupils 14 to 16 years of age and 16 to 18.
2. Continuation and extension schools : In connection with public high schools, to reach pupils no longer enrolled in the public schools, ages 14 to 18.
3. Agricultural education for families, as proposed by the homestead commission.
4. The public schools as centres for extension work in agriculture and country life, carried on by the farm bureaus and the college.

III. COUNTY OR DISTRICT AGRICULTURAL SCHOOLS.

1. General and specialized agriculture : Temporarily for boys 14 to 18.
2. Specialized courses in agriculture, such as poultry husbandry, dairy husbandry, pomology, etc., as the eventual purpose for boys 16 to 18 ; these courses correlate with the work of the agricultural departments of the high schools.
3. Extension work, in co-operation with the county farm bureaus and improvement leagues ; this should be co-ordinated closely with work of the county schools on the one hand, and with the agricultural college on the other.

IV. THE AGRICULTURAL COLLEGE.

1. Investigation.

- (a) Research.
- (b) Experimentation and testing.
- (c) Co-operative studies in agricultural resources.

2. Teaching.

- (a) The four-year course for a degree.
- (b) Graduate work.
- (c) Short courses for pupils of 18 years and upward.

A. Short courses of college grade, one to two years.

- (1) For graduates of county agricultural schools.
- (2) For graduates of agricultural departments of high schools.
- (3) For graduates of high schools who have not had agriculture and are not eligible to the four-year course.
- (4) For graduates of liberal arts colleges.
- (5) For adults 21 years and over not eligible to four-year course.

B. Short courses giving elementary and specialized work, if the demand requires, for those 18 years of age and upward.

- (1) Winter course of 12 weeks for highly specialized work, such as butter making, etc.
- (2) Winter course of 20 weeks for students desiring more general work.
- (3) Summer course of 6 weeks, primarily for teachers of non-vocational agriculture.

3. Extension service.

- (a) General extension work for adults.
 - (1) Lectures and study clubs.
 - (2) Extension schools.
 - (3) Correspondence courses.
 - (4) Demonstrations.
- (b) Junior-extension work.
- (c) Extension work for urban and suburban residents.

NOTE.—It is understood that so far as possible work in rural home making will parallel agricultural work throughout the whole system.

Education
work of the
Department of
Agriculture.

The scheme contemplates a single agricultural college in each State. Considerable success has been achieved by county agricultural agents and the importance is realised of the establishment in each county of permanent headquarters for extension work, in charge of a competent county agent who shall act as the joint representative

of the local community, the states through its agricultural college, and the nation through its Department of Agriculture. There are now over a thousand counties in the 48 States which have county agents.

In view of the limited number of agricultural college graduates some difficulty has been experienced in recruiting suitable candidates for appointment as county agents. This difficulty is, however, purely temporary and it is encouraging to notice that agricultural colleges are beginning to feel their responsibility in this direction.

The Department also interests itself in the boys' and girls' club work and by publications, lantern slides and other material assists all subsidiary organizations for the extension of agricultural training and education.

IV.—School and Home Gardening.

This subject is dealt with by Mr. J. L. Randall, Specialist in School and Home Gardening, Bureau of Education.

Home gardening is needed.

School and home garden training has become an educational activity in busy cities and towns. The attempt to project the school influence outside of the four walls into the home and real life of the people is a significant trend towards a new and more complete type of city education of which gardening will become a part. There is an educational unrest and demand for school reorganization in cities, and in this reorganization gardening is needed. Since the days of colonization the United States has been essentially a rural nation. But new industrial conditions are forcing more and more of the population to live in cities, until at the present time more than half are living under urban conditions. With this change in living conditions there has not been a corresponding change in school organization. The school year, with its long summer vacation, was planned to suit rural conditions and to allow of the farm boy and girl helping with the ordinary agricultural operations of the farm. Thus the country child had, outside of school hours, good healthy out-of-door work. As a result he easily formed habits of industry and gained a knowledge of purposeful, productive occupation.

In the city, on the other hand, when the school doors close for the summer vacation, the child has no large field of useful occupation to which to turn his energies. About 5 per cent. of the city children are away from home during the vacation months or are with parents at summer resorts or visiting in the country. Something less than 10 per cent. are employed near home in healthful occupation suited to childhood, while the other 85 per cent. remain at home, without proper employment for any large part of their time. Many of these children at the close of school wander about aimlessly and often form themselves into gangs, and give outlet to their energies in ways that are not acceptable to other members of the community or beneficial to themselves.

Early history of gardening.

The school garden movement had its inception in the desire of city educators to provide employment for city children and also to add a subject to the curriculum from which knowledge might be gained through doing. It is interesting to note that the school garden was first started, and has taken firmest hold, in large cities. People feel

keenest desire for things when they have lost them. As cities become more and more congested, parents feel more strongly that their children should have greater opportunity for out-of-door exercise and first-hand contact with nature.

The first school garden in the United States was started at Roxbury (now a part of Boston), Mass., in 1890. From this beginning, the school-garden movement spread rapidly, and during the following 10 years many cities became identified with it.

Of the city school superintendents of the United States some 78 per cent. are now encouraging school gardening.

In some cases encouragement means simply talks on gardening by teachers and principals or the distribution of seeds and bulbs. In other cities, including practically all of the large cities, garden plots are maintained at the school building, and the teachers either give their services or are paid a small additional salary for the extra work in the garden. In still other cities complete departments of school and home gardening or of gardening and nature study are maintained and separate appropriations set aside for the work. The more rapid promotion of garden teaching by the schools is prevented by the tendency to adhere to traditional subjects, the lack of school funds, and the small number of well trained teachers who can be employed for a salary in keeping with that now paid in the elementary schools.

Present
status of
gardening.

Within recent years more attention has been devoted to the financing of school gardens. School boards either make separate budget provision or superintendents of schools are authorised to use part of the general school fund for the purpose.

Financing of
school
gardening.

With regard to the training of teachers the larger part of the State normal schools of the country give courses in elementary agriculture and nature study. The greater number of city school superintendents state, however, that none of the teachers now employed are trained to direct children in gardening in the practical way in which it should be done. It is the duty of the State normal school to train the elementary teachers of the State, and as superintendents are now demanding teachers with special qualification for garden teaching, these schools should meet the requirement.

In addition to school gardens promoted by the educational department, garden campaigns have been financed by city councils, chambers of commerce, civic clubs, women's clubs, etc. In some cases public spirited citizens have contributed liberally to the support of children's gardens usually in the form of prizes for individual achievement. In

Gardens
promoted by
other
agencies.

some cases conscientious, far-sighted teachers have voluntarily undertaken such work without financial support. They fully admit, however, that their efforts are not wholly devoid of personal interest, for they claim that children engaged in gardening are more easily taught and governed. A School Garden Association of America has been formed as a section of the National Education Association in 1911 and this body is growing in numbers and authority. In recent city school surveys the question of school gardens has been given careful consideration and in many cases garden teaching has been strongly recommended as a part of the school activities.

[The following text is extremely faint and largely illegible. It appears to be a continuation of the article or a separate section, but the words are too light to transcribe accurately. It seems to discuss the practical aspects of school gardening, such as the role of the teacher, the benefits to the child, and the organization of the garden. It mentions that the garden should be a part of the school's curriculum and that the teacher should guide the children in their work. It also suggests that the garden should be used as a means of teaching various subjects, including science, history, and civics. The text concludes by emphasizing the importance of the garden as a part of the school's life.]

Educational Publications of the Bureau of Education, India.

Quinquennial Reviews.

- Progress of Education in India, 1892-93 to 1896-97. Third Quinquennial Review. By J. S. Cotton. Rs. 3.
- Progress of Education in India, 1897-98 to 1901-02. Fourth Quinquennial Review. By R. Nathan, C.I.E., 2 Vols. Rs. 7.
- Progress of Education in India, 1902-07. Fifth Quinquennial Review. By H. W. Orange, C.I.E., 2 Vols. Rs. 5-8-0.
- Progress of Education in India, 1907-12. Sixth Quinquennial Review. By H. Sharp, C.I.E., Vol. I, Rs. 4 ; Vol. II, Rs. 2.

Reports.

- Report on the conference on the Education of the Domiciled Community in India, July 1912. Re. 1.
- Report on the enquiry to bring Technical Institutions into closer touch and more practical relations with the employers of Labour in India. By Lieutenant-Colonel E. H. deV. Atkinson, R.E., and T. S. Dawson. As. 10.
- Papers regarding the Educational Conference, Allahabad, February 1911. Rs. 1-8-0.
- The Essentials of a University in a Great Centre of Population. *Not for sale.*

Occasional Reports.

- No. 1. Rural Schools in the Central Provinces. By H. Sharp. Re. 1.
- No. 2. Vernacular Reading Books in the Bombay Presidency. By J. G. Covernton. (*Out of print.*)
- No. 3. The Educational System of Japan. By W. H. Sharp. (*Out of print.*)
- No. 4. Furlough Studies. By J. Nelson Fraser, H. Sharp and G. W. Kitchler. Rs. 2.
- No. 5. Training of Secondary Teachers. By H. R. James, H. Sharp and J. Nelson Fraser. As. 8.
- No. 6. Educational Buildings in India. Rs. 5.
- No. 7. Methods of School in England. By H. G. Wyatt. As. 8.
- Indian Education in 1913-14. Rs. 1-8-0.
- Indian Education in 1914-15. Rs. 2.
- Indian Education in 1915-16. As. 8.

Bureau of Education Pamphlets.

- No. 1. Drawing and Manual Training in Punjab Schools. By J. Y. Buchanan, As. 8.
- No. 2. The Education of Factory Children in India. As. 6.
- No. 3. Extracts from the Report of the Committee appointed by the Prime Minister to enquire into the position of Natural Science in the Educational System of Great Britain.

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