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CHAPTER XIX: CONVERSATION WITH MR. T. P. GILL.

Information obtained from "Conversation" with MR. T. P. GILL, *Secretary of the Department of Agriculture and Technical Instruction for Ireland.*

The object and scope of this department may be quoted from the opening paragraph of the pamphlet, "Organization and Policy of the Department," as follows:—

> The purpose of the Agriculture and Technical Instruction Act, 1899, is to establish an Irish Department of State, so constituted as to be representative at once of the Crown, the recently created local government bodies of the country, and those classes of the people with whom its work is chiefly concerned; and to give to this Authority the function of aiding, improving, and developing the agriculture, fisheries, and other industries of Ireland, in so far as may be proper to such a Department, and in such manner as to stimulate and strengthen the self-reliance of the people.

The Department represents a number of branches heretofore existing that had in various ways relations with agriculture or administration of some department, and included the Veterinary Department, also the functions of the Registrar-General and the Land Commission related to agricultural statistics; also the administration of sundry other Acts. It included also the functions of the Board of Education, South Kensington, (London), in relation to the administration of the Science and Art grant, the grant in aid of technical instruction, and the Science and Art institutions in Ireland; also those of the Board of National Education in connection with the Albert Institution and Munster Institution. It is important to realize that these were scattered elements of administration, staffs and endowments that were in existence and that were brought together under common direction and with a common co-ordinate idea, which is thus stated:

> The organization of the Department has been carried out, so far as it has gone, in careful observance of the fact that there is an essential unity of purpose behind its various functions, whether these directly concern the development of agriculture and industries, the promotion of technical instruction, the collection and publication of information, or the administration of laws to prevent the spread of contagious diseases amongst cattle and other live stock, and fraud in the sale of agricultural requirements and produce.

FUNDS AVAILABLE AND HOW APPLIED.

The various funds at present available were made up of votes of Parliament in connection with the branches of administration taken over when the Department was constituted, and in addition a special endowment fund, to be administered by the Department for its new work. There was first the grant due to the country under the heading of Local Taxation, Customs and Excise, amounting to £78,000; another, called the Irish Church Temporalities Fund, consisting of a surplus remaining after the disestablishment of the Irish Church, amounting

to £70,000; a third fund, amounting to £12,000, came from economies made in legal administration when certain judgeships were abolished, and the salaries attached thereto were offered to the Department. Then there was the money annually spent on the institutions at Glasnevin and Munster, £6,000; these funds making together £166,000 per annum, which is an annual grant. Since then the Department gets, under the Congested District Boards Act, a special fund of £19,000 additional. These moneys are called the Department's Endowment Fund, and every three years it is divided into two sections—£55,000 going for Technical Education, as distinct from Agricultural Instruction, and £10,000 being set aside for Sea Fisheries. A few other small items need not be mentioned. The remainder is given to all the purposes of agriculture, including improvement of live stock and schemes for agricultural education and development generally. The £55,000 for Technical Education is every three years divided into sections again, one going to the large cities and county boroughs, and the remainder to the small towns and the balance of the country.

The Department receives from the Imperial Exchequer two other sums,—one of £5,000 under the Act of 1902 and the other of £7,000 from the Development Fund.

The Department has two Boards, one for Agriculture generally, and the other for Technical Education; the former administers everything that the other does not, and also deals with Fisheries. The Agricultural Board has voted an additional sum of £9,000 from its funds to be applied by the Board to technical instruction in rural districts.

The item for training teachers in Nature Study in rural schools comes from the sum the Department keeps for central purposes, to be used for the whole country and not for a given district. Teachers come from different parts and go to different parts of the country, and their training is considered one of those central purposes and paid for in that way. For Summer Courses for other teachers, whether for town or rural districts, to teach Science in Secondary Schools, a part of the Parliamentary grant is obtained through the Treasury. There are thus, it is to be noted, different sources from which funds are got.

Science and Art Regulations.

One additional main item is the administration of the old Science and Art grant from South Kensington that was applicable to Ireland the same as to the rest of the United Kingdom when this Department came into existence, but which had been very poorly utilized in Ireland. One reason for this was that the regulations were not suitable to Irish conditions; another, the competition of the Intermediate system. When the Department started, the full amount utilized for the teaching of Science and Art was £4,000. In consultation with the teachers, and using the knowledge that some of the leaders possessed of the circumstances of the country, the Department got the Treasury to agree to a new set of regulations more suited to the conditions of Ireland, and the result is that for the teaching of science and art in the secondary schools the sum earned has increased in 10 years from £4,000 to about £28,000. This is provided from the Treasury at London, and is separate from the Endowment Fund.

The South Kensington fund is allocated according to regulations which lay down conditions under which it is to be earned. This Department has to approve of the programme adopted by the school, to inspect the teaching of that programme, and to satisfy themselves that the teachers possess the qualifications laid down by the Department, then certify that the school has earned the grant which comes through the hands of the Department. The Treasury will not pay the money to the school except on the authority of the Department.

The Royal College of Science, the Metropolitan School of Art, the National Library of Ireland and the National Museum and Royal Botanic Gardens at Glasnevin were formerly administered from South Kensington, but have come over to the Department, and with them the grant that maintained them. At that time the grant was about £32,000 in all but it has been increased since. The Department appointed a Committee to study and report as to the future of the College of Science, and on its recommendations the College was reorganized and a new building has been provided by the Imperial Treasury involving additional money.

Another set of regulations were made available for the Evening Technical Schools, and they were so suitable that nearly every one of those schools is now able to avail itself of these grants, which have grown from a very small figure up to £27,000. In round figures the whole scheme now comes to £55,000 from the Imperial Treasury, apart from the Department's Funds.

School Garden Work.

Great pressure has been put on the Department from various people in the country to have the Horticultural instructors, who are teaching the cottagers how to improve their holdings, put into the work of teaching garden work to elementary school children. This the Department could not do, but they had undertaken to train the National teachers for the purpose by short courses.

The Endowment Fund —that is, the Department's Funds—is administered with the assistance of the two Boards mentioned, but the Department itself has organized its work on a plan intended to give effect to the principle already quoted—that of essential unity amongst all its functions. The aim has been to have a series of branches, each manned by a qualified staff, and in a position to concentrate its entire energy and expert skill upon its special task as if it were a distinct department in itself, while at the same time its work is brought into harmony with the general purpose of the Act and gains from having behind it the resources of the entire Department.

Branches of the Department.

The machinery for the general direction and co-ordination of the branches is provided by the officers, Vice-President and Permanent Secretary. The branches are:—

(1) Agriculture—dealing with the whole field of agricultural administration, including Agricultural Education;

(2) Technical Instruction, administering the specific endowment for Technical Instruction, the Science and Art branch of the Secondary Schools, and evening technical schools:

(3) Fisheries Branch, dealing with the Fisheries;

(4) Statistics and Intelligence Branch, dealing with a very elaborate system of statistical information, and acting also as the Intelligence Department. Through this branch the Department is in communication with practically every Government Department in the world like their own, with every department of Technical Instruction and of Agriculture. It receives not only their publications, but those of the press of various countries relating to their work and has a system by which a synopsis of anything that may be new in information, that comes in from the whole world, is circulated amongst the branches every month, and sometimes every week, so that every branch is kept in touch with what is going on all over the world in connection with its work;

(5) Veterinary Branch, which deals with administration in connection with diseases of animals;

(6) The Grants Branch, which is the Treasury Department.

Broad Principles of Administration.

The first of the broad principles on which the Act is administered is to secure an effective *modus operandi* by which both local initiative and central contribution will have every opportunity. All the agricultural and technical instruction work of a local nature is administered through Committees of the Local Authority which are called into existence by the Act. In the Counties they are Committees of the County Council; in the towns Committees of the Municipal Council, expressly formed under the Act for that purpose. The County Committees administer all the live stock schemes and local agricultural instruction, and the city Committees administer all the technical instruction schemes. The local authorities raise rates for the promotion of this work, and unless they do so, they are not entitled to receive any grants from the Department. When they raise a rate and submit a scheme that the Department approves, a grant is made for it, and the local authorities administer the scheme subject to the inspection of the Department, which practically fixes the standard. The Department lays down qualifications of various types of teachers, and will not approve of any being employed who have not these qualifications. This is one of the most important principles to be noted in the working of the Act. Great pressure is nearly always brought to bear on the Department to allow a teacher to be employed who has not quite obtained the qualifications required, but the Department has always refused, except in most *bona fide* exceptional circumstances.

This is the only safe principle in the end, because the teaching must be absolutely right.

Local Rates and Department Grants.

The local authorities are asked to raise a certain amount of money before they get the Department's grant. Some districts are poorer than others, but the Department says that they must raise such a rate as in the circumstances of their locality they should raise. For example, a penny rate in the County of Mayo would not raise anything like what a farthing rate would in a district in part of the County of Down, It is that poor district that is most in need of grants; so that where a poor district does its duty, although the total amount raised may be a small one, the grant is given, and given at a higher rate to a poorer district than to a richer one. Pound for pound may be given in one case, and thirty shillings to the pound in the other. The proportions are modified in that way.

The idea is to stimulate local initiative and sense of local responsibility as much as possible, while conserving the equally necessary principle of central suggestion and supervision. There must be a body which is able to look at the question from the point of view of the whole country; a body which has experience of what is going on in the country itself as well as outside—which no local body can have. It is most important to conserve the effectiveness of action of that body. Various movements of opinion come into the plan to destroy that effectiveness, because the control of a central body is always irksome to a local body that does not quite agree. While all those difficulties were met in the beginning, the local authorities throughout the country have now come to realize that the Department has generally good reason for what it recommends and decides. The upshot is that local authorities invite the Department's interference and guidance again and again. That remark applies to schools looking for the advice of the Department's inspectors as well as to local authorities, who constantly ask that an inspector be present at the meeting when they are settling their schemes for the year.

Direct and Indirect Means.

Another principle has been to distinguish between direct and indirect means of action in promoting agriculture and industries. The direct means include all that relates to the improvement of live stock on the agricultural side; to exploitation of Irish products in the market; and to assistance to industries on the technical instruction side. The main indirect means of action is education—the instrument that the Department regards as most potent of all.

One principle of the Department's educational policy is that although administering a specific branch of education, the Department does not look upon that apart from the education of the country as a whole, which must be considered as an organic unity.

The other fundamental principle is to consider the pupil with regard to the formation of the all-round man, and not merely to give to specific technical aptitudes. Experience has shown—and of nothing was Mr. Gill more firmly convinced than this from his own experience—that even for making a man

efficient in a purely technical calling, the more that broad human preparation of the man was regarded, the better would the technical work be done. The effort must be to make a man of him, and not merely a machine. The following passage occurs in the very first statement of the Department's policy:—

> The Department do not desire that Ireland, at this period of transition in her educational history, should fall into the mistake, which, it is beginning to be recognized, has been committed elsewhere, of underestimating the value of the human and ethical parts of education even in the direct production of utilitarian results.

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CHAPTER XX: CONVERSATION WITH MR. GEORGE FLETCHER.

Information obtained from "Conversation" with MR. GEORGE FLETCHER, *Assistant Secretary in respect of Technical Instruction, Department of Agriculture and Technical Instruction for Ireland.*

This Branch of the Department is concerned with the following operations:—(1) Secondary Schools; (2) technical schemes in various urban centres and rural districts; (3) Central Institutions; (4) the policy in regard to industrial development.

When the Technical Instruction Act of 1899 was passed there was transferred to this Department the administration of the grant for Science and Art in Ireland, and also the administration of the grant-in-aid of technical instruction as defined by that Act. The South Kensington authorities had made grants to Secondary Schools in Ireland before this Department came into existence. The Department inherited that power and right, and has exercised it to the full, and while it worked under the South Kensington regulations for several years, it was found that those regulations, unsuitable for Scotland and England, were still more so for Ireland; hence no time was lost in altering them.

The Department, recognizing that all Technical Education must be based on sound Primary and Secondary Education, endeavoured as one of their first steps in Technical Education, to reform the teaching of Science in the Secondary Schools of Ireland. An extremely small amount of science teaching was being done in the Secondary Schools when the Department established its programme. There was a programme of natural philosophy which did not involve any practical work whatever. It was tested solely by examination, and the number of students in the whole of Ireland had fallen down to something like 600—a desperate condition of things when it is realized that there are very nearly 300 Secondary Schools.

SCIENCE TEACHING IN SECONDARY SCHOOLS.

The Department had a fairly clear course, because they had the power to make grants for the teaching of science in Secondary Schools; therefore they established a programme which has some very interesting fundamental principles. First of all the Department said to schools, "We can make grants to you for the teaching of experimental science, but we require that the teaching shall be very practical in character, and that practical work shall be done by the scholars themselves. Mere demonstrations are insufficient. Therefore we cannot recognize a school which has not a fairly equipped laboratory for the teaching of science. Next, we require that teachers shall be trained to carry

out this course, which shall be for four years. The first and second years, called the preliminary course, shall be quite fundamental in character, shall impress the elementary principles of physics, and must be taught practically. For the third and fourth years you may choose among the specialized subjects:—physics, chemistry, mechanics, botany, or domestic economy for girls, drawing, or physiology or hygiene."

The main difficulty at the very outset was that there were not in the whole of Ireland six laboratories in the Secondary Schools, neither had they the teachers. But the body that made the conditions gave the aid to meet them. On representations made to the Treasury a full grant was made for equipment for Science Laboratories—£5,000 a year for 5 years, or a total of £25,000. The Department also sanctioned County Council Committees making grants for this purpose out of the funds which had accumulated during practically the whole of the first year, before the schemes had been able to mature; so that all told there was probably £50,000 given to assist in equipping the Secondary Schools. The local authorities certainly gave as much more, because they had to provide buildings.

How Teachers were Trained.

The difficulty of teachers then appeared. Teachers were admitted pretty freely to Summer Schools, and if they had not taken a suitable course in some University or higher institution they were given special recognition after passing five sessions of summer courses. The fifth course might be a repetition of one of the courses gone through, or a special course in laboratory arts devised for the purpose of giving them some manual dexterity in making and mounting apparatus. These summer courses took in a large number of teachers, who were given travelling allowances and £3.10s. for personal expenses for the month. The students who attend at the Royal College of Science and the Metropolitan School of Art get this grant out of a parliamentary vote: but for all institutions outside those, the money comes out of the Department's Endowment Funds. There have been 500 or 600 Secondary School teachers every year in the summer courses, and as a result a very fair amount of training has been secured.

The Department decided to use the regular teachers for the science work in Secondary Schools. For Experimental Science and Drawing, three hours weekly are required. No school may take one without the other. The first and second year's course is fixed for the schools by the syllabus, and they all adopt this, although the Department allows them to draw up their own if they choose. One reason they are content with the syllabus is that they themselves have a voice in its revision.

Advisory Committee a Safety Valve.

There is an Advisory Committee of Head Masters, and when any great change in the regulations is proposed, the Department calls them together and discusses these things with them. Sometimes they propose alterations or reductions, but the Committee is exceedingly reasonable. Mr. Fletcher con-

sidered a Committee like this a most excellent affair, because changes, proposed as the result of experience in working, would be received very badly, and would cause passive resistance if not actual opposition, unless such changes commended themselves to the Head Masters.

The Committee formed a safety valve, for they could state all their objections and make all their vigorous remarks around the table and hear the reply. As a matter of experience there was always agreement in the end. This Committee is called probably once or twice a year, but with the understanding that they can come together oftener if they desire a meeting.

Grants—How Allotted.

A school that cannot carry out a course for more than three years is not recognized for payment of grants without a special condition. No student can be recognized for grant unless he is aged 12. The Department's idea of a Secondary School is that the student should finish by 16. The programme has Experimental Science and Drawing in all classes. But if under the circumstances students cannot be retained for the third year, the school must take Manual Training. The idea is that a school that cannot retain students for more than a two years' preliminary course is rather a lower type of Secondary School. The pupils are probably the children of parents of industrial occupations and are therefore held for manual instruction. The science course applies to both boys' and girls' schools. In the latter, if they cannot take a third year they must take Domestic Economy. This does not imply that manual instruction is only necessary for that type of school, but it means that they, at least, must take it.

The principle on which grants are made to those schools, when these conditions are satsified, is that they must have a laboratory and a qualified teacher and then grants are made solely on the results of inspection, there being no examinations. There is a staff of 15 inspectors who are entitled to go into those schools at any time and test the students in any way they may think fit. They make casual inspections during the year, and at the end of the session hold something of a field day or full dress inspection.

Then grants are made on the basis of attendance. It might be called a Capitation-Attendance-Efficiency system. That is to say, the greater the number of pupils the greater the pay; the larger amount of time devoted to teaching the greater the pay; and the normal grant fixed in this way is capable of being raised by one-tenth or lowered by one or more tenths on the report of the inspector. If he reports that it is meritorious teaching and above the average, the normal grant would be automatically increased by a tenth. If he says it is bad, the grant is lowered by one tenth, but if it has to be lowered by two tenths the school is warned that the grant will be withdrawn altogether if matters do not improve. On the whole the plan works very well, and 283 schools have taken it up.

Co-operation of Intermediate Board.

Mr. Fletcher did not think they would have taken it up so generally if the Intermediate Board, which controls the Secondary Schools, had not worked in

with the Department. As soon as the programme was published, the Intermediate Board passed a resolution adopting the Department's programme in place of their own programme of Natural Philosophy, and recognizing the Department's inspection in lieu of their own examination, so that the two bodies worked together in the matter. The Department inspects for the National Board, and the latter adopt the inspectors' passes and failures as their own. Hence schools find it convenient and profitable to work on the Department scheme, and there is hardly a school in Ireland that is not using that scheme.

Grants which were originally about £1,000 a year have gone up to £28,000. A school might get from 30s. to £2 per head of pupils, depending upon its efficiency, the amount of time it devotes and the excellency of the teaching. Mr. Fletcher said there was no branch of the Department's work less known than this, yet, in his opinion, none more worthy of attention, because he believed that Ireland stood out almost unique, certainly among the countries of Europe, for this class of work. He knew it was not done so well in England or on the Continent, and he ventured to suggest that this would be found a most interesting and profitable line of enquiry.

Practical Training in Science.

In Boys' Schools, Chemistry is being taught very well and always practically. The boys themselves may be found at work taking specific gravities, etc. The research method is adopted as much as possible, the Department deprecating giving boys information which they could find out for themselves. The boy is given a piece of iron and asked to find the specific gravity on the basis of principles which he has been taught. He has to record all his weighings, which are carefully checked, and the final result is arrived at and discussed and made the basis of instruction in fresh scientific principles. Much importance is attached to method in this matter.

The freedom among the schools to vary between the third and fourth years by choosing which specialized course they will take—Botany, Philosophy or Hygiene, or Geology—has been taken away and replaced by a syllabus in Commercial Geography. He believed that some of the very best teaching of Domestic Economy and Hygiene was to be found in the Girls' Secondary Schools in Ireland. The teaching in all the Catholic Secondary Schools is undertaken by religious orders, and the Nuns themselves have taken to the Department's work with the very greatest enthusiasm. They have rules which make it impossible for them to attend the summer courses in Dublin, though occasionally groups of Nuns from various convents attend at central houses where teaching is given. The teaching in Hygiene and Domestic Economy is being done extremely well in Secondary Schools.

Records of Pupil's Progress.

The inspector pays great attention to the teacher's record of the pupil's progress, and this is one of the first things he asks for and discusses with the

teacher. It is made a matter of friendly discussion—sometimes not so very friendly if the work is bad. More attention is paid to this record than to the work done on the day of inspection, which is more or less superficial.

Accurate records of work by the pupils are insisted upon and they are found most useful. A clear, logical statement of a result arrived at helps enormously the teaching of English, and is of very great educational value. There is no room for sloppy or ill-considered statements. The student must state precisely what results he has obtained and what inference he draws from them. Moreover, he is required to make drawings of his apparatus and thus use drawing as an aid to expression. The keeping of a notebook by the student is one of the best guarantees the Department has of the real nature of the work. It helps the student in another way, for the Department requires that the student should be registered from the beginning of the session to the close, and payment is made on that register; so that the notebook is virtually a Treasury Voucher.

Dealings with the Treasury.

The custom is to say to the Treasury at the beginning of the year "We estimate that we shall require £28,000," or whatever the amount may be. The grant to the schools is never trimmed to fit the estimate, and if it be a thousand pounds less, the money would go back to the Treasury; if a thousand pounds more, the Treasury is usually willing to permit a transfer from some other heading. If a school gets more or less it is neither an advantage nor a loss to the funds of the Department. Mr. Fletcher said it was a great credit to the staff that the estimates were so remarkably close.

Another point of importance is that the Department deals directly with the Secondary Schools, and not with any local authority.

For the work done through the local authorities—county and urban committees—the sum of £55,000 is available, together with the proportion of the local rate, plus the Science and Art grant for Secondary Schools. When this work was begun, there were only two or three technical schools in all Ireland; now there are 50 or 60. These are managed by local committees with co-opted members. These committees had had no experience, as Ireland was very much behind either England or Scotland, where Technical Education took a great leap through the passing of the Local Instruction Act and the Technical Instruction Act in 1890-91, when the Beer and Spirit money was made available for Technical Education. The Irish equivalent was not given to technical education, but to intermediate and primary education, which at that time was perfectly justified, as there was no machinery for the former. The Local Government Act did not pass till 1898, so that from 1891 to 1901, practically, there were ten dead years in Ireland as related to technical instruction.

How Schemes are Framed.

These local Committees in Ireland had no experience in framing schemes; but an Inspector from the Department discusses schemes with them, and these are adopted, submitted to the Board and approved, and the Committees go

to work at once. To-day every county in Ireland has a Technical Instruction scheme. That of County Cork may be taken as typical: it includes advanced evening classes, day trade preparatory classes, technical classes and scholarships for girls, domestic economy day classes, instruction in manual work and domestic economy, preparatory course of instruction, and general conditions that come into all the schemes.

While very great use is made of examinations for the purpose of deciding on the qualifications of teachers, the Department believe they can find out what work is being done in a technical school by means of inspection better than by examinations, which are entirely abolished.

Local Rates and Grants.

No grant is given in any county or town unless it raises a rate, and the Department is generally satisfied with a penny rate. The town of Pembroke raises twopence, and certain other towns raise more than a penny. The basis of distribution of the fund is this:—At the option of the Department the £55,000 may be divided into two portions, one portion available for the 6 county boroughs in Ireland, and the other for the rest of the country. The basis of allocation is this:—The Dpeartment, wishing to relieve any poor district of the consequence of poverty, decided to begin by making up its rate to £20 per thousand of population, so that no town would suffer from poverty in respect to the smaller amount raised by the rate; then the amounts are allocated on the rough basis of population, in some cases the principle being departed from for special reasons. That makes up the grant called the grant from Endowment. There is also the product from the rate; also the earnings from the Science and Art Department.

Itinerant Classes.

From Mr. Fletcher's point of view a most important scheme is that of instruction in Itinerant Classes. The Department set to work to train teachers in manual work and domestic economy, and in special courses, running over 8 months, trained some 80 young tradesmen, and those who passed their examinations were set to work in Counties, being given salaries commencing at £120 and rising. These give their whole time. The principle is that different centres make application to the County Committee, who allocate instructors for courses extending for six weeks in daily classes. The course may be extended to three months if it is going on well, but the Department prefers a six weeks' course repeated the following year. Any old building is rented which is available and suitable, and the plan works very well, criticisms formerly heard having entirely disappeared. Young farmers and all sorts of people attend, and are taught manual instruction on rigid principles, drawing, etc., but in the strictly rural districts people are allowed to make wheelbarrows, gates and anything in the construction of which those principles may be used.

Mr. Fletcher was afraid that manual instruction had been some shibboleth; everything that was useful was condemned; the principle of making a dovetailed joint was thought so important that its value was supposed to be lost if it were put into a piece of furniture. The Department does not agree with that. They find people in the country districts working uselessly unless thay turn out something that is useful in the end; so, while the educational principle is kept in view, these rural classes are making beehives and barrows and all sorts of useful things and are putting these to the betterment of their holdings. Having got the skill, they are beginning to use it. The County Committee meets the expense of the school, other than the teaching, out of the joint fund made up of their own rate and the Department's contribution.

Domestic Economy Teachers and Scholarships.

The same plan is worked in connection with Domestic Economy. These teachers get three years' training, and are available to be appointed by local committees who provide six weeks' courses of instruction for localities in the same way. Usually two sessions are held daily, say, in the afternoon from 4 to 6, and in the evening from 7 to 9. That has been found useful, because senior girls from the National Schools may attend the afternoon class outside of school hours. To prevent overlapping, a rule was made that no girls under 14 should attend, and no scholar on the roll of the Elementary School; but the classes are always attended by a number of girls who have just left school. The evening classes are very largely attended by women of the district, sometimes the ladies, sometimes servant maids and daughters of farmers, and these all work together. Mr. Fletcher attended one of these classes in the previous week, and saw the National School master's wife and the wife of a hotel-keeper and farmers' wives from a distance of four or five miles who went in every day.

The Department allows County Committees to grant Scholarships for girls, which are tenable at Schools of Domestic Science. They are worth £15, and the local Board adds £2, making £17 for board and residence. The Department has a School of Domestic Training at Killarney, which is devoted quite definitely to training in Domestic Science, and the moment these girls are trained they are immediately snapped up.

Day Trades Preparatory Schools.

The Day Trades Preparatory Schools form an entirely new type, organized by the Department. While a certain amount of English is kept on the programme, the subjects may be said to be Applied Drawing, Workshop Arithmetic, Experimental Science, Manual Instruction, with perhaps a little Commercial Instruction. These schools are worked mainly through local authorities, which send in an estimate of their probable expenses, and if approved, the Department pays three-quarters of the actual expenses as shown by vouchers, the other quarter being provided from local funds, consisting of the Department's grant plus local rates.

Aid to Home Industries.

The Home Industries in Ireland are such as Lace, Crochet Making, Sprigging, Knitting and Hand-loom Weaving, and the Department originally allowed grants towards teachers in these various industries, but the plan did not work well because when a class was not well attended and went down, the grant continued. The Department then gave capita grants and required that every scholar should receive instruction in Domestic Economy, which was defined, and that worked very well. In addition to that, the Department allowed County Committees to employ teachers for those home industries and lend the teacher if they liked, and that plan had worked very well, notably in Fermanagh, where there are 8 teachers who control these little home industries, mainly Crochet, Sprigging and Embroidery. Both these methods of aid to industries through County Committees have their merits.

The Department also directly encourages various home industries, though its powers are limited in this direction. Industries have been started which have arisen out of the Department's courses of Manual Instruction; but the industry known as Sprigging is a development of great interest. This consists of embroidering the corners of handkerchiefs with initials, etc. It is a very widespread industry in Ireland, but as a hand industry is undoubtedly declining, a machine having been found to do the work. The Department sent a special inspector to Switzerland to report on the machine embroidery there, and also made enquiries at home and found that three large Belfast manufacturers sent all their linen to Switzerland to be embroidered. It was taken in duty free under a special Act, and sent back to Belfast, and of course it was Irish linen. These people actually established factories in Switzerland for this purpose. There is no doubt that the work could be done in Ireland, and the Department has lately established a school at Ballydugan in the North of Ireland, to which this large Swiss machine has been brought, on which several handkerchiefs can be done at once by a simple pantograph movement at one end, and it is doing very good work. The Department is giving aid to this school, and may establish others.

The Department's Various Grants.

The Department can give grants under 11 heads, and it is difficult to say what cannot be touched under those heads, which cover the following industries—building, metal, textile, printing and engraving processes, furniture, leather, woodworking, carriage building, electrical, chemical and agricultural.

The old Science and Art plan having proved unsuitable, the Board of Education finally allowed the Department to have its own scheme. The Department now pays a grant on attendance, and in addition gives what is called an increment grant for continued attendance in the case of individual students, which is paid on the total attendance-hours in all subjects of an approved course

in the preparatory or specialized courses, the rate of increment per hour being as follows:—

For each hour from	21 to 40	One Penny.
	41 to 60	Twopence.
	61 to 80	Threepence.
	81 to 100	Fourpence.
	100 to 120	Fivepence.

No increment is paid on attendance-hours exceeding 120. This has the effect of causing the classes to keep up a good attendance, either by pressure upon the student or by giving inducements for regular attendance.

The Department has a system of inspection to ascertain whether students are really profiting by the instruction as they should. The inspector visits from time to time and sits and hears the lesson, examines the students' note books, etc. The method of written examination has been tried, and Mr. Fletcher ventured to say it had been found wanting. If a paper examination is instituted and all the students are required to go in for it as a basis of payment of grant, it would stereotype the teaching. Mr. Fletcher would like to make inspection more frequent, but the Department was handicapped by lack of inspectors, so the endeavour was made to inspect very thoroughly, each school being visited several times each session, and a school like the Belfast Institute probably twenty times each session. At the same time he frankly admitted that it would be quite possible for a class to escape, but the Department left something to the conscience of the local authority.

There is always a fight between the school that wants to get as much grant as it possibly can and the Department that wants as much efficiency as possible; and the lower standard of students coming into the schools is a handicap, so there always has to be a nice adjustment between what is possible and what is perfect.

All the Central Institutions run by the Department, such as the Metropolitan School of Art, minister to the other parts of the scheme.

Lack of Suitable Buildings.

When the Act was passed, no grant was made for buildings, and there is a lack of suitable technical school buildings. The work has gone on in all sorts of unsuitable premises. People in Ireland did not believe that technical education had elements of permanence. In one place Mr. Fletcher was told they would not have half-a-dozen pupils, yet on the opening night there were over 200. It was suggested that this was a flash in the pan, but they not only remained but increased in number.

Now, after 10 years, the Department is quite convinced that technical education has come to stay, and the attendance compares most favorably with towns of similar size in England. What is now needed is proper accommodation. Quite a large number of local authorities have borrowed money and built, and the Department allows the interest and sinking fund as a first charge on the

grant, so that quite a number of small townships have put up schools, and a number of buildings have been modified for technical instruction. The money which is allowed for interest and sinking fund was primarily intended for annual maintenance, and makes such a hole in the annual income as to rather interfere with educational work. Parliament has been pressed for a building fund, which is a great financial need, but this has not yet been granted. It is a question whether it is fair to ask the localities for a higher rate than one penny. They have power to borrow, and they have used it most freely, but they have not power to raise more than twopence, and some towns have reached their limit.

Scholarships for Boys at Schools and Trades.

There are scholarships for boys, tenable at Secondary Schools and paid for out of the funds of local committees. Hitherto these scholarships, which were intended for boys who were to follow industrial careers, were held in Secondary Schools, but the scheme failed, as the boys never went on to an industrial school. Now these scholarships are made tenable at Trade Preparatory Schools, which a boy may attend for two years, or he may be apprenticed, and the Department will guarantee him 15s. a week till he is out of his apprenticeship, on condition that he attends evening classes and follows the programme approved by the Department. Perhaps the first year the boy gets nothing from his employer; then the Department will give him 15s. The second year he may be paid 15s. by his employer, in which case the Department gives him nothing; but before he is apprenticed the Department has to know the terms of apprenticeship, and to some extent will be able to have terms in competition. Mr. Fletcher hoped the scheme, which had only been initiated, would work very well.

SESSIONAL PAPER No. 191d

CHAPTER XXI: ORGANIZATION OF THE DEPARTMENT.

The purpose of the Agricultural and Technical Instruction (Ireland) Act, 1899, is to establish an Irish Department of State, so constituted as to be representative at once of the Crown, the local government bodies of the country, and those classes of the people with whom its work is chiefly concerned; and to give to this Authority the function of aiding, improving and developing the agriculture, fisheries and other industries of Ireland, in so far as may be proper to such a Department and in such manner as to stimulate and strengthen the self-reliance of the people.

SECTION 1: THE VARIOUS BODIES CONSTITUTED.

With this end in view, a Department has been constituted with a staff paid out of a Parliamentary vote. There have been appointed, to advise and co-operate with the Department, an Agricultural Board, a Board of Technical Instruction, a Council of Agriculture, and a Consultative Committee of Education. There have been placed at the disposal of the Department and its Boards an endowment of £166,000 per annum and some additional sums as indicated elsewhere.

Council of Agriculture.

The Council of Agriculture, constituted under Section 7 of the Act of 1899, consists of 104 members, of whom 68 are appointed by the County Councils and 34 are nominated by the Department, the President and Vice-President of the Department being *ex-officio* members.

By Section 27 of the Act the members of this Council, and of each Board established by the Act, hold office for terms of three years.

The Agricultural Board.

The Agricultural Board consists of 12 persons—8 appointed by Provincial Committees of the Council of Agriculture and 4 appointed by the Department.

That portion of the Department's Endowment Fund intended for the purposes of agriculture, rural industries, and sea and inland fisheries (with the exception of a special sum of £10,000 for sea fisheries, and certain specified capital sums) must be administered by the Department with the concurrence of the Agricultural Board. In addition to their control of all such expenditure, this Board acts as an advisory body to the Department in reference to "all matters and questions submitted to them by the Department in connection with the purposes of agriculture and other rural industries."

Board of Technical Instruction.

The Board of Technical Instruction consists of 21 members, appointed as follows: 3 by the county council of each of the county boroughs of Dublin and Belfast; 1 by a joint committee of the councils of the several urban county districts in the county of Dublin, such joint committee consisting of one member chosen out of their body by the council of each district; 1 by the council of each county borough not above mentioned; 1 each, by the Provincial Committee of each Province, by the Commissioners of National Education, and by the Intermediate Education Board; and 4 persons appointed by the Department.

The Consultative Committee.

The Consultative Committee consists of the Vice-President of the Department as Chairman, and one person appointed by each of the following bodies: —The Commissioners of National Education, the Intermediate Education Board, the Agricultural Board, and the Board of Technical Instruction.

The function of the Committee is to "co-ordinate educational administration." The operations of the Department as regards science teaching and technical instruction, whether as applied to agriculture or to urban industries, have an intimate bearing on the work of primary, secondary and higher education, and the success of the Department's work must largely depend on the manner in which the various educational systems of the country are worked in harmony. This harmony it is the object of the Committee to promote.

Local Organization.

The Department is deeply convinced that in Ireland, and especially in relation to agriculture and to industries connected with agriculture, organization has an essential part to play in the economic and social elevation of the people. Indeed, it would appear as if this agency of progress had, comparatively speaking, greater possibilities here, on account of the racial capacities for associated effort which the people display, than even in countries which, with the aid of organization, have succeeded, for the time being, in driving Irish agricultural produce from its due place in the markets. The Recess Committee found that Departments of Agriculture in the countries whose competition Ireland feels the most keenly, devote a considerable part of their efforts to promoting agricultural organization, recognizing it as an axiom of their policy that, without organization for economic purposes amongst the agricultural classes, State aid to agriculture must be mainly ineffectual, and even mainly mischievous.

Thus, for the sake of efficiency in its educational work and of economy in administration, the Department would be obliged to lay stress on the value of organization. But there are other reasons for its doing so: industrial, moral, and social. Organization is itself an agency of the greatest power and, in modern economic conditions, an essential agency for the advancement of the agricultural industry, and of others connected therewith, not only rural districts,

but undertakings in which town and country share; and by its means capital (as well as directing skill and economic management) is made available both for such undertakings and for the most minute concerns of the smallest farmers and labourers to whom the use of helpful capital is possible through no other channel.

Again, organization is perhaps the most direct means of nourishing the self-reliance and strengthening (so to speak) the moral back-bone of the people; for, through mutual help, it renders the self-help of a community at once effective and brings the intelligence of the most intelligent to assist in promoting the interests of the most backward individual who engages in the common effort. But not the least important aspect of organization for Ireland, where the isolation and dulness of rural life have something to do with the continuance of emigration, is its social side. Around every little society, through which the people of a district have been successfully working out their industrial advancement and learning the powers which combination gives the simplest and most remote of communities, even in complicated business affairs, there is an inevitable tendency for combined efforts for other purposes to group themselves. In this way opportunities and means for educational improvement and social amenity are multiplied in places where such means and opportunities did not exist before; while the faculties of the people are expanded, their hopefulness increased, and life at home on the Irish countryside is rendered more attractive.

SECTION 2: ADMINISTRATION AND FUNDS.

Principles of Administration.

Two principles of procedure are clearly indicated, as well as by the situation the Department has to deal with as by the legislation they are required to administer.

1. Administration of this kind must fail in its best result unless it seeks to evoke and fortify the self-reliance, enterprise and sense of responsibility of the people. Both economic and social laws dictate this principle.

2. In encouraging local initiative and responsibility the danger, on the other side, of an indiscriminate multiplication of unrelated local schemes must be guarded against by a due conservation of the principle of central direction. It is the duty of the Department to keep in mind the national as well as the local point of view, and to bring to bear on schemes and problems that power of co-ordination and that expert aid which the resources of a Central Authority, acting and thinking with and for the whole country, can command. The importance of this principle is well illustrated in the efficiency of the Continental systems of State aid for Technical Instruction and Agriculture, on which the constitution of this Department has been to some extent modelled.

Both these principles are provided for in the Act in such a way as mutually to strengthen each other. The Advisory Boards of the Department, who control the expenditure of its Endowment Fund, are mainly constituted by the local self-governing bodies of the country.

Relations with Local Authorities.

With a view to rendering its advice more effective and better informed, the Department considers it wise to establish, through their officers, direct and personal relations with the local authorities, societies, schools and those classes of the people generally with whom their work has to do. It is felt that correspondence alone would be an inadequate means of explaining a new and complicated Act, and of working out highly technical schemes with bodies who are under no obligation to adopt them. Hence, the Department, in the person of its representatives, has been ready to visit every local authority, confer with them on the spot, and aid them with expert advice after thorough inspection and examination of local conditions. Practically all the county councils and urban councils or Technical Instruction Committees in Ireland have thus been visited by the Department—some of these bodies many times—and very numerous personal conferences have taken place at the Department in Dublin between its officers and the representatives of local committees.

The Endowment Fund.

The Department's Endowment Fund at present consists of an annual income of £166,000 under the Agriculture and Technical Instruction (Ireland) Act of 1899, £5,000 under the Agriculture and Technical Instruction (Ireland) Act, No. 2, of 1902, £19,000 under Section 49 of the Irish Land Act of 1909, and £7,000 from the Ireland Development Grant. From the total, amounting to £197,000, a sum of £62,000 has to be set aside for the purposes of Technical Instruction (as distinguished from Agricultural Instruction), and £10,000 for sea fisheries. A provision of about £1,000 a year has also to be made for the payment of the superannuation allowances of certain persons formerly employed under the Commissioners of National Education, and for travelling expenses of members of the Council of Agriculture and of the two Boards established by the Act of 1899.

Any portion of the Endowment Fund, under this head, not expended in any financial year is accumulated by the Department in accordance with Section 16 (4), and may be used in future years for expenditure upon general or local schemes, at the discretion of the Department and the Agricultural Board.

In addition to the Endowment Fund there are Parliamentary votes for some of the work done under the Department. In these provision is made for the salaries and other expenses in connection with the institutions and officers transferred from other departments under Section 2 of the Agriculture and Technical Instruction (Ireland) Act of 1899, as well as for salaries and expenses of officers appointed since the 1st April, 1900.

The expenditure falls into two main natural divisions: (1) Moneys which are required for the purposes of a general character, affecting the country as a whole; (2) Moneys which are required for local schemes. This distinction is duly regarded in the administration of the funds by the Department and the Board.

Aid to Local Schemes.

In regard to local schemes, it is of importance to have it clearly understood that aid is intended to be applied to schemes, and not to localities as such. The function of the Department is not to distribute money to localities, but to apply financial support and skilled assistance to approved schemes for giving effect to specific purposes, for the attainment of which the Department has been created. The schemes must be approved by the Department, and they must, save in exceptional cases, be aided by local contributions before the Department's funds can be applied to them. But the contribution from the Department's funds is not in any fixed proportion to the local contribution. Provided the Department and Board are satisfied that the locality does its duty, and the actual local contribution is in just proportion to the genuine capacity of the locality to contribute, they are free to aid schemes in that locality with regard only to the merits of the schemes, to the needs of the locality, and to the relation of the schemes with the general system for the country as a whole of which they are part. To such schemes in any county, or to the extension of such schemes, or to any particular feature of them, the Department's contribution may be increased or lessened in future years according as the needs of the locality, the success or non-success of parts of the schemes, the amount of the local contributions or other circumstances may determine.

That policy in respect to the contribution by the Department not having any fixed relation to the actual local contribution was modified in 1910.

In view of the increasing demands on their funds, resulting from the extension of county schemes, it was accordingly decided, with the concurrence of the Agricultural Board, that the amount of the Department's grants towards the cost of agricultural schemes should in future bear some proportion to the conditions of each county, taking into consideration valuation, population, number of breeding stock, and area under crops. This new method of distribution took effect with regard to all agricultural schemes coming into operation after 30th September, 1910, and will remain in force for five years from that date.

The net expenditure on the agricultural side of the Department's work in 1909-10, including the grant of £9,000 for the purpose of providing instruction in manual work and domestic economy in rural districts, was £117,778.

For Agricultural Instruction.

The grants for Agricultural Instruction, sanctioned with the concurrence of the Agricultural Board, amounted to £28,088. The votes to County Committees included £5,363 for general administration and £16,891 for Agricultural Improvement Schemes. These were outside of and in addition to grants for Live Stock schemes and shows. Altogether there are 14 main schemes in regard to which the Department co-operates with County Committees. The first seven which relate to Horses, Cattle, Swine, subsidies to Agricultural and other societies, prizes for Cottages and Small Farms, lie outside the scope of this Report. Other schemes, such as Instruction in Agriculture, Winter Agricultural Classes, In-

struction in Horticulture and Bee-keeping are dealt with. They may be taken as typical of the others. Altogether 131 instructors and instructresses are employed permanently in connection with the schemes.

For Technical Instruction.

Under Section 16 (C) of the Agriculture and Technical Instruction (Ireland) Act of 1899 an annual sum of £55,000, allocated for the purposes of Technical Instruction, is to be divided into two parts. It was allocated by the Department with the concurrence of the Board of Technical Instruction for the triennial period ending 31st March, 1912, as follows:—

For Technical Instruction in county boroughs..... £26,000
For Technical Instruction elsewhere than in county boroughs, and for central purposes..... £29,000

The Board therefore control the expenditure of an annual sum of £29,000, which is applicable for technical instruction elsewhere than in county boroughs, and for certain central purposes. The balance of the £55,000 viz., £26,000, allocated (with the concurrence of the Board) for technical instruction in the six county boroughs, is applied in aid of schemes in those boroughs subject to the approval of the Department alone. Out of the sum £29,000 referred to, the Department (with the concurrence of the Board) set aside an annual sum of £4,000 for central purposes, *e.g.*, for Senior Scholarship schemes, provision for training teachers, etc. The remaining £25,000 is distributed in aid of approved schemes of technical instruction in urban and county districts.

On the whole the amount contributed by the Department from its Endowment Fund, for Technical Instruction, under 34 county and 34 urban districts and county borough schemes, amounted to £58,916 as against £29,514 from local rates. The total number of pupils in attendance was 42,909 (16,784 young men and 26,125 young women). Of these 2,948 are boys and 2,998 are girls who are still attending school.

As the funds available for the ordinary subjects of Technical Instruction are all needed for the urban schemes, the Department again found it necessary to ask the Agricultural Board to allocate a sum of £9,000 out of the funds administered with the concurrence of that Board, for Manual Instruction and Domestic Economy classes in rural districts. Such classes are regarded as part of the general scheme of Agricultural Education, but, for administrative reasons, the Department have hitherto found it convenient to administer this sum with the concurrence of the Board of Technical Instruction. Classes in lace and crochet-making, and other rural industries, are also financed from the agricultural surplus, the amount voted in 1909-10 for this special purpose being £3,000.

The grant in aid of Technical Instruction for 1909-10 commonly known as the "equivalent grant," was duly received from the Ireland Development Grant, and amounted to £7,000.

The total of the sums available in 1909-10 for Technical Instruction in non-agricultural subjects was £72,182 exclusive of the balance of £74,192 brought forward from the year 1908-09. The expenditure was £91,410, of which £41,184 was paid to the county boroughs.

THE PARLIAMENTARY VOTES.

The expenditure in respect of the institutions maintained from the Parliamentary Votes during the year 1909-10 was as follows:—

Royal College of Science	£16,097
National Museum of Science and Art	13,568
National Library of Ireland	5,477
Metropolitan School of Art	4,360
Royal Botanic Gardens	4,636
	£44,138

The Parliamentary Votes also provided grants for Science and Art Instruction in Ireland, payable to schools which adopt the Department's programme for Experimental Science, Drawing, Manual Instruction and Domestic Economy. The provisions made for these purposes was £48,750, an increase of £5,150 on the corresponding provision for the previous year.

From the Parliamentary Votes grants were paid as follows:—

	No. of Schools.	No. of Pupils.	Amounts.
Day Secondary Schools	286	13,406	£27,583
Technical Schools (mostly evening classes)	87	8,102	18,223
Other Grants to Technical Schools	....	1,802	3,920
Primary Schools, for Drawing and Manual Instruction	95	.....	1,639

These Parliamentary Votes are outside of and separate from the amounts already referred to as available from the Endowment Fund.

CHAPTER XXII: THE AGRICULTURAL BRANCH OF THE DEPARTMENT.

INTRODUCTORY.

The term "Agricultural Branch of the Department" is used here to indicate the portions of the Department's work which are more directly concerned with education for and in agricultural and housekeeping occupations. It has not been thought necessary to describe the many useful activities of the Department in connection with schemes for the improvement of live stock by grants to bring about the use of thoroughbred animals, or subsidies to agricultural and other societies, or prizes for cottagers and small farmers.

No report will be made on the branches concerned with Fisheries, Statistics and Intelligence, Veterinary matters or Transit and Markets. Specific mention is made of the matter here lest the reader might be led to suppose that the whole of the activities of the Department of Agriculture and Technical Instruction were confined to the two branches dealt with in this Report, viz., the Branch of Agriculture in so far as it conducts or promotes education and instruction for agricultural purposes,and the Branch of Technical Instruction which is concerned chiefly with the training and instruction of workers for and in manufacturing and building industries.

When the Department was inaugurated it found itself confronted by conditions which required competent men and women as leaders and teachers in various capacities on its staff. Some men who had obtained their experience and training in England and Scotland were secured. The further need was a large number of Irishmen and Irishwomen who understood local conditions, were in sympathy with the character and needs of the various communities, and who had become competent by acquisition of further knowledge, scientific training and some practical experience in administration, to fill positions which would be assigned to them. In consequence, the principal features of the procedure which was adopted were:—

(1) The reorganization and development of the educational institutions (the Royal College of Science, the Albert Agricultural College and the Munster Institute) in existence at the establishment of the Department and transferred to their control.

(2) The postponement of the establishment of agricultural colleges and schools until the farming classes generally should be sensible of the need for more detailed and extended instruction than could be given by itinerant lecturers.

(3) The provision of facilities for training young farmers to become itinerant instructors, and for supplying qualified teachers for agricultural schools when the time for their foundation would arrive.

(4) The inauguration of a system of itinerant instruction calculated to bring the farming classes into touch with the latest advances in their industry,

and, at the same time, to prepare the way for permanent institutions for agricultural education.

Under such a policy no first or second order of importance can be regarded as attached to any one of these features, and no one of the features did receive first attention to the neglect of others.

The following resumé of the work of the Agricultural Branch at the present time is a brief survey of what is being done in the development of each of these features.

SECTION 1: ARRANGEMENTS FOR INSTRUCTION.

Information on the Agricultural Work of the Department obtained from PROFESSOR J. R. CAMPBELL, *Assistant Secretary in respect of Agriculture.*

The work of the Agricultural Branch may be divided into,—

(*a*) That which is administered jointly by the local authorities and the Department, and

(*b*) That which is administered by the Department directly from the central offices.

Generally speaking, when the work is such that the county can be made the unit for the purposes of administration, and particularly where such an arrrangement would enable each district to receive benefits proportionate to its contribution, the administration of the schemes is delegated to the local authority. Such, for example, is the procedure adopted with schemes for encouraging improvement in live stock and schemes of itinerant instruction in various branches of agriculture. On the other hand, work for which the county cannot be conveniently made the unit and which does not apply equally to the whole county is administered directly from the Department's offices, such, for example, as the investigation of special outbreaks of diseases of stock, the encouragement of improvement in the management of creameries, and a variety of other work and investigations to which reference will be made subsequently.

FUNCTIONS OF LOCAL AUTHORITIES.

The local authorities are the County Councils, of which there are 33. Each Council, however, for the purposes of the Department's work, appoints a Committee of Agriculture composed partly of members of the Council and partly of other persons. To this Committee the Council usually delegates full powers, subject to the approval of the Department, for the administration of the funds placed at its disposal. The County Council alone can raise a rate for the purposes of the Act.

The amount raised by the county rate is usually transferred by the County Council to the County Committee to be applied by them, subject to the approval of the Department, partly to schemes of agriculture and partly to schemes of technical instruction. In a few cases the amount to be spent on agriculture and on technical instruction respectively is specified by the County Council. In

the majority of cases, however, it is left to the County Committee to decide the proportions.

In the first year 31 out of 33 County Councils raised a rate and appointed Committees for the purposes of the Act. Every year since all the 33 Councils have done so.

Relations with Department.

The relations between the Department and these Committees are very satisfactory indeed. In the first years, when the procedure was not well understood, there were administrative difficulties and delays; but all these have been largely, if not altogether, overcome, and an excellent understanding has for some years existed between the leading members of the Committees and the officers of the Department, who are constantly in conference, either at the local meetings or at the offices of the Department, to discuss the details of and the arrangements for carrying out the work.

Early in August these outline schemes are explained to, and laid before, the Agricultural Board, with a statement of the estimated amount required from the Department's funds (1) to meet the cost of central administration, and (2) to meet the Department's contribution to the funds of the County Committees. When the necessary funds have been voted by the Agricultural Board a conference at the Department's offices of secretaries of County Committees has usually been held to discuss any new provision in the schemes, and to arrange dates for meetings of the Committees which are attended by the Department's inspectors for the purpose of assisting in arranging details of the programme and finances for the ensuing agricultural year. As soon as each County Committee has decided on the schemes which it proposes to put into operation, and has provisionally allocated funds therefor, the secretary notifies the Department, who then intimate their approval as well as the maximum of their contribution for the year. Where the County Committee and its secretary are alive to the interests of the county, the work is usually in full swing by October, except, of course, such sections of it as depend on the seasons.

The appointment of local or district sub-committees who see that the district they represent takes full advantage of the schemes, is a most important factor in insuring the success of the work. The Department have urged the appointment of such sub-committees to assist the statutory committees, and hope that still more use will be made of them in future years.

The expenditure of at least half the Department's Agricultural Endowment is now in the hands of the local authorities.

Supervision of the details of this expenditure cannot be undertaken by the Agricultural Board. It therefore rests with the Department to discharge this duty. If they use their control unreasonably, they will very soon be brought to task either by the Board, who are themselves members of County Committees, and to whom the local representatives would complain if they were being improperly treated as regards funds, or by the Council of Agriculture.

Attitude Towards Agricultural Education.

Of all the agricultural problems which the Department have had to solve, that of gradually leading Irish farmers to appreciate an education for their sons, who are to succeed them, has been the most difficult, and has received the most attention.

It did not require a prolonged study of the conditions of agriculture in Ireland to show that there is good reason why it would be impracticable to at once introduce methods which have proved successful in other countries. It is impracticable to bring the farmer himself to school, and therefore the only way he can be brought into contact with the application of science to agriculture is by sending round instructors to give lectures in the evenings; to visit holdings during the day and discuss privately with the occupiers the various problems which confront them in their practice. Such an officer, if he is armed with a thorough knowledge of his business, both scientific and practical, rarely fails to convince a farmer that he would have been more successful had he received an agricultural education, and that it is to his son's advantage that he should be given one. Such work, however, is slow, and even in the most progressive countries requires patience and determined perseverance. It is universal experience that the more highly educated, capable and progressive the farmer, the more he appreciates technical education.

Policy of the Department.

The policy of the Department has been,—

(1) To provide at one central institution the highest form of technical education for the training of men who are to become teachers and specialists in agriculture. (This has been done at the Royal College of Science in connection with the farm and college at Glasnevin.)

(2) To provide at least one high-class agricultural college which would form a stepping stone to men desirous of entering the Royal College of Science, as well as men, the sons of well-to-do farmers, who wish for an education to enable them to manage their own farms, and men who desire to become creamery managers, or who wish to have a special training to fit them as horticultural or poultry experts, stewards, land agents, or other occupations in connection with agriculture. (This has been done at the Albert Agricultural College, Glasnevin.)

(3) To provide provincial institutions at which young men who can be spared from the farm for one year can be taken in as apprentices, taught agriculture, both practical and technical, at a fee proportionate to their means. (This work, which had to be delayed until teachers were trained, is now in progress at three such institutions, and the provision of others is in contemplation.)

(4) To provide winter schools of agriculture where the sons of farmers could obtain technical training at small expense during the winter months, when they can best be spared from farm work.

(5) To provide one central higher institution for the training of women in the domestic economy of the farmhouse, and in work which falls to the lot of

women to perform in connection with the farmyard, as, for example, dairying and poultry-keeping. (This provision has been made at the Munster Institute, Cork.)

(6) To provide for young women education in domestic economy and farmyard lore at residential and day schools. (This has been done at a number of institutions, while the equipment of others is under consideration.)

(7) To provide in each county, by a system of itinerant instruction in agriculture, horticulture, dairying, poultry-keeping, and bee-keeping, instruction and advice for farmers and their wives, sons and daughters who cannot avail themselves of other means of acquiring information.

A Graduated System of Education.

Thus the Department have laid the basis of a graduated system of agricultural education by means of which the youth who is inspired by the work of the itinerant instructor may be able to obtain education in the local winter school of agriculture, from which he may graduate to the provincial agricultural school, thence to the Albert Agricultural College, or the Royal College of Science, according to his circumstances and his education, and equip himself for the highest offices in connection with agriculture which the country has to bestow.

One important aspect of the question should be mentioned in this connection, viz., that the education of the agricultural student must be accelerated when the influence of the teaching of practical science in the Secondary Schools provided under the Technical Instruction Scheme comes to be more and more felt. It may be taken for granted that the boy who has had a training in practical science in the Secondary School will benefit more by his attendance at the lectures and demonstrations of the agricultural instructor, at the classes in the winter schools, and at the provincial institutions, than the boy who goes to these without this preliminary training.

SECTION 2 : ALBERT AGRICULTURAL COLLEGE, GLASNEVIN.

This College is being used to train teachers and leaders for what may be called the extension schemes of the Department, carried out in co-operation with local authorities. The entrance examination and supplemental entrance examination, held in September and October, 1909, were attended by 60 candidates—this number and that of students admitted showing a substantial increase as compared with the previous session. Five students of the College obtained Scholarships in Agriculture, tenable at the Royal College of Science. The number of students at the College during the years 1909-10 was as follows:—

Agricultural Course	35
Horticultural Course	7
Royal College of Science students	16
Total	58

28 men trained at this College are now employed by the Department in connection with its work.

Although the reorganization of the agricultural institutions taken over by the Department in the year 1900 was at once proceeded with, and provision made for training instructors and teachers, it has not yet been found possible for these institutions to meet fully the demand for qualified persons to take up the work of the various schemes. In 1909–10 several County Committees had again to be disappointed in their expectation of obtaining instructors trained by the Department. The number of persons so trained, who were employed by County Committees or by the Department, now amounts to 81, in addition to the 52 women who have been trained at the Munster Institute.

The College is situated on the north side of Dublin in a healthy situation, about 170 feet above the sea level. It is easily reached by tram to the Glasnevin terminus, from which it is distant less than a mile. The College consists of a residence for between 50 and 60 students, together with a farm, orchard and gardens, all covering an area of about 180 acres.

Admission, Staff, Diploma, Etc.

Admission to the College is conditional on passing the entrance examination and furnishing evidence of good health and character. Only resident students, prepared to stay the whole session and to take the full curriculum, are admitted. They must not be less than 17 nor more than 30 years of age on 1st September.

The staff consists of Principal, House Masters, Agriculturalist, and teachers of chemistry, botany, zoology, veterinary hygiene, horticulture, dairying, poultry-keeping, bee-keeping and woodwork. A competent Drill Instructor attends twice weekly to see to the physical training of the students.

The clergy of the different denominations also visit the College weekly to give religious instruction. The domestic comfort and bodily health of the students are under the care of an experienced matron.

The College diploma is awarded partly on the result of the sessional examinations and partly on the work done throughout the year. It is of two classes, the first being reserved for those students who add to an intelligent grasp of scientific principles a high standard of skill in practical farm work.

Every encouragement is given to the pursuit of athletics and to the development of social intercourse among the students.

The College Discussion Society meets frequently throughout the session. The papers read before it relate to topics of current interest to the farming community.

The library is supplied with standard works on agriculture, and copies of the best farming periodicals are procured regularly for the students' use.

Prizes are given by the Department for progress made, for work done, and for services cheerfully rendered the common weal. These prizes are awarded after consultation with the Principal, and not merely on marks obtained at the examination.

Courses of Instruction.

The College provides two distinct courses of instruction—one for farmers, the other for gardeners. The former or Agricultural course occupies in the Department's scheme of agricultural education a position intermediate between the instruction given at the Agricultural Stations and that provided by the agricultural faculty at the Royal College of Science, Dublin. The Horticultural course is intended for selected pupils who are seeking to qualify for the post of Instructor in Horticulture.

Agricultural Course.

This course is intended for young men who desire a technical and practical knowledge of agriculture, to fit them for entrance to the Royal College of Science, for becoming farmers, or for engaging in any other occupation, such as creamery management, which requires technical training in the sciences underlying agriculture. It includes instruction in agriculture in the classroom, farmyard and fields, supplemented by lessons in dairying, horticulture, poultry management, bee-keeping and veterinary hygiene. The elements of physics, chemistry, botany, zoology, and entomology are taught so far as is necessary to the proper understanding of the principles underlying the most approved farm practice.

Instruction is also given in book-keeping, surveying and woodwork, while literature, mathematics and drawing receive such attention as is found requisite.

The subjects included in the examination for admission are as follows:—

(1) English, including dictation and composition; (2) Arithmetic, including calculations requiring a thorough knowledge of weights and measures, decimal and vulgar fractions, percentages and interest; (3) Mathematics—the elements of mensuration and algebra to simple equations; (4) Agriculture—the questions on this subject are framed with a view to testing knowledge acquired by practical experience of farm work. No text-book is prescribed or recommended. The examination may be oral as well as written.

The fees for tuition, board, residence, laundry, and ordinary medical attendance during the session are:—For students whose parents or guardians derive their means of living mainly from farming in Ireland, £15; for students other than the foregoing, £50.

Horticultural Course.

This course is suited for men who have already had experience in fruit-growing and general gardening, such as can be obtained by working for four or five years under a fully qualified gardener. In addition to the practical work in the gardens, class-room instruction is given to the pupils to enable them to understand the scientific principles underlying horticulture.

Applicants for admission must be at least 20 years of age on the 1st October, in good health and of strong constitution, and should have received a fair general education.

The subjects included in the examination for admission are:—

(1). English—to be tested by dictation and a short letter.

(2). Arithmetic—the first four rules, simple and compound; a knowlege of weights and measures and percentages.

(3). Practical fruit-growing and gardening.

A high standard in English or arithmetic is not expected. The examination in practical fruit-growing and gardening covers the whole range of these subjects.

Pupils receive an allowance of 18s. per week during their first session and of 20s. per week during their second session.

When in receipt of these allowances they are required to find their own board and lodging. In the event of lodging accommodation being provided for them at the College the allowances are modified.

Pupils of the Horticultural School are subject to the conditions under which the gardeners at the College are employed.

The Department does not undertake to employ or to procure employment for the pupils at the close of the course, but the names of those who qualify are sent to County Committees of Agriculture with an intimation that they are eligible for appointment by such Committees to instructorships under the Department's scheme of Instruction in Horticulture and Bee Keeping.

SECTION 3: AGRICULTURAL STATIONS FOR FARM APPRENTICES.

While the operation of the schemes of itinerant instruction was being extended advantage was taken of such opportunities as arose for providing more intensive forms of instruction by means of permanent Agricultural Stations for the training of Farm Apprentices, and by 1909-10 three new Stations and one residential Agricultural School for boys had been established. These Stations are most serviceable in the training of young farmers to become itinerant instructors, although it is desired that they should also have some training at the Albert Agricultural College.

There are three such Stations in Ireland, one at Ballyhaise, County Cavan, another at Athenry, Co. Galway, and a third at Clonakilty, Co. Cork. The latter was visited by the Commission.

The Station at Clonakilty.

Young men who intend to follow the farming profession and who desire to acquire a practical knowledge of its several branches are admitted to the Station as apprentices.

The farm is managed by an experienced agriculturist under whose direction the apprentices are required to take part in all the work of the fields and of the farmyard, whether in connection with seasonable operations or permanent improvements. In the class-room attention is given, in the evenings and at

other times when outdoor work is not pressing, to English, Arithmetic (including Surveying), Book-keeping and Technical Agriculture. This instruction is not intended as a preparation for any examination. It is of such a character as to continue the general education of the apprentices, and be useful to them in their future career as farmers.

The applicant for apprenticeship must be not less than 17 years of age on the 1st October, and must give an undertaking that it is his intention to become a farmer in Ireland. He must also provide evidence of a sure prospect of obtaining a farm of his own or *bona fide* occupation on a farm. Admission is conditional on passing the entrance examination, producing certificates of good health and character, and paying the required fee. Preference is given to applicants from the Province of Munster, especially those who have attended a course of instruction under the Department's scheme of Winter Agricultural Classes. The latter are exempted from entrance examination provided their attendance and progress at the Agricultural Classes were satisfactory. It will also be a recommendation if the applicant produces a certificate, from the itinerant Instructor in Agriculture for the county in which he resides, that he has taken advantage of the Instructor's lectures and demonstrations and has shown a desire to improve his knowledge of tillage farming. The apprentices are required to reside in the buildings attached to the station, where they are in the charge of a House-Master and Matron. The session runs from October till the following September.

Fees for apprentices whose parents or guardians derive their means of living mainly from farming in Ireland are proportional to the aggregate tenement valuation of their holdings, as follows:—

Where the aggregate valuation does not exceed £20, £3 per Session;

Exceeds £20 but not £40, £6 per Session;

Exceeds £40 but not £100, £10 per Session;

Exceeds £100, £15 per Session;

Apprentices not included in foregoing classes, £20 per Session.

The farm at Clonakilty contains about 350 acres, and is rented by the Department from the trustees in whose care it is at the rate £280 per annum. The Department spent for buildings and equipment about £2,500, and the net annual maintenance costs the Department from £1,700 to £1,800. The Farm Superintendent expected the farm revenue to exceed the farm expenditure by £400 per annum. The latter did not include the expense of management, or the salaries of the instructors.

Students and their Work.

30 students are received per annum, 3 of whom are kept on from the previous year. The course is for one year. During the summer the students give practically their whole time to outside farm work, except in weather unfit to be out. Taking the course as a whole, about one hour per day is devoted to class-room instruction. There is no laboratory. There are specimens for illustration purposes, and also a good working room with benches and tools, where students are taught to do simple carpentering.

Of the 27 first-year students in attendance, 21 had previously taken one of the Winter Agricultural Courses of 16 weeks, such as are referred to under a subsequent heading.

The farm had the appearance of being well managed. The students had excellent opportunities for observing the best processes in farm practice, and for being trained into ability to do the work well themselves.

It occurs to the Commission that Agricultural Stations similar to this would be a benefit and advantage, particularly in those districts of Canada where the settlement is new, and where the working farmers and young people have not had opportunity of becoming skilled in farm work and have had little experience in farm management. In the older districts, where Illustration Farms have been selected, a development which would not be costly, and would likely be of decided benefit, might come through places being arranged for from 3 to 10 farm apprentices on each suitable Illustration Farm.

SECTION 4: ITINERANT INSTRUCTION IN AGRICULTURE.

The schemes of Itinerant Instruction constitute part of the County Schemes for Agricultural Instruction carried out by the County Committees of Agriculture and the Department co-operating together.

The Department's scheme of instruction in agriculture was again put into operation by each County Committee in 1909-10. 36 instructors were employed, there being no increase in the number at work during the previous year. The County Committees of Cork, Tyrone and Wexford each employed two instructors.

The number of instructors in agriculture employed each year under this scheme, since the establishment of the Department, may be observed from the following table:—

Year.	No. of Instructors at work
1900-1	3
1901-2	10
1902-3	10
1903-4	17
1904-5	21
1905-6	23
1906-7	30
1907-8	34
1908-9	36
1909-10	36

During the season, from October to March, 826 lectures were delivered at 390 centres, at which close on 41,000 persons attended, giving an average of about 50 for each lecture. These figures show a considerable decrease when compared with those for the years 1907-8 and 1908-9, owing to the fact that 24 of the instructors were employed in teaching Winter Agricultural Classes as compared with 10 in 1907-8 and 19 in 1908-9. The instructors paid 13,531 visits to farms, an average of 377 visits for each instructor. Upwards of 671

field experiments and 2,036 demonstrations were conducted by the instructors. These experiments and demonstrations are distinct from the demonstrations conducted in congested districts by the Department's overseers.

Every instructor, except two, was engaged for some weeks during the summer in judging under the Department's scheme of prizes for cottages and small farms, in a county other than that in which he was employed as instructor. The instructors also assisted in work under the Department's dairy cattle registration scheme, and in performing certain duties in connection with the Fertilizers and Feeding Stuffs Act.

Itinerant Instructors.

At the outset, schemes of itinerant instruction in Agriculture, Horticulture, Poultry-Keeping and Butter-making were proposed by the Department for adoption by County Committees of Agriculture. These schemes were put into operation by the majority of the Committees as soon as qualified persons were available to take up the instructorships. The schemes have remained substantially the same throughout the decade, but have been revised each year and their scope extended in directions pointed out by experience gained at the work. The number of instructors has increased steadily from year to year. At the close of the year under review each county committee of agriculture, with one exception, had several schemes in operation. In the great majority of counties all four schemes were working, and in several counties a second and even a third instructor was employed under one or more schemes. The number of instructors at work was as follows:—

Instructors in Agriculture	36
" Horticulture and Bee-Keeping	36
" Poultry-Keeping	33
" Butter-Making	33
Total	138

The total shows an increase of 10 as compared with the previous year.

Besides the instructors employed by County Committees of Agriculture under the schemes mentioned, there are several Agricultural Overseers and Assistant Overseers employed directly by the Department to carry out the special schemes of agricultural development in the poorer districts of the West. The Department were enabled during 1909-10—owing to the additional funds for agricultural work in congested districts provided by the Irish Land Act, 1909—to increase by 13 the number of Assistant Agricultural Overseers. 43 Overseers and Assistant Overseers are now at work in these districts.

Winter Agricultural Classes.

The Agricultural Classes are held during the four winter months, and provide from 30 to 40 days of instruction. The minimum daily duration of a class is 4 hours.

The scheme of Winter Agricultural Classes in 1909-10 was adopted by County Committees of Agriculture in 26 counties out of a total of 33 in Ireland. 70 classes were formed under the schemes and 1,166 students were admitted. As compared with previous years, there was an increase of twenty classes, and of almost 300 students.

These classes are directly helpful to young farmers who are to continue working at their farming occupations. They also provide an excellent beginning in systematic instruction for young farmers who have natural aptitudes for service as instructors and leaders to begin their course of preparation. The instructors and others in charge are always on the look-out for promising young men and women to be guided towards further preparation for public service in connection with the Department and its work.

The following tables indicate the extent to which Agricultural Classes have been availed of in each year since their inception:—

Year.	Number of Classes.	Number of Students.
1902-3	2	44
1903-4	7	161
1904-5	18	317
1905-6	25	422
1906-7	28	449
1907-8	33	529
1908-9	50	875
1909-10	70	1,166

Horticulture and Bee-keeping.

The schemes of instruction in horticulture and bee-keeping were adopted in every county except two. The Tipperary (S.R.) County Committee, however, made provision for instruction in horticulture only.

Of the 36 instructors employed during the year, 29 were qualified to give instruction in horticulture and bee-keeping, 4 were qualified in horticulture only, and 3 in bee-keeping only. In 3 counties separate instructors were employed for horticulture and for bee-keeping respectively.

An instructor's duties under this scheme, although confined mainly to giving practical demonstrations in gardens, orchards, etc., in the planting, pruning, grafting, and spraying of trees, etc., include the delivery of lectures to a limited extent. During the year 330 such lectures were given at which there was an average attendance of 47, and the number of visits and demonstrations at gardens, orchards and selected plots amounted to 25,589.

The number of demonstration plots established in 1910 in connection with this scheme was 286 as compared with 270 in 1909—the plot holders evincing a keen interest in the cultivation of their plots. The Department hope that in future all such plots will be established principally on labourers' holdings.

As in previous years the Committees again made provision for assisting farmers and others in procuring reliable forest and other trees. The Department inspected the stocks of the principal Irish nurseries, and furnished the several County Committees with particulars of the classes of trees approved at each nursery. The Committees then usually invited tenders for the supply of trees

to residents in the county. All trees were purchased subject to the approval of the instructors, and by this means the applicants were protected from having unsuitable trees supplied to them.

Poultry-Keeping.

Schemes for encouraging improvement in the poultry-keeping industry were in operation in every county save Dublin. 33 instructors were employed, 14 of whom were also engaged for a portion of the year in connection with the scheme of instruction in butter-making.

The scheme of tutorial and practical classes was adopted by 22 County Committees. The instruction at these classes, which covered a period of 12 months, is essentially of a practical nature and includes discourses aided by demonstrations followed by practical and class work in which the pupils take part. Visits by the instructor to the poultry-runs of pupils and others in the district is also an important feature of the work. The instructors gave 588 lectures, at which there was an average attendance of 56 pupils. In addition, 1,522 classes were held with an average attendance of 11, and 10,198 visits were made to poultry-keepers.

Butter-Making.

The scheme of instruction in butter-making was continued during 1910. The Committees of 26 counties adopted the scheme and employed 33 instructors, of whom 14 were also engaged during a portion of the year giving instruction in poultry-keeping.

In addition to making 7,703 visits to private dairies, the instructors gave 128 lectures, and conducted 4,093 dairy classes in 305 centres where courses (extending from 2 to 4 weeks) were held, with an average attendance of 8.

The following statement shows the number of counties in which instructors have been employed each year since the inception of the scheme:—

1900-1	1
1901-2	4
1902-3	11
1903-4	18
1904-5	22
1905-6	24
1906-7	24
1907-8	24
1908-9	26
1909-10	26

SECTION 5: AGRICULTURAL SCHEMES.

Full information regarding each of the Agricultural Schemes agreed upon between the Department and the Board is published and made available to all concerned or interested.

There are 14 main schemes in regard to which the Department co-operates with the County Committees. Altogether 131 Instructors and Instructresses

are employed permanently in connection with these schemes. Information is here given on schemes, typical of the others and useful for Canada, such as Scheme No. 9, Instruction in Agriculture; Scheme No. 10, Winter Agricultural Classes; Scheme No. 14, Instruction in Horticulture and the Management of Bees. Certain other schemes, which relate to horses, cattle, swine, subsidies to agricultural and other societies, prizes for cottages and small farms, are not considered to be within the scope of this Report.

Duties of Committees.

It is the duty of the County Committee to select suitable centres at which classes are to be held, and to appoint at each centre a Local Committee, with an Honorary Secretary, who will be responsible for the local arrangements necessary for the proper carrying out of the work, and who will be required to comply with the conditions set out. The Local Committe at each centre should undertake to have posters and handbills, which will be supplied by the Secretary of the County Committee, effectively displayed in the neighbourhood of the centre. Copies of these posters and handbills should be forwarded to the Department at least a week prior to the commencement of each class. The Local Committee is responsible for securing a lecture-room, and for the heating, lighting, etc. of the same. The Local Committee should appoint a representative Chairman for each lecture, and be responsible for distributing the syllabus prepared by the lecturer.

In selecting centres, the County Committee should have particular regard to districts in which lectures or classes may not have been held in previous years.

Instruction in Agriculture (Scheme No. 9).

The Department are prepared to approve of the appointment of at least one properly qualified Instructor in Agriculture for each county in Ireland, his remuneration, except in special cases, not to exceed £200 per annum (inclusive of maintenance and hotel expenses) in addition to travelling expenses.

The duties of the Instructor, who should take every opportunity of discussing with farmers matters affecting their interests, are:—

(*a*) to conduct such experiments and demonstrations in spring and summer as may be approved by the Department, to select suitable land for the purpose—to supervise the sowing of the seeds and manures, and the keeping of the plots free from weeds—to weigh the produce, tabulate the figures and prepare a report on the results;

(*b*) to deliver lectures on agricultural subjects, such as soils, manures, seeds, pastures, crops, and their cultivation, and the breeding, feeding, and management of live stock, especially of dairy cattle;

(*c*) to visit farms;

(*d*) to reply to letters from farmers seeking information;

(*e*) to advise farmers (i.) how they can take advantage of the Department's Seed Testing Station, (ii.) as to the planting of forest trees for shelter and ornament, (iii.) how they can best avail themselves of all approved county schemes, and (iv.) how they may take advantage of agricultural co-operation;

(*f*) to make known the provisions of the Fertilizers and Feeding Stuffs Act, and of the Destructive Insects and Pests Acts;

(*g*) to furnish to the County Committee and to the Department, as may be required, reports on the progress of his work and on matters relating to the agricultural industry of the county; and

(*h*) generally to give his whole time to the work and to do all in his power to further the interests of agriculture in the county.

The Instructor may also be required (*a*) to assist in the teaching of winter agricultural classes, (*b*) to assist in carrying out the provisions of the scheme for the registration of dairy cattle, by the weighing and testing of milk, etc., and (*c*) to act as judge in connection with the scheme of prizes for cottages and small farms in a county other than that in which he acts as Instructor.

The Instructor shall make arrangements to have experimental and demonstration plots in his section or circuit and during the summer months meetings of farmers should be held at these plots to discuss the objects, etc., of the plots. In selecting sites for plots preference should be given to localities in which agricultural classes have been held during the preceding winter.

During the winter months, viz., from the beginning of October to the end of February, the County Committee should arrange for one or more lectures in each circuit, on the results of the experiments.

The County Committee may make such regulations as they think necessary with regard to—(*a*) the maximum age of students to be admitted to the classes; and (*b*) the admission to classes of students who have previously attended similar classes, provided that admission to an elementary class shall not be approved in the case of any student who has attended two previous classes.

The classes shall be confined to young men over 16 actually engaged in farm work in the county. Not more than 24 students shall be admitted at any centre and if the number of students eligible is less than 10, no class is held, but with approval of the Department, the County Committee, if a sufficient number over 16 is not available, may admit young men over 15.

No fee will be charged for the course. Students must provide, at their own expense, note books and other stationery, as directed by the teacher.

Students who reside beyond a radius of 4 statute miles from the class centre will, at the end of the course, be allowed the cost of third-class railway tickets, or one penny for each mile travelled by road, provided that their attendance and progress are regarded by the Department as satisfactory. No student will be regarded as having attended satisfactorily who shall not have been present at five-sixths of the meetings of his class, unless his absence shall have been due to illness or other unavoidable cause.

SYLLABUS OF THE COURSE.

Brief sketch of origin and formation of soils. Conditions influencing fertility. Soil improvement by draining, liming, etc.

Study of a plant, and the function of roots, stem and leaves; modification of these organs. Elements of plant food and their relative importance from an agricultural point of view. Conditions affecting the development of plants. Examination of the habits of growth and duration of the principal crops and weeds found on the farm, and the practical application of this knowledge.

Farmyard manure: its storage and application. Organic and artificial manures. Composition, description and identification of artificial manures; their valuation, time and manner of application. Mixing manures. Fertilizers and Feeding Stuffs Act.

Rotations. Cultivation, seeding, manuring and harvesting of the principal farm crops. Forage and Cattle crops. Study of the commoner insect pests and fungoid diseases of crops.

Characteristics, duration and adaptability for various purposes of grasses and clovers in farm practice. Identification of the different species and varieties.

Identification of farm seeds and the commoner impurities and adulterants. Germination and purity tests, how performed; the inferences to be drawn therefrom. Change of seed. Grass seed mixtures. Weeds and Agricultural Seeds Act.

Care and management of various classes of farm stock, with special reference to breeding, feeding and housing. Principal breeds of live stock and their characteristics.

Constituents of foods; their respective functions and value in animal nutrition. Valuation; manurial value. Description and uses of home-grown and purchased feeding stuffs. Impurities and adulterants. Rations for various classes of farm stock. Methods of using foods.

Secretion of milk; composition; conditions influencing the quality and quantity of the milk yield. Care and treatment of milk for new milk trade or butter-making. Cream ripening. Milk records. Respective merits and demerits of the several systems of dairying. Summer and Winter dairying.

Rules for estimating the areas of the principal geometrical figures met with in chain surveying and farm calculations. Field book, method of entering measurements; calculation and computation of areas. Practical work with the chain in the field. Plotting from the field book to given scales. Location of drains, etc., on the plans for future reference.

Method of keeping a diary, cash book, and a record of credit transactions. Farm valuations and stocktaking. Balance sheets: their interpretation. Estimates of the cost of various farm operations, etc.

A course in Veterinary Hygiene intended to indicate the treatment to be adopted in cases of accidents to or simple ailments of farm stock, and to enable students to carry out intelligently the instructions of the Veterinary Surgeon. To this end demonstrations regularly follow class work.

SESSIONAL PAPER No. 191d

Winter Agricultural Classes (Scheme No. 10).

The County Committee may employ as teacher for Agricultural Classes for four days per week, the Itinerant Instructor in Agriculture who has previously worked in the county, if approved by the Department. He is to devote the remaining two days per week to duties in connection with the scheme of itinerant instruction in Agriculture. Or they may employ an approved teacher or assistant instructor who would devote his whole time to the classes.

The aim of the instruction is to impart such knowledge as is capable of direct practical application to farm work. The subjects taught will be:—Soils, tillages, manure (natural and artificial), seeds, grasses, weeds, treatment of pasture, cropping, management of live stock (including winter dairying), valuation of manures and feeding stuffs, simple farm account keeping, mensuration, elementary chain surveying, and elementary science explanatory of principles underlying ordinary farm practice. As far as possible the lesson should be illustrated by practical demonstrations.

At each centre special attention will be devoted to farm calculations in connection with cost of growing crops or raising stock, with direct reference to the practice prevailing in the district.

The County Committee may arrange for a few outdoor demonstrations in the planting and after-treatment of fruit trees, to be given to students by the County Instructor in Horticulture, but no lectures on horticulture shall be given.

In order to bring the classes within the reach of as many young men as possible, it will be necessary for the teacher in each county to give instruction at two or three centres, at each of which he shall attend for *three* or *two* days weekly, during a period of about 16 weeks, from November to March. Unless in exceptional circumstances, centres at which agricultural classes have been held previously shall not be selected under this scheme.

In fixing the days of the week on which the classes are to be held at any centre, the County Committee should have regard to the dates of fairs and markets, as well as to any local circumstance which might interfere with attendance of students on certain days.

Instruction in Horticulture and the Management of Bees (Scheme No.14).

The Department are prepared to approve of the appointment of at least one properly qualified Instructor in Horticulture and Bee-keeping for each county in Ireland at a salary of £2 per week.

The Instructor's duty is to give demonstrations and, if approved, to deliver lectures on horticultural subjects, such as soils, manures, vegetable, fruit and flower cultivation, plant diseases, and insect pests—to visit gardens and orchards, and give practical demonstrations on spraying, planting, pruning and grafting of fruit trees—to conduct such experiments and other demonstrations in the spring and summer as may be approved by the Department—to select suitable land for this purpose—to supervise the sowing of the seeds and manures, and the keeping of the plots free from weeds—to give instruction in the principles and practice of modern bee-keeping—to deal with diseases of bees, plants, and trees—to advise farmers, cottagers, and others interested in land, as to the planting of trees, etc., for shelter and ornament—to reply to letters from those seeking advice on horticultural and bee-keeping subjects—to give practical outdoor demonstrations to students attending winter agricultural classes—to report to the Department and to the County Committee on the progress of his work either weekly or otherwise, as may be required: and generally to give his whole time to the work and to do all in his power to further the interests of horticulture and beekeeping in the county.

He will be required to carry out such duties as may be assigned to him in connection with any Orders issued by the Department under the Destructive Insects and Pests Acts, reporting to the County Committee names and addresses of persons in possession of bushes on which he has detected, or has reasonable grounds for suspecting, the existence of any disease or pest referred to in such Orders; also all cases of foul brood which may come under his notice; and shall act as Inspector of the County Committee for the purpose of Bee pest prevention regulations.

For the purpose of this scheme, the county shall be divided into circuits (except where the Instructor gives instruction in Bee-keeping only, in which case he will attend at centres applying for his services). He shall give outdoor demonstrations for 4 weeks in each circuit; visit gardens, orchards or apiaries in the district and give such information on practical subjects as the circumstances of the case may suggest.

Each demonstration will be followed by a discussion, during which persons interested in horticulture and bee-keeping will be invited to ask questions. Where a course of lectures has already been given a new syllabus should be presented. The County Committee may purchase fruit, forest and other trees, shrubs or plants in bulk and re-sell them, at cost price including carriage, to farmers and other residents in the county. As trees and plants infested with disease have been imported into Ireland, County Committees must invite from Nurserymen tenders for the supply of trees, etc., to be guaranteed free from disease, and before acceptance submit such tenders to the Department for examination on or before January 1st, each year. The horticultural demonstrations should commence early in autumn and be continued throughout the whole year.

In each circuit one demonstration plot may be provisionally selected for the purpose of growing vegetables, fruit, and flowers, and showing improved methods of cultivation, but no new plots shall be selected in a county if a sufficient number of suitable plots have been established in previous years.

New plots a quarter of an acre in extent are recommended. They must not be less than one-eighth of an acre and must be established at a convenient center adjacent to a main road.

The aspect of each plot and the nature of the soil must be suitable for vegetable growing and fruit cultivation. Necessary improvements, such as drainage, must be carried out, and when required, farmyard manure must be supplied by the plot owner without expense to the Committee. The owner of the plot must sign an undertaking to continue the plot for three years. The necessary labour must be given gratuitously by the persons providing the plots—the produce to be their property.

The cost of trees, etc., required for planting a new plot must not exceed £2.

(The Department recommends that allotments attached to labourer's cottages should be selected for the establishment of new demonstration plots subject to the foregoing conditions.)

SECTION 6: AGRICULTURAL OVERSEERS.

Besides Instructors employed by County Committees of Agriculture under such schemes as have been mentioned, there are a number of Agricultural Overseers and Assistant Overseers employed directly by the Department to carry out the special schemes of agricultural development in the poorer districts of the West.

The Irish Land Act of 1909 extended the area scheduled as congested, and provided for the payment to the Department of a sum of £19,000 per annum for the purposes of agricultural development in the districts scheduled as congested. In 1910 there were employed in connection with the Department's special schemes of agricultural instruction in the congested districts, 5 Agricultural Overseers and 38 Assistant Overseers.

The work which they carry on is generally illustrated by what follows regarding the work for "colonists" at Castlerea. They arranged for the establishment and supervision of not less than 9,579 special demonstration plots in the congested districts. These were demonstrations in the growth of potatoes, oats, barley, wheat, rye, turnips and mangolds, garden vegetables and grass, and also in the use of artificial manures in connection therewith.

They also encouraged the occupiers to spray their potato plots, and transacted for the Department the business of supplying hand-spraying machines to occupiers of small holdings in districts where such articles were not readily procurable through local agencies at reasonable prices. During the 4 years 1907–10, 5,946 hand-spraying machines were sold in that way. The Overseers also undertook the repair of spraying machines that were out of order, the necessary repair parts being supplied by the Department at cost price. During the year, 5,080 machines were thus repaired.

Work in Congested Districts.

The Commission visited a locality about three miles distant from Castlerea, to see a number of new holdings created under recent Land Acts, and to see something of the work of agricultural instruction for such "colonists".

In this area about 200 holdings of about 30 acres each had been created. The land formerly was part of a large pasturage area, and under the present holders is being tilled to a very considerable extent. One of the small farmers had 12½ acres of his holding under forage or hoed crops. On the whole, the crops were of good quality and evidently well put in.

The local Agricultural Overseer spends his whole time among about 150 holders, there being about 50 holdings uncompleted at the time of the visit of the Commission. The Overseer helps them to begin the use of new implements and machines, such as chilled ploughs, cultivators, mowers, etc. The "colonists" were also given some assistance by the Department to enable them to obtain such machinery. When a new machine was to be started or put to use, a number of the neighbouring farmers would come to one place to learn all they could. When there was no such work to do, the Overseer would visit about 10 farms daily, offering counsel, answering questions and helping the people to understand the difficulties of their occupation, and how to meet them successfully. This Overseer had attended one Winter Agricultural Course of 16 weeks, and formerly managed a large farm for some four years in the County of Cork. He began his work as Overseer at a salary of £65 a year, and is now receiving the maximum for that class, which is £100 a year. The Overseers are not used by the Department to conduct Winter Classes, to hold meetings or to give any other instruction than that imparted to the farmers on their own places. Those who are engaged for the higher posts are required to be trained further, usually at Albert Agricultural College, and for the highest posts at the Royal College of Science.

Suggestions for new Canadian Settlements.

It appears to the Commission that the employment in Canada of Agricultural Overseers and Special Instructors for districts where settlement is just going on would be most advantageous. Farmers would have someone to advise them how to manage most advantageously with the fewest mistakes and the least risk of loss under the new conditions. They could be shown how best to use new kinds of machines and implements. The prevention of waste of time, disappointment from partial failure at first, and direct losses, would all accrue to the credit of a well-administered system of Agricultural Overseers and Instructors and to the immense advantage of the localities. Such overseers should have had successful experience in actual farm work and management, and have sufficiently advanced agricultural education to enable them to explain correctly and clearly the underlying principles of the ordinary farm operations.

SECTION 7: INSTITUTIONS FOR WOMEN AND GIRLS.

THE MUNSTER INSTITUTE, CORK.

In close association with its work of agricultural education for boys and men, the Department has an extensive programme of agricultural education for girls and women.

It maintains the Munster Institute at Cork more particularly for the training of teachers for agricultural schools for girls, and of county instructresses in poultry-keeping and butter-making. Four teachers are employed. Four sessions are held at the Institute during the year, and in 1909-10 were attended by 204 pupils, including those admitted to the second, third or fourth sessions. At the end of the year there were 213 applicants waiting their turn for admission. 56 pupils can be admitted at each session. In 1909-10 ten students passed their final examinations, including two instructresses who attended supplementary courses in poultry-keeping and butter-making respectively. Eight students of the Institute obtained employment in connection with the Department's work, and the number of past students so employed amounts to 52.

The outstanding features of the Institute on the occasion of the Commission's visit were the earnestness and enthusiasm alike of the Staff and Students.

The classes at the Institute are open to female students only.

Course of Training.

The course of training includes:—

(1) The practice of dairy-work. The treatment of milk and the making of butter on a large and on a small scale with the most modern machinery and utensils, as well as with the appliances generally used in farm dairies.

(2) Instruction in the feeding and management of cows, calves and pigs; in the keeping of small gardens and in the manipulation and care of bees.

(3) Instruction in poultry-keeping. Breeds; their suitability for different purposes and different localities; housing, feeding and management; grading and packing of eggs; hatching and rearing of chickens ; fattening, killing, plucking, trussing and preparing for market.

(4) Instruction in domestic work, embracing plain cookery, plain needlework, laundry work, and home nursing.

The fee for tuition, board and lodging during one term is £3: 3s., payable on entrance.

Four terms, each of about eleven weeks, commencing respectively in January, March, July and October, are held in each year.

Conditions of Entrance, Study, Etc.

Intending students must be at least 17 years of age on date of admission. They are required to produce certificates of good health and character and to show that they have received sufficient general education to enable them to follow the course.

ULSTER DAIRY SCHOOL, COOKSTOWN.

The Department also maintains a Dairy School at Cookstown in the Province of Ulster, which is conducted on the same lines as the Munster Institute, with the exception that finishing courses for instructors and teachers in training are held at Cork only. Students of the Ulster Dairy School who qualify for these courses are transferred to the Munster Institute at Cork.

Four sessions of the School were held in 1909-10, and 120 students attended, a large proportion of them coming from counties outside the Province.

SCHOOLS OF RURAL DOMESTIC ECONOMY.

There are nine other Schools of Rural Domestic Economy in Ireland. Some of these are residential and others are for day classes.

The particular object of the Department in promoting this type of instruction in rural districts of Ireland is to inculcate respect and affection for the home and the countryside, and thereby counteract the tendency to look down upon farm work and abandon rural life. The training aims at the making of efficient housewives. It does not aim at the preparation of girls for domestic service, or for the factory or the shop.

THE SCHOOL AT LOUGHGLYNN.

The School of Rural Domestic Economy at Loughglynn, Co. Roscommon, was visited by the Commission. The School is located about six miles from Castlerea. When the land was divided into small holdings under the Land Purchase Act, the manor house and small farm surrounding it became the property of an order of Nuns, the Franciscan Missionaires of Mary. The school was established in order to provide the women and girls of the neighbourhood with such practical training as would enable them to increase the comfort of their homes and improve generally the conditions under which they live.

The school takes pupils of about 14 or 15 years of age from the homes of the surrounding farmers. Day pupils only are received. They come between 9 and 9.30 in the morning. In winter they continue until 4 o'clock in the afternoon; in summer until 6. All come from within six miles of the school. The pupils receive practical instruction in Cooking, Sewing, the Care of Milk and the Making of Butter and Cheese, and in Poultry-keeping and Gardening. They also have an opportunity of acquiring some knowledge of Embroidery and Weaving. They are taught the small home industries such as mat-making. While the object of the school is to teach the daughters of farmers to be good housekeepers, we learned that as a matter of fact many of the girls went to situations, and many had gone to America.

As an accessory the school owns 25 outfits for spraying potatoes, and rents them to farmers in the vicinity at a shilling per day. Teachers of the school give the farmers instruction in how to prepare the mixtures and use the spraying outfit.

The Commission was impressed most favourably by the trim and worklike appearance of the pupils, and the evident effect upon them of spending one or two years in attendance at such a school. There were altogether 60 pupils in attendance.

The nuns, who are also the teachers of the school, visit the homes of the girls, and it is said to be a matter of common knowledge that the school has had a marked influence upon the improvement of the homes in the vicinity.

CHAPTER XXIII: THE CO-OPERATIVE MOVEMENT.

The co-operative movement in Ireland preceded the establishment of the Department of Agriculture and Technical Instruction. Its development has been concurrent with the extension of the work of the Department. The progress in the spirit, the principles and the methods of co-operation in rural communities owes nearly everything to the work of the Irish Agricultural Organization Society. Consequently it has been thought expedient to include a brief statement regarding the work of that Society.

Somewhat cognate with that has been the consideration of the question of Agricultural Credit. The Report of the Recess Committee (1896) contains a concise statement of the origin and work of the Raffeisen Banks. The Report of the Department of 1909-10 presents the present view of the Department concerning Agricultural Credit. In view of the suggestiveness of the work in Ireland in connection with these matters, brief statements are here presented concerning the three, viz.—Irish Agricultural Organization Society, the Raffeisen Banks, and Agricultural Credit.

SECTION 1: AGRICULTURAL ORGANIZATION.*

Why It Was Necessary in Ireland.

There is a great magic in property, and within the limits of a farmer's knowledge, ownership of his land does set his thought on better farming of that land. But the Irish farmer was suffering from economic troubles of another kind which he could not diagnose. Prices of produce were falling, and he did not know why, and it became obvious to some observers that even if the Irish farmer paid no rent at all he would still remain miserably poor. The foreign farmer sold in Irish markets and flourished on the prices he received. Both had the same markets. One set of producers grew prosperous; the other set, nearer to those markets, could not make farming pay. It was not merely a question of rent, because the foreign farmer often paid as much rent as Irish farmers did. It was a question of business organization. The modern world had turned away from the old methods of doing business.

Wholesale provision dealers wanted to buy in a wholesale way as well as sell in a wholesale way. They could not be bothered with the few pounds of butter made by the small farmer or with his wife's weekly dozen or so of eggs. The expense of collection was too great. They wanted to buy butter and eggs by the ton, and they wanted to deal with agricultural producers who could supply them with large quantities of farm produce graded in the way they wanted,

*Material largely drawn from "The Work of the I. A. O. S." by Harold Barbour.

always uniform in quality, so that they in their turn could sell it with the same confidence as a first-rate manufacturer of watches can advertise his timekeepers as always being true to the minute. The foreign farmer met the wholesale provision merchant. The foreign farmer had organized his business. In association with other farmers he bought, manufactured, and sold. He studied the markets, met their requirements, and got the trade. The Irish farmer knew nothing about this business organization of his rivals, and his business was going from bad to worse.

THE ORIGIN OF THE I.A.O.S.

"The foreign farmer had recognised that combination was just as necessary in farming as in any other business. He did not form companies. Under the company system capital came into conflict with the producers, and capital invariably predominated. Capital was not out for the sake of its health, but to make more capital, and this did not suit the farmers, whose business was exploited. It became gradually recognised over Europe that the co-operative system was the right one for farmers to adopt when combining for business purposes. It was found, too, that these co-operative combinations brought living and lasting bonds between the individual and his associates. Thus in a society the example of the most progressive member rapidly became the practice of the whole society, and any advice or instruction the State offered was more easily assimilated and put into practice by the association than it was by unorganised farmers with no bond of union. It was found where farmers combined they became very progressive, and where they did not combine they were backward and ignorant. It is easy to spread knowledge when pupils gather in a school. It is difficult or impossible to teach where there is no grading of pupils and the children remain at home. The co-operative associations placed the most progressive farmers at their head, and the whole district soon found themselves committed to swift progress and development.

SIR HORACE PLUNKETT'S WORK.

"The first person to apply these ideas in Ireland was Sir Horace Plunkett. He returned in 1889 to Ireland from America, where the advantage of combination in business has been perhaps unduly pressed and where little businesses are swallowed up until the Trust is all in all. But the advantages of combination were undeniable, and he himself started a crusade in the country and worked for some years with only one or two associates preaching the gospel of agricultural co-operation in the face of much opposition and chilling apathy. But the doctrine which is economically sound finally makes way. Slowly, very slowly, the first societies started like bathers unwilling to take a plunge into icy water; but those who did adventure found it paid, and then the demands from the country became so numerous that in 1894 the Irish Agricultural Organisation Society was formed as a necessary central body, first to establish co-operative societies among the farmers and then when established

to advise and guide them. The establishment of a central body was absolutely necessary. Just as the duties of parents do not end when they have brought children into the world and they are compelled to bring them up to manhood and womanhood, so it was not sufficient to establish societies and leave them. There was an immense amount of organising to do to bring the movement up to the point of efficiency of continental societies,and the I.A.O.S.had to undertake this work. Since its formation the I.A.O.S. has had a chequered career. At first it was mainly supported by Sir Horace Plunkett's friends, and very real friends to Ireland they were. Later it was the recipient of an annual grant from the Department of Agriculture which also owed its existence to Sir Horace. Now the organising body is dependent altogether on subscriptions and affiliation fees from the societies it has formed and on the subscriptions which still come from those who welcome a non-political and very practical way of doing something to bring peace and prosperity to the country. On its work the I.A.O.S. has spent over £100,000, and never was money better spent in Ireland. In the co-operative creameries alone it is admitted that the additional annual *gain* to the farmers through this organisation is now £400,000 a year. Regarded as a national investment this one result alone more than justifies the expenditure of the I.A.O.S. The total trade of the movement since it began is over £20,000,000. The annual turnover of the societies is considerably over £2,500,000, and it increases year by year. We believe few people will differ from us when we say that this £100,000 spread over 20 years was well-spent money.

Agricultural Banks.

"Profitable farming, like any other business, necessitates the use of credit at certain times and seasons. The Agricultural Bank is the form of combination which has proved to be the most helpful way of dealing with farmers' credit. Previous to the introduction of these banks the farmers used to run a credit with his local trader, a system which was bad for the farmer, because he lost his independence and sometimes his farm. The I.A.O.S. has organised about 300 agricultural banks. These are associations of farmers who pledge their joint credit for the safe-keeping of any money lent to them or deposited. On this joint guarantee they borrow a large sum of money sufficient for the needs of their members at a low rate of interest and lend it out again to these members at a slightly increased rate. Hitherto it has been found possible to borrow money at from 3% to 4% and to lend it out at the popular rate of one penny per pound per month (less than 5%). From his agricultural bank the farmer can borrow in accordance with his needs. Money is only lent for reproductive purposes sanctioned by the Committee of the Society. Interest is not deducted beforehand from the loan, and the length of time for which the money is advanced is determined by the purpose of the loan. So is the method of repayment. A man borrowing money to buy a milch cow will be getting his cheque every month from the creamery, and so he can repay by instalments. Another farmer buying young pigs or fertilisers will have to wait six months, maybe, before his beasts are ready or his crops are sold, and he will repay in one sum when he has made

his profit out of his loan. The peculiar needs of farmers are met in every way. The societies serve a very useful purpose in country districts, taking from the wealthy their superfluous capital, for which they pay a fair interest, and lending it out again to those who require it for reproductive purposes. The money of the district is in this way kept in the district, where it is always producing more money and doing good. The farmers also are instructed in the true use of credit, which is to borrow money to make more money and not merely to fill up some gap by throwing good money after money that is gone. This system, introduced into Ireland by the I.A.O.S., is the system of credit for farmers which is most widely used over Europe."

SECTION 2: RAFFEISEN BANKS.*

Raffeisen banks were introduced in 1886, when two were established, having collectively 54 members, in the Duchy of Austria, and in the following year the local Diet voted £300 to aid in this purpose. So rapid has been their growth that the Duchy now counts 396 of these banks. Moravia instituted one in 1887, and has at present 85. Among the mountaineers of Tyrol this form of banking has met with, relatively, the most complete development, no fewer than 122 of these institutions having been established between 1889 and 1894. The official returns show that in 1895 there were 994 Raffeisen banks in the empire; but the complete balance-sheets come no later than December, 1893, showing as follows:—

Year.	Banks.	Members.	Assets £ stg.
1886	2	54	360
1890	182	9,670	132,000
1893	565	35,470	410,000

At present it is estimated that the existing banks have 60,000 members, and assets exceeding £700,000 sterling. The programme and statutes differ very slightly in the various provinces, the object being to lend small sums to farmers at longer dates and lower interest than is usual with banks.

A dozen neighbors can start a bank, with a paid-up capital of £20 or more; each member takes one or more shares, and pays 2s. a-month per share until the whole capital is made up. The shares are usually £1 each; but in some few cases £2. None but neighbours can be shareholders, and nobody can hold more than 25 shares; the voting power is alike for all—one man one vote. No person who has been bankrupt or convicted of a felony, or who is interested in any other bank, can be a shareholder. Persons who wish to become shareholders must apply to the board of managers, who will admit or reject candidates at pleasure. Women may be shareholders, but cannot be elected to the board of management. When anyone wishes to retire from the bank, the managers return him the exact amount of his capital: he cannot sell his shares to an outsider. The managers receive no salary, except the bookkeeper—usually the village schoolmaster—who gets £1 a month for his trouble. The board

*From the Report of the Recess Committee (1896).

must meet once a month, at least, the village priest being often the chairman. Each shareholder is liable in the whole amount of his fortune for any debts of the bank, but the transactions are so small that this causes no uneasiness.

Average of Liabilities.

In 1893 each bank had an average of 63 members, with liabilities amounting to £900, that is £14 each: the average gross profits were £19 per bank, from which had to be deducted £12 to the school-master for keeping the books, leaving a net profit of £7 sterling. The following table shows the proportionate amount of advances to farmers, and the terms for which loans were made:

Amount.	Ratio.	Terms.	Ratio.
Under £8	23	Under 6 months	32
£8 to £32	49	6 to 12 months	28
Over £32	28	Over 12 months	40
	100		100

The average amount of a loan is £13, the maximum fixed by law £128. The average term is 14 months, and no loan can be for longer than 4 years. Raffeisen banks are found chiefly in villages where the population may be between 600 and 2,000 souls. They receive deposits at rates varying with locality from $3\frac{1}{2}$ to $4\frac{1}{2}$ per cent., and charge interest on advances between $4\frac{1}{2}$ and 5 per cent.; the object being to make no profits, but to give depositors as high interest as possible while lending to borrowers at a minimum rate. The returns of 672 banks in 1894 showed as follows:—

Province.	Banks.	Deposits, £.	Loans, £.
Austria	396	355,000	250,000
Tyrol	122	140,000	85,000
Moravia	85	102,000	96,000
Bohemia	69	20,000	16,000
4 Provinces	672	617,000	447,000

The Austrian Government makes a reduction of stamp-duty on all transactions of these banks, and in order to multiply them all over the Empire the several Diets vote annual subsidies to provide iron safes, books, etc., besides employing Wander-Lehrers to go about among the farmers and preach to them the adoption of every form of co-operation, especially Raffeisen banks. In this way the movement has progressed so rapidly that in the last two years no fewer than 430 new banks were established. It is admitted on all hands that they prove an incalculable blessing to the farmers, that they are worked almost free of expense, and that in all cases where the parish priest and school-master lend their aid (for a purpose so strongly recommended by the Catholic Congress of 1890) these banks are established without the least difficulty.

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SECTION 3: AGRICULTURAL CREDIT IN IRELAND.

The Department for some time have had under consideration the question of agricultural credit available for the rural classes in Ireland with a view to seeing what improvements should be made in the existing system, having special regard to the form of agricultural credit most suitable to the requirements of the occupiers of land affected by the Land Acts in the western districts and throughout the country generally.

The first part of the problem is concerned with the case of existing agricultural credit societies formed on the Raffeisen principle. There are at present in Ireland about 260 of these societies, most of which have been organised by the Irish Agricultural Organisation Society. In the year 1901 the Department, with the concurrence of the Agricultural Board, decided to assist societies of this kind by granting loans in suitable cases. At present there are about 100 credit societies holding loans from the Department, and the amount of the outstanding loans is about £9,000. Experience has shown that while many o the societies are doing excellent work, in some cases the money advanced by the Department is not being used to the best advantage, and it is evident that the societies would derive much benefit from a regular system of inspection and audit. The Department, believing that co-operative credit societies when established on a proper basis and when subject to adequate supervision and control can fulfil a most useful function in connection with the work of agricultural development, desires to see an improvement in the present methods of organisation and management.

The other aspect of the problem of credit has reference to the new tenancies which are being created under the recent Land Acts, especially in the West. Large areas of grazing land are being purchased by the State and are being subdivided into suitable farms which are being allotted to men brought from uneconomic holdings. As a rule the new-comers have little, if any, capital and are sadly deficient in farming knowledge. The Department has provided teachers and overseers, whose business it is to help the new occupiers and to give them instruction and advice necessary to work their farms with some success. But no general system has yet been devised whereby these men can obtain sufficient capital on favourable terms to enable them to stock and equip their farms. The case of these men is not met by the existing agricultural credit societies, as the amounts of the loans needed are on a larger scale than the transactions of such societies. The Department feels that the problem, which is one of great complexity, should be dealt with in the first instance by means of a systematic and comprehensive inquiry, and they have under consideration the question of entrusting such an inquiry to a small departmental committee.

CHAPTER XXIV: THE TECHNICAL INSTRUCTION BRANCH OF THE DEPARTMENT.

INTRODUCTORY.

The term "Technical Instruction Branch of the Department" is used here to indicate the portions of the Department's work which are directly concerned with education for and in Industrial, Urban Housekeeping, Technological and Art occupations.

This Branch of the Department is concerned with operations in the following fields:—

1, 2. Secondary Schools (the supplementary training of teachers, Scholarships and Grants.)

3. Technical Classes in various urban centres and rural districts.

4. Schemes under Local Authorities.

5. Central Institutions and Scholarships.

The funds which maintain the work of this Branch of the Department have been dealt with under Section 2 of Chapter XXI on "Administration and Funds," and in the information furnished by the "Conversation" with Mr. George Fletcher.

When the Department was inaugurated, it found itself confronted by conditions in the Primary (National) and Day Secondary Schools which did not provide the knowledge, training or experience necessary to enable pupils to derive the greatest amount of benefit from any scheme of industrial training or technical education. The situation which faced the Department called for the thorough teaching of Experimental Science, Drawing, Manual Instruction and Domestic Economy, to prepare boys and girls for Technical Instruction.

SECTION 1: THE TRAINING OF TEACHERS.

TEACHERS OF DAY SECONDARY SCHOOLS.

Technical Schools, or Science and Art Schools, provide special classes or courses for the instruction of teachers of Primary or Secondary Schools. In accordance with a scheme approved by the Department, grants may be paid for such service. The instructors must be recognized by the Department as qualified for this special work. In the report of 1909-10 it is said, "It is not proposed in future to demand the same high qualifications from teachers in the smaller schools as from teachers in the larger technical institutions, especially in the County Boroughs, nor to approve of the larger institutions employing teachers who from economic or other reasons have to be accepted as teachers in small schools."

The training of teachers for Day Secondary Schools is provided for through courses of instruction to teachers held in July and August in experimental science (physics, chemistry, mechanical science, botany and physiology and hygiene), laboratory arts, drawing and modelling, domestic economy, manual instruction (woodwork), practical mathematics and mechanics, hand-railing, office routine and business methods, hygiene and sick nursing, housewifery, and rural science (including school gardening). A special course of instruction for teachers of crochet-work, embroidery and sprigging is also held.

The institutions at which the courses were conducted were:—The Royal College of Science, Dublin; The Metropolitan School of Art, Dublin; the Irish Training School of Domestic Economy, Co. Dublin; the Department's Industrial Annexe, Grand Canal Bank, Dublin; The Municipal Technical Institute, Belfast; the City of Dublin Technical Schools; The Christian Brothers' Schools, North Richmond Street, Dublin; the Municipal Technical School and School Garden, Kingstown; the Albert Agricultural College, Glasnevin; and the Crawford Municipal Technical Institute, Cork. Special centres were arranged for members of enclosed religious orders, for whom courses of instruction in experimental science, drawing and modelling and domestic economy were provided.

The courses were attended by 621 teacher-students, of whom 478 received certificates of satisfactory attendance and progress; the number attending for instruction in the various subjects being:—experimental science, 259; laboratory arts, 19; drawing and modelling, 117; domestic economy, 41; manual instruction (woodwork), 21; practical mathematics and mechanics, 29; hand-railing, 10; office routine and business methods, 19; hygiene and sick nursing, 19; housewifery, 19; rural science (including school gardening), 30; crochet-work, etc., 38.

TEACHERS OF NATIONAL SCHOOLS

In addition to the training provided for teachers in Day Secondary Schools, the Department has conducted classes for the training of National School teachers in Elementary Science at 10 centres. The number of teacher-students in attendance was 88, and the number who received certificates of satisfactory attendance and progress was 69.

Special Summer classes in Rural Science, including School Gardening, were held by the Department during the month of August. 30 National School teachers were admitted to these courses, and 25 received certificates of satisfactory attendance and progress.

There was a great increase in the number of classes conducted for the training of teachers in Domestic Economy. Classes were held at 18 Technical Schools. 422 teachers were presented for examination, of whom 367 secured certificates of satisfactory attendance and progress.

Special Drawing classes for National School teachers were conducted in 3 Technical Schools. These were attended by 23 teacher-students, but only 7 were presented for examination, and only one qualified for the certificate of satisfactory attendance and progress.

INSTRUCTRESSES OF DOMESTIC ECONOMY.

The Technical Instruction Branch of the Department carries on the work of training Instructresses for Domestic Economy classes for towns and cities at places separate from those under the Branch of Agricultural Instruction.

The work of the Irish Training School of Domestic Economy is carried an at St. Kevin's Park, Kilmacud, near Dublin. The Commission visited the School, which is housed in premises standing in grounds of about 3 acres. It can take in about 45 pupils, and about 15 qualified instructresses are turned out yearly.

The work of the School comprises two courses of instruction:—

(1) A course of one year in Household Management, the object being to train girls for the management of their own homes, and also to fit those who may not be selected for further training as teachers to undertake positions as matrons of large institutions, manageresses of hotels, etc.

(2) A two years' course of training for teachers of Domestic Economy.

All students of the School are required to attend the first-named course. Students are admitted to this course in August of each year. Applicants must satisfy the Department as to their general education. University graduates and applicants who have passed the Senior Grade examinations of the Intermediate Education Board, and who are otherwise suitable, will be admitted forthwith if accommodation is available. All others are required to pass an entrance examination, vacancies being offered to those who stand highest at entrance examination.

Only students who have worked satisfactorily through the course in Household Management are eligible for admission to the course of training for teachers of Domestic Economy.

At the close of each school year the Department, on consideration of the results of the examination held at the close of the course of Household Management, and the reports of their Inspectors and of the Teaching Staff upon the work of the students during the session, will select for training as teachers of Domestic Economy a limited number of students who have shown themselves most capable of taking full advantage of the course of training provided.

Students with physical defects of voice, sight, or hearing will not be selected to undergo the course of training.

The course of training, which extends over at least two complete sessions, involves a complete course of Domestic Economy suitable for teachers of this subject. It includes the principles of practical elementary science involved in domestic work; Cookery; Laundry; Dressmaking and Home Sewing; and Housewifery (including household routine and the keeping of accounts); and practice in the teaching of these subjects. Practical instruction in Home Hygiene and Sick Nursing is afforded, and instruction is given in the Theory and Practice of Education.

All students pay a fee of £10 per term (about 20 weeks), which includes tuition, residence and board, but not personal laundry, facilities for which, however, are afforded to students.

SCHOLARSHIPS.

Scholarships at Residential Schools of Domestic Training of the value of £15 each, are awarded to a limited number of girls to enable them to attend for one year a regular course of instruction and training in Domestic Economy, such as will cultivate their intelligence and resourcefulness and render them more practical in the performance of home duties. The Scholarship, together with the payment of a fee of £2 on the part of the scholar, entitles the holder to board, residence, and instruction during the term of the Scholarship. (Under the County Cork scheme the value of the Scholarship is only £10, the scholar being required to pay a fee of £8.)

The total number of Scholarships for girls in 1910 by 10 different Committees was 63; the scholars were distributed among 7 approved Residential Schools of Domestic Training.

SECTION 2: SCHOLARSHIPS AND GRANTS FOR SCHOOL PUPILS.

Until 1910 Scholarships tenable in Secondary Schools were provided in connection with schemes under local authorities to encourage and enable students to take further courses of instruction than they would otherwise have been able or disposed to do. The Department had for a long time been aware that the object of these Scholarships, which was to prepare boys for industrial careers, had not been attained. The subject was brought up for discussion at the Board of Technical Instruction, and a Committee appointed to draft a revised scheme. The scheme has now been issued and will replace that previously existing.

The Scholarships are now divided into two classes:—

(1.) *Technical Scholarships* for boys of 13 years and upwards, who have completed their primary school course, tenable at Day Trades Preparatory Schools or other schools which provide a course of the same type.

(2.) *Apprenticeship Scholarships* for boys, who have attained the age of 16, tenable throughout the term of indentured apprenticeship to approved trades.

The intention of these Scholarships is to secure picked boys from the primary school and, after a period spent in a school offering a course specially designed to prepare him for a trade, to provide a sum sufficient to maintain the boy throughout the whole period of his apprenticeship in a skilled trade. It is believed that this scheme will remedy the defect so often experienced where a boy who has received a good preliminary training is unable to follow it up by apprenticeship in a skilled trade for which his abilities fit him.

GRANTS TO DAY SECONDARY SCHOOLS.

Grants are paid from the Parliamentary Vote, as outlined in the section on Administration and Funds, for instruction given at Day Secondary

Schools in Experimental Science, Drawing, Manual Instruction and Domestic Economy. Regulations for the administration and distribution of these grants are as follows:—

I. SUBJECTS.

1. *Experimental Science* shall mean such a system of instruction in Physical and Natural Science as will involve the greater part of the work being done by the pupils themselves in an approved laboratory.

2. *Drawing* shall mean a system of instruction in Freehand, Object, Model, and Geometrical Drawing, and Modelling.

3. *Manual Instruction* shall include instruction in the use of tools employed in Wood or Metal-working, and Drawing in connection therewith.

4. *Domestic Economy* shall include Cookery and Home-sewing, and may include Laundry-work or any other form of practical instruction in household management of which the Department may approve.

5. No scheme will be approved unless the Department is satisfied that due provision is made for the instruction of pupils in the other main branches of a general education.

II. GRANTS.

Grants in respect of courses of instruction in Experimental Science, Drawing, Manual Instruction, and Domestic Economy may be made, in accordance with the following regulations, to Day Secondary Schools in which sufficient provision is made for instruction in the other main branches of a general education:—

1. Grants shall be payable in respect of attendances made by those students only who are 12 years of age on or before the 31st day of May in the calendar year in which the course is entered upon, and who have completed an education which would entitle them to be placed in the Sixth Class of a school under the Board of National Education in Ireland. Pupils on the roll of a National School are not eligible for attendance grants.

2. Grants shall be payable in respect of attendances made by the pupils of those schools only which have been approved by the Department.

3. Grants on the average attendance of duly qualified pupils will be made for each hour of instruction per week throughout the school year, according to the following scale:—

Experimental Science.—10s. for the first year of the course; 12s. 6d. for second; 15s. for third; 20s. for fourth year.

Domestic Economy (*as a Special Course*).—8s. for third or fourth year of course.

Drawing.—5s. for the first year of the course; 6s. for second; 7s. for third or fourth.

Manual Instruction and Domestic Economy (*Auxiliary Courses*).—6s. for first year of course; 7s. for second; 8s. for third or fourth.

III. Courses of Instruction.

1. The Courses of Instruction include:—

(*a.*) *A Preliminary (two year) Course* which is obligatory on all pupils and on all schools claiming grants under these regulations, and

(*b.*) *Special Courses*, which are optional.

The *Preliminary Course* may vary according to the character of the school, but it shall include Experimental Science for not less than 3 hours per week and Drawing not less than one hour per week. In schools claiming grants for more than six hours' instruction in this Course in any week, Manual Instruction or Domestic Economy must form part, and at least 1½ hours' instruction per week must be devoted to one of those subjects.

In Schools also which do not provide instruction in one of the Special Courses, or whose Special Course has not been recognized by the Department for attendance grants, Manual Instruction or Domestic Economy, with Experimental Science and Drawing, shall constitute the Preliminary Course; and in order that the Preliminary Course in such schools may be recognized, the time-table must show that at least 6 hours' instruction per week is devoted to those three subjects.

A *Special Course* must include one, but may not include more than three subjects, to which Manual Instruction or Domestic Economy (unless taken as a Special Course) may be added. Managers will be allowed much latitude in selecting the subject or subjects most suitable to their own school.

Managers desiring to have the special courses of their schools recognized must show that a fair proportion of the pupils who have worked through the Preliminary Course are prepared to attend the Special Course; that not less than 3 hours per week are to be devoted to each subject of the Special Course; and that at least one-third of the time is to be assigned to theoretical instruction.

IV. Laboratories.

No grant will be made for instruction unless due provision is made for experimental work in Science, on the part of the pupils, in properly equipped and approved laboratories.

V. Duration of Lessons.

Practical instruction in Science, Manual Instruction and Domestic Economy, must be given in lessons of at least 80 minutes' duration.

Lessons of less than 40 minutes' duration will not be considered in computing the "total number of hours of attendance."

The minimum time per week recognized for grants on behalf of attendance at Manual Instruction or Domestic Economy is 1½ hrs.

The time-table must be so arranged as to leave sufficient time to the teacher for preparation of laboratory work.

VI. SIZE OF CLASSES.

Not more than 40 pupils shall be taken at a time by one teacher for Theoretical Instruction, nor more than 20 for Practical Instruction in any subject, unless an assistant recognized by the Department is provided. In that case the number for Practical Instruction may be increased to 30. Instruction in Drawing may, for this purpose, be regarded as theoretical instruction.

Where classes for practical instruction are small, concurrent instruction in two subjects may be exceptionally allowed, but the approval of the Department must be obtained in each case.

EXTENT OF THE WORK IN 1909-10.

Information on the principles which guide the policy of this Branch in carrying out this work are referred to at some length in the "Conversation" with Mr. George Fletcher.

The total number of primary Schools for which grants were paid, through the Department, for Drawing and Manual Instruction was 95 Schools. The amount of the grants was £1,639.

The total number of Day Secondary Schools for which grants were paid, through the Department, for courses given in Experimental Science, Drawing, Manual Instruction, Domestic Economy was 286 schools. The following table shows the number of pupils taking each of these courses in each of the four years, and the amount of the grant earned in connection therewith.

	1st year	2nd year.	3rd year.	4th year.	Total. Grants.
Experimental Science...	6,127	4,397	2,072	352	£21,247
Drawing.....	6,127	4,397	453	66	3,999
Manual Instruction...	1,437	684	116	5	1,121
Domestic Economy....	453	206	389	48	1,100
					£27,467

13,406 individual students participated in the work.

SECTION 3: TECHNICAL SCHOOLS AND SCIENCE AND ART SCHOOLS AND CLASSES.

The Technical Schools or Science and Art Schools, where educational work to the satisfaction of the Department is done, may draw special grants for pupils who take courses and classes at them, as outlined in the information from Mr. George Fletcher. During 1909-10 the authorities of 87 Technical Schools or Science and Art Schools and Classes received grants through the Department from Parliamentary votes amounting to £18,223, the total number of students concerned being 8,102.

Some extracts, which contain information appropriate and useful to Canada, are taken from the Regulations which are designed to provide supplementary aid towards the instruction given in these Technical Schools and Classes.

Difficulties and Advantages of Evening Classes.

The Schools and Classes working under this Programme are mainly, though not exclusively, Evening Schools. It may be useful to indicate the position which teaching in evening classes occupies in relation to other branches of education. It is clear that instruction in evening classes cannot form a substitute for the more general systematic education given in Day Schools, whether Primary, Secondary or Technical. The work of such evening schools and classes constitutes a specialised form of education intended to fit those receiving it for industrial or commercial pursuits, or to render those already engaged in such pursuits more efficient in their work. Instruction of this nature in evening schools has obvious defects; it possesses, however, certain well marked advantages. Attendance at such schools is purely voluntary. Those attending are for the most part engaged or about to be engaged in some form of industry—they have commenced the serious work of life—and are meeting problems and difficulties which the Evening Technical School can help them to solve. They perceive that the higher branches of their calling may be reached only by increased technical skill and knowledge. This being the case, the attitude of evening students to instruction is usually most favourable; but progress is hindered by several circumstances: hitherto the previous preparation of students joining evening Technical Schools has in many cases not been such as to fit them for the specialised form of instruction which it is the special function of such schools to impart.

An attempt is made in these Regulations to remedy this defect. Before a student can take full advantage of a specialised course of instruction in any branch of Science or Technology he should at least be able to express himself clearly, both orally and by means of writing and drawing; he should be able to make such elementary calculations as are required in all industries, and he should know something at least, and that something really and practically, of the fundamental principles of science underlying all industrial work. Without this preparation a student cannot hope to profit by a specialised course. He will be continually handicapped and disheartened by the difficulties, and will tend to retard other members of the class who may be better prepared. When these conditions are not satisfied the young student should be given an opportunity to comply with them, and to this end should enter the Preparatory Course.

A second difficulty is the shortness of time available for instruction in Evening Classes. For students engaged in arduous work during the day the amount of time devoted to evening technical school work must be severely limited. Speaking generally, not more than two evening attendances a week can be expected, for homework is essential if full advantage is to be derived from the work in class. The hours of school study thus limited become precious, and the organisation of the School and the efforts of the teachers should be earnestly directed to the most thorough utilisation of these two hours, and to this end every lesson should be carefully prepared. It will, moreover, be obvious that, under such circumstances, regular attendance becomes a matter of the highest importance. The Department mark their sense of the importance of this by the "Increment Grant," under which largely increased grants are paid for continued attendance over 20 hours up to a limit of 120 hours.

Instead of offering a number of *Subjects* a school should offer a number of *Courses*, and no student should be allowed to omit subjects of fundamental importance. Where, however, a student on entering a school shows a competent knowledge of the earlier stages of a Course of Study he may be allowed to join the Second or Third Year Course.

Some of the Regulations for Grants.

For the purposes of grants the subjects which may be included in specialised courses of study, and on which payment may be made, are grouped as follows, but courses of study may be taken from different groups.

Group A.—Commercial Subjects (Section A.)
Group B.—(1) Commercial Subjects (Section B.)
(2) Languages.
(3) Mathematics.
Group C.—Science (Pure and Applied).
Group D.—(1)Handicraft.
(2) Domestic Science.
Group E.—Art Subjects.

Group C.—*Science (Pure and Applied).*

Under pure science will be included such subjects as mechanics, physics, chemistry, biology, botany, zoology, physiology. Under applied science would be included naval architecture, navigation, nautical astronomy, building construction, machine construction and other subjects involving systematic instruction in the underlying scientific principles, and which would be classified under such headings as:—

(1) Building industries.
(2) Metal industries.
(3) Textile industries.
(4) Printing and process industries.
(5) Furniture industries.
(6) Leather industries.
(7) Woodworking industries.
(8) Carriage Building industries.
(9) Electrical industries.
(10) Chemical industries.
(11) Agricultural industries.

At least half the instruction in subjects included in this group should be practical, and must be given under approved conditions of accommodation and equipment.

The practical work must be so arranged as to be illustrative of the principles taught, and should not be directed to developing dexterity in the practice of trade processes.

DAY SCHOOLS FOR APPRENTICES AND OTHERS ENGAGED IN BUSINESS.

Day technical or commercial schools or classes, which are conducted by properly constituted managers, either in conjunction with works, business houses, or technical schools, with a view to improving the conditions of local industries and commerce, and to the further training of sub-managers, foremen, tradesmen or apprentices, may be admitted for grants under this section.

Such schools or classes must be open on one or more days of the week, not later than six o'clock in the evening, or than 1 p.m. on Saturdays.

Grants not exceeding three-fourths of the certified annual expenditure for the conduct of such schools or classes may be made by the Department in respect of students for whom an employer's certificate can be produced, showing that the students have been engaged during session in a business, trade, or industry, or that they are indentured or properly engaged as apprentices to a firm or to an individual.

The expenditure must be set forth in properly audited accounts, to be accompanied by vouchers.

The decision of the Department as to what constitutes a legitimate charge against annual expenditure shall be final.

The accommodation provided, the courses of instruction, the syllabuses of the subjects taught, the qualifications of the teachers, the time-table of instruction and the estimate of expenditure, must be approved by the Department.

The practical work must be so arranged as to be illustrative of the principles taught, and should not be directed to developing dexterity in the practice of trade processes.

SCHOOLS OF ART.

Schools of Art, which provide for students, the majority of whom are *industrial*, courses extending continuously over two or three years, according to a scheme approved by the Department, may be paid grants not exceeding three-fourths of the actual expenditure incurred in the conduct of such courses.

The expenditure must be set forth in properly audited accounts, to be accompanied by vouchers. An estimate of the expenditure must be submitted for the approval of the Department before the commencement of the session.

The decision of the Department as to what constitutes a legitimate charge against annual expenditure shall be final.

No grants will be payable to Schools of Art adopting this section of the regulations, under the methods of payments set out in Section III.

Recognition may be withheld or withdrawn from any School of Art in which, in the opinion of the Department, the efficiency of the instruction and the number of students in attendance do not justify the expenditure involved.

The amounts of grants payable in respect of any school may, on account of conspicuous merit, be increased by one-tenth, or, upon grounds of inefficiency, be decreased by one or more tenths, as the Department, in consideration of their Inspector's report, may determine.

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SECTION 4: SCHEMES UNDER LOCAL AUTHORITIES.

Introductory.

The various schemes of technical education under Local Authorities throughout Ireland are, on the whole, doing excellent work. They are revised annually in accordance with the experience gained. Nearly all the Local Authorities are now spending the whole of their available income, and in many cases their operations are very materially restricted by want of means. In a number of Urban Centres the provision of permanent buildings has proved unavoidable, and loans have been raised for the purpose of providing new buildings, the repayment of which falls upon the annual income, already too small for the maintenance of the school. Under these circumstances there is little opportunity for extension even on lines which have been shown to yield excellent results.

A statement is presented of the general conditions under which these schemes are carried on. That is followed by a presentation in detail of a typical scheme for the County of Kilkenny. This was chosen because the chief industries of the county represent those of many counties in Canada. The statement in detail under the sub-heading of Finance is presented in order that local authorities might see in detail the proportion of the total cost met from various sources of local revenue and by the contributions from the Department. After that, the scheme of a comparatively small urban district—that of Portadown, with a population of 10,092—is given in detail. Under the sub-headings of Finance and Subjects of Instruction, information is presented in detail of value to local authorities in Canada.

Altogether there are 35 urban schemes, participated in by 19,196 individual students; 30 county schemes,with permanent centres of instruction attended by 7,177 students; 34 county schemes with itinerant instruction, in which the classes are attended by 16,536 individual pupils. The total number of pupils in connection with the schemes under local authorities is 42,909, made up of 16,784 young men and 26,125 young women. Of these, 2,948 are boys and 2,998 girls who are still attending school.

Occupations of Young Men.

The occupations of the young men attending these classes are as follows:—

Engaged in Farming Occupations	2,338
Building Trades	1,127
Coach and Car Builders	65
Engineers and Metal Workers	1,485
Architects, Surveyors and Civil Engineers	125
Electrical Engineers, Instrument Makers	259
Textile Industries	550
Painters and Plumbers, Gasfitters, etc.	378
Applied Art Trades—Jewelry, Furniture	164

Chemists, Analysts, etc.	269
Salesmen, Shopkeepers, Clerks, etc.	3,621
Teachers	697
Students (University, etc.)	264
Other occupations	1,343
Boys just left school or college	296
Boys still at school or college	2,948
No occupation stated	612
Total	16,784

Occupations of Young Women.

The occupations of the young women are as follows:—

Farming Occupations	6,256
Domestic Service	1,526
Printing Trades	39
Dressmakers, Milliners, etc.	763
Textile Industries	410
Other factory workers	709
Embroidery, Lace, etc.	1,972
Saleswomen and Shopkeepers	1,300
Clerks	929
Teachers	2,117
Students (University, etc.)	131
Other occupations	1,614
Girls just left school or college	58
Girls still at school or college	2,998
No occupation stated	4,777
Total	26,125

The amount of money contributed by the Department from its Endowment Fund in 1909-10 was £58,916. £29,514 was contributed from local rates.

In addition the Schools and Classes earned grants, paid from Parliamentary Votes through the Department, amounting to £18,223 for the work of 8,102 pupils.

General Conditions for Each of the Schemes.

The Scheme is not intended to apply to children under 14, but such children who have been placed in the Sixth Class of a National School, or who have received an equivalent education, may be admitted to classes provided that there is accommodation available. Under no circumstances may scholars on the roll of a Primary School attend classes, under the Scheme, which meet during Primary School hours.

Schools or classes conducted or aided under the provisions of the Scheme shall be at all times open to the Department's Inspectors, who from time to time report to the Department on the condition and suitability of the school buildings or class-rooms, the character of the instruction and its suitability to the needs of the locality, the sufficiency of the teaching staff for the number of students under instruction, the progress of the students—which they may ascertain in such a manner as may be necessary—the method of registration, and, generally, the observance of the provisions of the Scheme.

Classes conducted or aided under the Scheme shall not be of such a size as to impair the efficiency of the instruction. (A practical class should consist of not more than 20 students under one teacher, and a theoretical or demonstration class of not more than 40 students. Local Committees should assist teachers in keeping classes within these limits).

Control will be exercised over the admission to classes so that students may take only associated subjects, and admission to certain classes may be limited by entrance examinations in order that the classes may be of a manageable size, and that students selected may be capable of taking full advantage of the instruction.

Classes will, unless in exceptional circumstances, be closed should the average attendance for four successive lessons fall below six.

Attendance Registers shall be carefully, regularly, and punctually marked.

A Local Committee of Management shall be formed in each centre in the Rural Districts where classes are to be held. The Committee formed shall appoint an Honorary Secretary, and place itself in communication with the County Joint Committee. In an Urban District the classes shall be under the management of a Local Committee appointed for this purpose by the Urban District Council. Wherever the instruction of girls is involved a number of ladies should be included in the Local Committee.

The duties of a Local Committee are:—(*a*) to arrange for suitable accommodation for the courses of instruction to be given; to awaken local interest, and to make due provision for the starting, or resumption, of the course. (*b*) to assist in securing regular and punctual attendance at the classes; (*c*) to visit the classes from time to time, and to check and sign the registers, and (*d*) to make recommendations to the County Committee as to local requirements in connection with the classes.

(A) SPECIMEN TECHNICAL INSTRUCTION SCHEME, COUNTY KILKENNY.

The Scheme ran from 1st August, 1910, to 31st July, 1911. Subject to the provisions requiring local contributions from the rates, it was applicable to the Urban District of Kilkenny and to all the rural districts within the administrative area of the County Council.

Population of County:—Urban Dist., 10,609; Rural,68,550; total 79,159.

Valuation of County:—Urban Dist., £19,552; Rural £344,369;total £363,921.

Valuation of 1d. rate:—Urban Dist., £81; Rural, £1,434; total £1,515.

The County Council's contribution from the rates was paid over to the Committee in quarterly instalments; the Urban District Council's contribution two-thirds in October, 1910, and balance in March, 1911.

The Technical Instruction Committee is a Joint Committee of the Kilkenny County Council and the Urban District Council of Kilkenny, consisting of 31 members, of whom 17 are councillors, and 14 added members.

CHIEF INDUSTRIES.

The most important industries (excluding agriculture and allied industries) are building trades, woollen cloth manufacture, engineering, cycle making, furniture making, tobacco curing, marble and slate quarrying and working, monumental carving, printing and book-binding, milling, foundry-work, brewing, cooperage, weaving, baking, cabinet-making, boot-making, coal-mining, distilling, tanning.

OBJECTS OF THE SCHEME.

The objects of the Scheme are to provide, mainly by classes in Evening Technical Schools and in the Day Trades Preparatory School, by scholarships, and by the employment of itinerant teachers, instruction in technological, science and art, commercial, industrial, and domestic economy subjects.

The Scheme is set out under the following heads:—(1) Finance. (2) Subjects of Instruction. (3) Teaching Staff. (4) Day Trades Preparatory School. (5) Itinerant Instruction. (6) Scholarships for Boys. (7) Evening Technical Classes.

(1.) FINANCE.

A. *Estimated Income.*		£
(1) Contribution form County Council from rates levied over the rural Districts, year ending 31st March, 1911		540
(2) Contribution from Urban District Council of Kilkenny (produce of rate of 1d in the £ levied in financial year ending 31st March, 1911)		80
(3) Contributions from Department:—		
(*a*) Annual Grant from Endowment	£ 820	
(*b*) Special Grant towards maintenance of Day Trades Preparatory School	£420	
(*c*) Grants for Instruction in Science, Art, etc.	£150	
(*d*) Grant in aid of the Scholarship Fund	£ 50	
		1,440
(4) Students' Fees, and Sale of Books, Class Materials, etc		60
(5) From Managers of Day Secondary Schools for part services of Art Master		80
Total		£2,200

B. *Estimated Expenditure.*

	£	
(1) Salaries of Teachers:—		
(*a*) Principal and Secretary	260	
(*b*) Permanent Teaching Staff	965	
(*c*) Increase of Salaries of Permanent Teachers	30	
(*d*) Temporary Teaching Staff	80	1,335
(2) Travelling expenses and Allowances		100
(3) Scholarships for Boys		188
(4) Prizes		60
(5) Maintenance of Classes at Temporary Centres, including rent of rooms, cost of supplies, removal of equipment, etc.		150
(6) Maintenance of Classes in Urban District of Kilkenny, including rent of premises, insurance, caretaker's wages, heating, lighting, etc.		250
(7) Equipment		37
(8) Administration, including cost of clerical assistance, office expenses, printing, stationery, and advertising		80
Total		£2,200

Subjects of Instruction.

IN EVENING CLASSES.

Preparatory Course.—English, elementary mathematics, drawing, manual instruction (woodwork).

Commercial Subjects.—Shorthand.

Science (*Pure and Applied*).—Building construction and drawing, machine construction and drawing, physics, chemistry, tailors' cutting, carpentry and joinery.

Handicraft.—Manual instruction in wood and metal.

Domestic Science.—Cookery, housewifery, laundry-work, dressmaking, home-sewing, sick-nursing, hygiene.

Art Subjects.—Freehand, object, model, and blackboard drawing, drawing in light and shade, design, geometrical drawing, painting of ornament in monochrome.

AT TEMPORARY CENTRES.

The subjects taught will mainly be those mentioned in Sect. (5)—'Itinerant Instruction,' but such of the subjects above-mentioned as may be suitable to a particular locality may be added from time to time.

IN THE DAY TRADES PREPARATORY SCHOOL.

Experimental science and drawing, workshop mathematics, manual instruction in wood and metal, practical geometry, and literary subjects, including one modern language in addition to English.

(3) Teaching Staff.

The teaching staff will comprise permanent and temporary officers.

The *permanent* staff will consist of:—

(1.) A principal, whose duties shall be:—

To act as secretary to the Committee;

To give effect generally to the provisions of the approved scheme in accordance with instructions of Committee;

To supervise the work of the teaching staff;

To conduct day and evening classes as may be found necessary.

(2) A teacher of experimental science, mathematics, etc. with special qualifications in mechanical science.

(3) A teacher of art subjects, whose services will be partly utilised in conducting day classes in certain Secondary Schools.

(4) Two manual instructors.

(5) A teacher of English, mathematics and French.

(6) Three itinerant instructresses in domestic economy. The services of these instructresses shall be available in Kilkenny Urban District and other centres as may be arranged, (They will be entirely engaged in conducting courses of instruction in temporary centres between the close of one evening school session and the opening of the next.)

It will be a condition of all appointments on the permanent staff that teachers will be prepared to give instruction in rural centres, and in both day and evening classes, when required by the Committee, and that they shall be under control of the principal.

The *temporary* staff will consist of teachers specially qualified to give instruction in technical and commercial subjects, whose engagements shall be subject to such conditions as may be arranged at the time of making each appointment.

(4) Day Trades Preparatory School.

The school is conducted at the City Technical School, Kilkenny. Its aim is to provide for boys over 13, who have received an education equivalent to that of the sixth standard of a National School, such a course of training as will fit them to enter upon an industrial career.

The course of instruction will extend over 3 years.

Candidates for admission will be tested by an entrance examination conducted under conditions approved of by the Department.

The Department will bear three-fourths of the approved net annual cost of maintaining the School. The proportion of the expenditure admitted for payment by the Department may be increased by one-tenth if the Department, after consideration of their inspectors' reports, are of opinion that the organization and teaching justify such a course, or may be reduced by one or more tenths if these are considered unsatisfactory.

A sum of £30, (included in the amount allocated for prizes) is reserved for pupils who have completed satisfactory courses at this School, and will be

distributed as follows:—3 prizes of £10 each may be awarded to students who have most satisfactorily completed a course extending over 3 years, choice being made of the most deserving students, having regard to the report made by the Principal in each case. Should sufficient merit, in the opinion of the Committee, not be shown, any or all of the prizes may be withheld. The first moiety of the prize in each case shall be payable on the production of satisfactory evidence that the student has entered upon an apprenticeship, or taken up industrial employment approved by the Committee, and that satisfactory provision has been made for his receiving further instruction in evening classes. The second moiety shall be payable six months later, on the production of evidence of satisfactory progress on the part of the student.

(5) Itinerant Instruction.

The subjects to be taught will include manual work in wood, technical drawing, building construction, cookery, laundry-work, needlework (including repairing, plain sewing and dressmaking), hygiene, housewifery. The teachers will continue to give short courses of instruction in centres where suitable arrangements can be made for accommodation of classes, which may be held for both day and evening students at each centre. Instruction will be adapted to local needs, and will be as practical in character as possible.

The short courses will be organized so as to allow a teacher to devote 30 days to instruction at each centre, and, when expedient, to work two centres concurrently.

In temporary centres a course of instruction in practical cookery and housewifery or manual instruction shall consist of 30 two-hour lessons, laundry-work 12, and needlework at least 18 such lessons. A time-table and itinerary showing distribution of time of itinerant teachers for the session is prepared as soon as possible after date fixed for return of forms of application.

(6) Scholarships for Boys.

Provision is made for award of Scholarships to boys attending primary schools, the object being to aid promising boys, who have already received a satisfactory primary education, to receive at the Kilkenny Day Trades Preparatory School a course of instruction specially designed to fit them to enter upon an industrial career.

These Scholarships entitle the holders to free tuition and the free use of text books, tools, etc., at above School, and in a certain number of cases to a maintenance allowance, the amount of which will vary with the distance of the residence of the boy from said School.

(7) Evening Technical Classes.

The Committee, in addition to maintaining the Kilkenny City Technical School, will establish, or aid in establishing, so far as the funds at their disposal permit, evening technical classes in places to be previously approved of by the

Committee and the Department,—(*a*) by acquiring or giving aid towards acquiring class rooms, (*b*) by making arrangements, so far as possible, to allow the Instructors employed by the Committee to conduct classes in subjects specially suited to the needs of the locality.

(B). SPECIMEN TECHNICAL INSTRUCTION SCHEME, URBAN DISTRICT OF PORTADOWN.

Chief Industries: Linen weaving, handkerchief weaving and hem-stitching, building, corn milling, engineering, fruit preserving, brick-making.

Population, 10,092. Valuation, £29,588. Value of 1d. rate, £123.

The local contribution from the rates was paid over to the Technical Instruction Committee in October, 1910, and February, 1911.

The Committee was appointed in February, 1908, and ceased to hold office in January, 1911. There were 15 members, of whom 8 were Urban District Councillors, and 7 added members.

The objects of the scheme, which ran from 1st August, 1910, to 31st July, 1911, were to provide: (1) Instruction by means of systematic courses in Science, Art, Technological, Commercial and Domestic Subjects, in Evening Classes, for those engaged in various industries during the day. (2) Instruction of a general scientific and technical nature for boys over 13 in the Day Trades Preparatory School. (3) Instruction for apprentices in the sciences and principles underlying their trades by means of a Day School for Apprentices.

The School is situated in Armagh Road and contains lecture rooms, art room, two class-rooms, manual instruction workshop, domestic subjects room, engineering workshop, physical and chemical laboratory (with balance and store rooms), mechanical laboratory, engine room, dark room, preparation room, scullery, offices, etc.

The Commercial Classes are held in the Free Library.

The Scheme is set out under the following heads:—

(1) Finance.
(2) Subjects of Instruction.
(3) Day Trades Preparatory School.

(I) FINANCE.

A. *Estimated Income.*

(1) Contribution from Urban District Council (produce of a rate of 1d. in the £ levied in financial year ending 31st March, 1911)	£	100
(2) Students' Fees		100
(3) Donations to Prize Fund		20

	£	£
(4) Contributions from Department:—		
(*a*) From Endowment	£ 500	
(*b*) Grants for instruction in science, art, etc	300	
(*c*) Grant towards maintenance of Day Trades Preparatory School	405	
		1,205
(5) Sale of books, cookery materials, etc		20
(6) Fees for instruction in experimental science of pupils from extern schools		12
(7) Grant from National Education Board for instruction in Cookery to National School children		8
Total		£1,475

B. *Estimated Expenditure.*

(1) Salary of Principal	275
(2) Salaries of other teachers	680
(3) Prizes and Scholarships (evening school only)	20
(4) Scholarships (Day Trades Preparatory School)	22
(5) Caretaker's wages	52
(6) Fuel, light and cleaning	40
(7) Rent, rates and insurance	85
(8) Equipment (new and renewals)	50
(9) Class materials	30
(10) Printing, advertising and stationery	40
(11) Repairs to premises, grounds, etc	5
(12) Administrative and incidental expenses	50
(13) Appropriation to meet the deficit on the working of the Scheme in previous Sessions	126
Total	£1,475

(3) Subjects of Instruction.

Preparatory Course.—English, mathematics, drawing, experimental science and manual training (woodwork).

Commercial Subjects—Shorthand, typewriting, business methods and routine, book-keeping, commercial English, commercial correspondence, commercial arithmetic, commercial geography, banking and currency, economics of industry, and commercial law.

Languages.—French and German.

Mathematics.—Practical and pure mathematics, practical plane and solid geometry.

Science (Pure and Applied).—Carpentry and joinery, workshop practice, chemistry, experimental science, applied mechanics, machine construction

and drawing, magnetism and electricity, building construction and drawing, steam, mechanical engineering, electrical engineering, textiles, tailors' cutting, elementary science (teachers).

Handicraft.—Manual training (woodwork and metal work).

Domestic Science.—Cookery, laundry-work, housewifery, plain and fancy needlework, dressmaking, renovations.

Art Subjects.—Freehand, blackboard, geometrical and model drawing. drawing in light and shade, drawing of common objects, design, perspective,

(3) Day Trades Preparatory School.

The Day Trades Preparatory School is conducted at the Technical School, Portadown, the aim being to provide for boys over 13, who have received an education equivalent to that of the Sixth Standard of a National School, such a course of training as will fit them to enter upon an industrial career.

The course of instruction extends over a period of 3 years, and includes experimental science, drawing, workshop mathematics, manual instruction, practical geometry, and literary subjects, including one modern language besides English.

The Department bears three-fourths of the approved net annual cost of maintaining the school. The proportion of the expenses admitted for payment by the Department may be increased by one-tenth if, in the opinion of the Department's Inspectors, the organization and teaching merit special recognition, or it may be reduced by one or more tenths if these, in the opinion of the Department's Inspectors, are unsatisfactory.

SECTION 5: CENTRAL INSTITUTIONS AND SCHOLARSHIPS.

As already mentioned under "Administration and Funds," Parliamentary Votes provide for the maintenance of the following Central Institutions:—

Royal College of Science	£16,097
National Museum of Science and Art	13,568
National Library of Ireland	5,477
Metropolitan School of Art	4,360
Royal Botanic Gardens	4,636

A special work carried on by the Department with these Institutions is the granting of Scholarships to enable approved persons to receive such education as will qualify them for posts under the Department or under local authorities in carrying out schemes which have been approved.

THE ROYAL COLLEGE OF SCIENCE.

This College at Dublin is an Institution for supplying an advanced Course of Instruction in Science as applied to Agriculture and the Industrial Arts; for

training teachers for Technical Schools and for Secondary and Intermediate Schools in which Science is taught; and for carrying out scientific research.

FACULTIES.

The College embraces three Faculties:—

Agriculture.
Applied Chemistry.
Engineering.

The main function of the Agricultural Faculty of the Royal College of Science is the training of teachers for employment under the Department's programme of Agricultural Education. The course extends over 3 years. A number of valuable scholarships are offered annually by the Department in connection with this course. Almost all the students in the Agricultural Faculty are holders of scholarships. The total number of students in the Agricultural Faculty at the close of the Session in June, 1910, was:

First Year	14
Second Year	10
Third Year	8

8 students who completed their training in June, 1909, obtained the College diploma in Agriculture and received appointments during the year 1909-10 in connection with the Department's schemes of agricultural education. The total number of students who had entered the Agricultural Faculty as holders of scholarships provided by the Department, and completed the course by the end of the 1909-10 session was 64, of whom 31 are employed as Itinerant Instructors in Agriculture, 3 as teachers of Agricultural Classes, 8 at the Department's Colleges and Stations, and 11 at the Central staff of the Department.

The maintenance of this College is not a charge on the Endowment Fund of the Department. It is maintained out of other grants provided by the Treasury which are administered by the Department of Agriculture and Technical Instruction.

A very fine, large, commodious and well appointed building for the housing of the Royal College of Science was nearly completed when the Commission was in Dublin. The whole expense was borne from the Treasury at London.

In general the Institution is organized to be on a plane with the Faculties of Applied Science of first class universities, and with the Technical High Schools of Germany.

NATIONAL MUSEUM, DUBLIN.

The Department arranges for the loan, from the National Museum of Science and Art, of cases of objects to Agricultural and Technical Schools and classes or to other institutions. It is considered very desirable that learners should be able to obtain information from the examination of actual objects

as well as from books and lectures. Under the Circulation Branch cases are prepared and sent out from time to time as applied for.

One group of cases contains objects useful to illustrate *Industrial Crafts*. From many others the following are mentioned:—joints used in carpentry; door construction; roof trusses; cabinetmaker's work; wool, British and Colonial samples; wool, stages in manufacture; woollen goods made by machine knitting; paper manufacture; wallpaper printing; printing of books; bookbinding; varieties of leather; tanning of leather; manufactures from horn; manufactures from bone; filigree button making; manufacture of soap; bye-products of milk, etc.

There are also collections for the *Artistic Crafts*, including wood-carving, embroidery, hand-woven silks, copper repoussé work, engraving, carving stone, etc.

Cases may also be obtained with specimens illustrating plants, animals, metals and minerals. Cases are usually lent for periods of three weeks or seven weeks.

The collection of *Drawing, Design and Art* consists of works which have secured awards at the National Competition of Art Schools and Classes, works which have been accepted towards the Irish Secondary Teachers' Honours Drawing Certificate, and other school works of merit. The Department are prepared to send selected works on loan for a period not exceeding 14 days, to managers of Secondary and Technical Schools, in order to afford teachers and students an opportunity of judging the quality of execution to be aimed at in the work of Art Classes. As a rule, not more than 18 works will be sent in response to any one application.

The loan is made on condition that Managers make arrangements for the safe custody of the works, and undertake responsibility for any damage which may be done to them from the time of their receipt until re-delivery into the custody of the Department.

METROPOLITAN SCHOOL OF ART, DUBLIN.

The Department of Agriculture and Technical Instruction for Ireland offers, through this School, instruction to students in Drawing, Painting, Modelling, and Designing. In the evening classes workmen, apprentices and foremen can obtain instruction in the various branches of these subjects, as well as their application to craft work.

The School Session extends from the beginning of October to end of July. The School is open daily (Saturdays excepted) from 9.30 a.m. to 3.30 p.m. and from 6.30 to 9 p.m.

School lectures are regularly given in connection with most of the studies, and other lectures and demonstrations are given as the school work may demand. Students who intend becoming Designers, Art Teachers, etc., are expected to attend the classes in Principles of Ornament and Design and the lectures in connection therewith. Modelling students who are studying Design are also expected to attend them.

SESSIONAL PAPER No. 191d

COURSES.

There are two sections in the Art instruction, viz., Elementary and Advanced, the subjects including architecture, and mechanical drawing, landscape and artistic handicrafts. The subjects in detail are:—Linear drawing by the aid of instruments; freehand outline drawing on rigid forms from flat examples; freehand outline drawing from the "round"; shading from flat examples; shading from the "round" and solid forms; drawing the human figure and animal forms from flat examples; drawing the human figure, or animal forms from the "round" or nature; anatomical studies of the human figure or of animal forms; drawing flowers, foliage, landscape, details and objects of natural history, from nature; painting ornament from flat examples; painting ornament from the cast, etc.; painting from flat examples, flowers, still-life, etc.; painting direct from nature; painting from nature groups of still-life, flowers, etc., as compositions of colour; painting the human figure or animals in monochrome from casts; painting the human figure or animals in colour; modelling the human figure or animals; modelling fruits, flowers, foliage and objects of natural history from nature; time sketches in clay of the human figure or animals from nature; elementary design; drawings from actual measurements of structures, machines, etc., applied designs, technical or miscellaneous studies; work designed and executed in material wholly by the student.

ARTISTIC HANDICRAFTS.

The craft work taught at the school includes Enamelling and Art Metal work; Leather and Gesso work; Stained Glass work; while the teaching of other craft work is undertaken in connection with the Design Classes.

Numerous prizes are awarded in each section of the work of the school annually, providing that there is adequate competition and the standard of work in the various sections is sufficiently high.

DRAWING ON THE BLACKBOARD.

Practice in this exercise is specially directed to the acquirement, by students, of freedom and skill in using chalk, or brush with tempera, on the blackboard for the purpose of making drawings or diagrams in outline and in the mass on a large scale, and of illustrating various lessons to a class.

Students are urged to study many kinds of common objects, plants, and other examples, and cultivate a free and accurate style of Drawing. The representation of these subjects should show that their structure has been well studied, understood and expressed, all unimportant details being omitted.

In testing the student's ability to draw on the blackboard, the examiner calls upon the student (1) to make a drawing from memory of one or two objects, natural forms, ornamental forms, or subjects such as would be useful for illustrating a lesson to a class; (2) to sketch on a large scale an object or group of objects placed before him; and (3) to make an enlargement from a simple example, selected by the examiner for the purpose.

SCHOLARSHIPS.

FOR AGRICULTURE, HORTICULTURE, ETC.

A limited number of Scholarships are offered for competition among young men in Ireland who desire to acquire a thorough knowledge of Technical Agriculture, and one or more also for students who intend to specialize either in

Horticulture, Forestry or Creamery Management. Each Scholarship includes (1) free admission to the first year's course in the College, (2) railway fare to and from Dublin, and (3) either of the following, at the option of the Department (a) a maintenance allowance of one guinea per week while attending the Royal College or elsewhere as the Department may decide, or (b) free board and residence at one of the Department's institutions, in the latter case a small grant being made towards the cost of books and apparatus.

A Scholarship is tenable for one year, but selected candidates must undergo a probationary course of one term (about three months). If satisfactory progress be made by the holder, the Scholarship may be renewed for a second, third, and in certain circumstances even for the fourth year, to enable the student to complete his course.

The Department do not undertake to employ, or find employment for, students at the close of the period of training.

Holders must devote their whole time to the course of study prescribed for them by the Department. Candidates should be between 18 and 30 years of age; must have been born in Ireland or have been resident in Ireland for three years immediately prior to the 1st September; and must have had substantial experience of practical work in connection with farming, gardening, the management of woodlands, or dairying and creamery management. The examination may be written, oral and practical. The subjects will include all the ordinary work of farms, gardens, woods, or dairies, as practised in Ireland.

The holder's ability to impart instruction will be gauged by the style of answers in both written and oral examination.

For Science and Technology.

A number of Scholarships and of Teacherships-in-training, tenable at the Royal College, are offered for competition among students of Science and Technology. Candidates must be not less than 16 nor more than 30 years of age. Holders of Royal Exhibitions or National Scholarships and present or past students of the Royal College of Science are ineligible as candidates. The Scholarships are of the value of £50 per annum and in addition entitle the holder to free instruction during the Associate Course, a maintenance allowance of 21s. per week for the session of about 40 weeks each year, and railway fare to and from Dublin.

Candidates awarded Teacherships-in-training undertake to pursue the full Associate Course with a view to becoming teachers of Science in Ireland and to refund sums paid to them as maintenance allowance and travelling expenses in the event of their leaving the college before obtaining the Diploma of Associateship.

The Associate Course extends over three years, the College session running from October 1st until June 30th each year.

Holders of Scholarships and Teacherships-in-training are required to devote their whole time to the work of the Associate Course, to comply with the regulations of the College, and to pass the examinations required for the Associateship. The continuance of the Scholarship or Teachership-in-training for a second or a

third session will depend upon the ability and application which the student has shown during the previous session or sessions at the College.

In 1910, 55 candidates competed for the 5 Scholarships and 5 Teacherships-in-training offered for competition.

For the School of Art.

The Department offers 3 Scholarships, tenable at the School of Art, for competition amongst students of Irish Schools of Art and Art Classes who propose to become Art Teachers in Ireland. The holders of all these Scholarships are entitled to free admission to all Day and Evening Classes at the School; a maintenance allowance of 21s. per week during the session (about forty weeks); and railway fare to and from Dublin. Scholarships may be renewed for a second session.

A limited number of Scholarships are offered for competition amongst apprentices, under the Goldsmiths' Corporation, who have attended the School regularly and punctually for at least one session. The Scholarships are of the value of £6 each, and entitle the holders also to free tuition at the School.

Admission free or at reduced fees is offered to students of the School who have paid fees for two consecutive sessions and who are preparing to become teachers, manufacturers' draughtsmen, designers, or Art workmen, providing they continue to make satisfactory progress in their studies.

CHAPTER XXV: THE MUNICIPAL TECHNICAL INSTITUTE, BELFAST.

INTRODUCTORY.

The Municipal Technical Institute at Belfast is such an excellent example of organization, plant and equipment to meet the industrial needs of the city, that a statement of its main features is presented. The authorities of any city considering the question of building and equipping such an Institute would do well to procure a copy of the latest prospectus, which can be obtained on application to the Principal at the cost of 8c. plus postage. It is a volume of 350 pages, with detailed information, and most suggestive. Only the barest outline of very important features can be given in the limited space of this Report.

The work of the Institute was begun in 1900, although the present building was not opened until 1906. In the interval, the Principal conducted such work as could be overtaken and, with the members of the Staff which had been gathered together and others, devoted much time to the plans for a suitable building with its equipment. One commendable feature is the grouping of the rooms for each department, with office rooms for the staff in the group, the group itself being placed as far as practicable in proper relation to the department with which it has most to do.

A Trade Preparatory School is conducted in the Institute for boys from 12 to 15 years of age. About 140 boys were taking the course. The Principal approved of the plan of having the Trade Preparatory School in the Institute rather than elsewhere in the city.

He also stated that there were advantages from having Day and Evening Classes in the same building, using the same equipment, provided the whole was under one management and practically one set of heads responsible for each department. The attendance at the Day Classes in the Technical School has not become large enough to satisfy the wishes of those responsible. The attendance at the Evening Classes was over 4,000 pupils. The population of the city was 349,000 in 1910.

The keeping of useful records of technical students, and the methods followed in the compilation of these to make them of the greatest service, have been a difficulty. That matter has been studied carefully by Mr. Forth, Principal of the Institute. An article by him on the method in educational institutions in regard to the compilation of technical students' records, was published in the Journal of the Department of Agriculture and Technical Instruction for Ireland, Vol. VI., No. 3.

The Queen's University of Belfast and the city Corporation have an agreement recognizing the Institute as a College in which students of the University may pursue a course, or part of a course of study qualifying for their degree

of Bachelor of Science (B.Sc.), Master of Science (M.Sc.), Doctor of Science (D.Sc.), or a diploma.

The Departments in which courses, or parts of courses, are recognized, and in which courses of study already are or may be provided are those of Mechanical Engineering, Electrical Engineering, Chemical Technology, Textile Technology, Architecture and Naval Architecture.

Scope of the Institute.

The chief object of the Institute is to provide instruction in the principles of those arts and sciences which bear directly or indirectly upon trades and industries, and to show by experiment how these principles may be applied to their advancement.

All departments are open to both sexes. The evening classes are suitable for persons engaged during the day in handicrafts or business, who desire to supplement and develop the knowledge and experience they have gained in the workshop, warehouse, etc. Apprentices, journeymen and others employed in the various industries of the city and district cannot fail to profit by the facilities for self-improvement now so liberally placed within their reach.

Intending Science and Technical Students are reminded that the successful prosecution of their special studies will be in proportion to their knowledge, at the beginning, of the elements of Mathematics and Drawing,

Students are required to consult with the teacher of the class proposed to be joined, and to obtain the teacher's initials to the Entrance Form, before applying at the office for the ticket of admission to the Class.

The Classes are open at the fees named to students from any district in which the Technical Instruction Act is in operation, provided that the regulations as set out in the Time Table of Classes are complied with.

Non-naturalised foreigners are charged fees higher than those set out in the Time Table.

Laboratory and workshop classes are open only to students in regular attendance at the corresponding lecture courses.

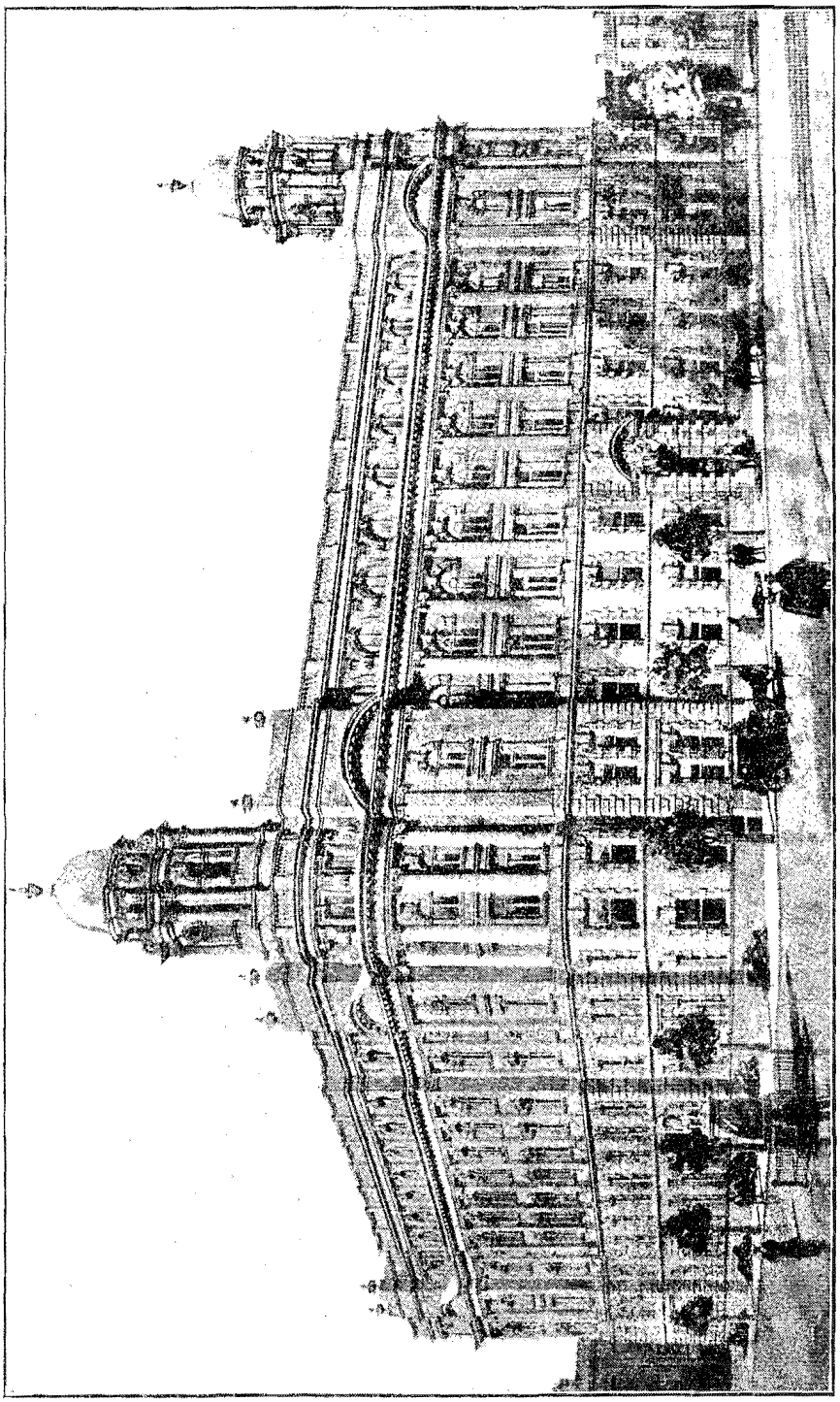
Equipment.

The Institute contains a full range of Classrooms, Lecture Rooms and Drawing Rooms, and is furnished with very completely equipped Laboratories for Mechanical Engineering, Physics, Electrical Engineering, Pure and Applied Chemistry, and with Workshops for Spinning and Weaving, Wood Carving, House Painting and Decoration, Typography, Lithography and Bookbinding, Baking, Cake Ornamentation, and other trade subjects.

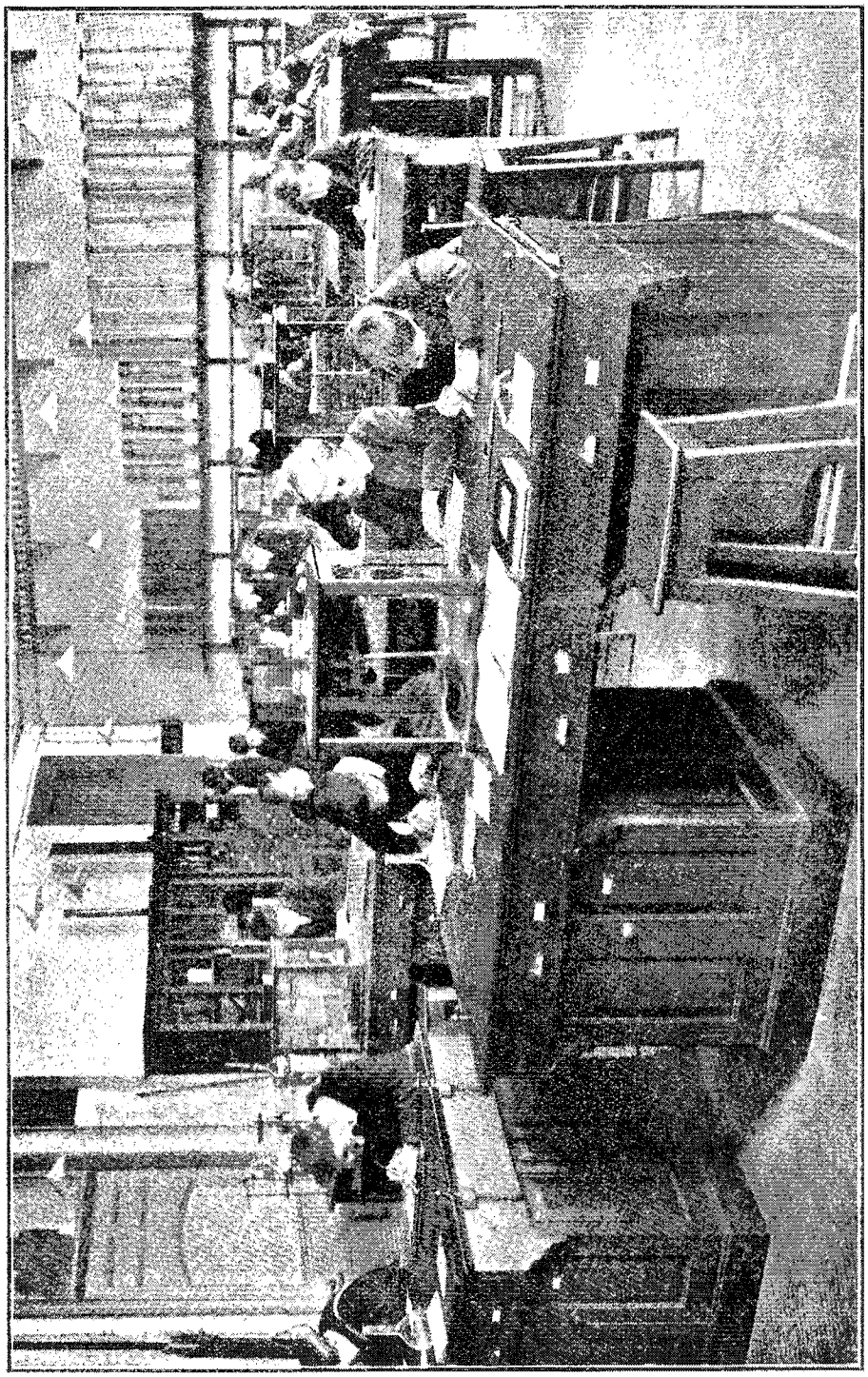
There are practice rooms for Cookery, Laundry work, Dressmaking and Housewifery.

The Institute also contains a completely equipped School of Art.

A Gymnasium, fitted up with the most modern appliances for physical training, has been installed.



THE MUNICIPAL TECHNICAL INSTITUTE, BELFAST: PERSPECTIVE VIEW OF THE BUILDING.



TRADE PREPARATORY SCHOOL: PHYSICAL LABORATORY.

TRADE PREPARATORY SCHOOL.

The Library and Technical Instruction Committee has established this School as a Junior Section of the Day Technical Division, the principal object of the School being to provide a specialised training for boys who are intended for industrial occupations. Whilst due regard is paid to the subjects of a general education, special attention is devoted to imparting a sound training in the elements of science, and in science as applied to local arts and manufactures, such as those which fall under the heads of Mechanical Engineering, Naval Architecture, the Building Trades and Textile Industries.

The complete course of instruction is designed to extend over three years.

With the object of making the school work as thorough as possible, the theoretical instruction imparted in the class-room is supplemented by practical work in the Laboratories, the Workshop and the Drawing School.

Boys who follow out this complete course will be in a position to enter upon their life work in the mill, factory or workshop with a sound preparatory training, and will have acquired that scientific habit of mind which will qualify them to take part in the development of the industries of the city, and later—when their school training has been reinforced by practical experience—to rise to positions of responsibility. Furthermore, youths leaving the School at the age of 16 or 17 to enter upon an industrial career will be fitted to continue their education in the higher classes of the Evening Division of the Institute, and to derive the maximum benefit from attendance at those classes.

Applicants for admission to the School must be *not less than* 12 years of age on the 31st May in the year of Examination, and must have been enrolled in the Sixth Standard of a National School for at least 12 months, or show that they have reached an equivalent educational standard. The entrance examination is held in June.

Outlines of Courses.

With a view of indicating the nature of the instruction given, the following outlines of the courses of instruction are supplied:—

First Year.—Mathematics, English, Drawing, Experimental Science, a Modern Language, Manual Training, Educational Gymnastics.

Second Year.—Mathematics, English, Physics, Chemistry, Practical Geometry, the Elements of Machine Drawing, Mechanics, a Modern Language, Art, Manual Training, Educational Gymnastics.

Third Year.—Mathematics, English, Physics, Mechanics, Mechanical Laboratory, Practical Plane and Solid Geometry, Machine Drawing, a Modern Language, Manual Training, Metalwork, Art, Educational Gymnastics.

Fees.—The fee to pupils who pass the Entrance Examination, but who are unsuccessful in obtaining Scholarships, is sixpence per week, payable weekly. Parents who wish to do so may pay a sum of £1 in advance to cover the year's instruction. Non-Scholarship pupils are required to provide themselves with books, instruments, etc., required (costing for first year's course about £1 5s.

The School is open from Monday to Friday, from 9.30 a.m. to 12.30 p.m., and 1.30 p.m. to 4.30 p.m. Punctual and regular attendance is considered

a first essential, for without this no satisfactory progress can be made. Pupils are required to attend during the hours specified, and deviations are not permitted.

In case of unavoidable absence or unpunctuality, a written explanation, signed by a parent or guardian, should be sent to the Head Master. All pupils of the School are expected to wear the school cap.

The work of the pupils will be tested by Examinations of the Institute, and of the (London) Board of Education; but the instruction will not be directed towards preparing pupils for nor will pupils be entered at the Examinations of the (Irish) Intermediate Board of Education.

Parents or guardians are required to enter into an undertaking not to remove pupils from the School before the end of the School Year in July. But should they not desire to comply with this Regulation, exemption may be obtained by payment of five guineas ($25.50) for the course of instruction.

DAY TECHNICAL COURSES.

The Courses have been established to provide a sound training in the science and technology of Mechanical and Electrical Engineering, the Textile Industries, and Pure and Applied Chemistry. The Courses give a suitable preparatory training to youths who aim at filling positions of responsibility as mechanical engineers, electrical engineers, spinners, manufacturers, manufacturing chemists, or in other industrial occupations.

Candidates must not be less than 15 years; must be prepared to pass an entrance examination and have a standard of education not lower than that of the Junior Grade of the Intermediate Board. A workshop training or other practical acquaintance with the branch to be studied is not required, but practical experience will be found a distinct help in following the programme of instruction.

Various opinions are held as to the best educational preparation for youths intended for engineering in its several branches. The instruction for the engineering departments has been planned with due regard to the recommendations contained in a special report on this subject.

The instruction is of University standard, and thoroughly practical. Students who have, previous to entering upon the Course, passed the Matriculation Examination of the London University, are prepared for, and should have no difficulty in taking, the degree of Bachelor of Science with Honours, in either Mechanical or Electrical Engineering.

The instruction does not consist merely of courses of lectures; the Institute is provided with well-equipped Laboratories and Drawing Offices specially arranged for extensive and thorough instruction in both the experimental and commercial aspects of the subjects taught. The teachers aim at keeping in touch with the industry to which the instruction is related, and visits to places of interest are arranged from time to time.

The programme of instruction extends over three years. In the First Year it is common to all the departments. In the Second Year it is specialised in certain subjects according to the department entered. In the Third Year it is almost wholly specialised.

The Course of Instruction is of 30 hours' duration per week, and the Session continues for about 40 weeks. Students attend from Monday to Friday, from 9.30 a.m. to 12.30 p.m., and 1.30 to 4.30 p.m.

Allocation of Time in Second Year.

The allocation of hours for the Second Year Course indicates the programme of instruction in each of the four departments. The subjects are treated in a similar way but in a more advanced manner during the Third Year.

Subjects.	Mech'l Engineers.	Elect'l Engineers.	Textile Students.	Chemical Students.
Mathematics	5	5	5	5
Applied Physics	.....	2	.....	2
Geometry	2	.....	.....	.....
Mechanical Drawing	3	3	3	3
Mechanics	1	.....	1	.....
Machine Shop Practice	3	3	.....	.....
Theory of Machines, Heat Engines, Hydraulics, Strength of Materials	7	.....	.....	.....
Electrical Engineering	2	6	.....	.....
Electrical Machinery	2	6	.....	.....
Textile—Raw Materials	.....	.....	1	.....
Spinning	.....	.....	3	.....
Weaving—Preparatory Processes	.....	.....	1	.....
Construction and Testing	.....	.....	2	.....
Design of Patterns	.....	.....	2	.....
Weaving	.....	.....	2	.....
Inorganic and Organic Chemistry	.....	.....	.....	4
Practical Chemistry	.....	.....	.....	8
Bleaching, Dyeing, and Finishing	.....	.....	1	3
Design	.....	.....	4	.....
English	2	2	2	2
German	2	2	2	2
Gymnastics	1	1	1	1
Total	30	30	30	30

Occasional Students.

With a view to meeting the requirements of a number of students who have applied for admission to the classes in the Day Department of the Institute, but who are not in a position (owing to business engagements and other reasons) to attend the Full Day Technical Course, it has been arranged to admit students to portions of the course, as e. g. to Lectures, Mechanical Drawing Practice, or Laboratory or Workshop Practice.

The fees for the Session are as follows:—

Lecture Class, one hour per week	£1 0 0
" two hours "	1 10 0
" three " "	2 0 0
Drawing Practice, two hours per week.	£1 5 0
" " three " "	1 10 0
Laboratory or Workshop Practice, each additional period of three hours	1 0 0

Special fees are applicable in the case of foreign students.

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Day Course for Engineer Apprentices.

These classes meet one day per week (Monday) from the 11th September until the end of May. They are intended for Engineer Apprentices and Apprentice Draughtsmen, who are nominated by their employers. Several engineering employers in the city have given their apprentices facilities for attending these classes, and it is hoped that a similar privilege may be given by other employers.

Students are required to attend on Mondays throughout the Session. The instruction is given from 9.30 a.m. to 4.30 p.m., with an hour's interval for dinner.

Candidates for this Course must have reached the age of 17, and must give evidence of a satisfactory knowledge of Mathematics and Mechanical Drawing.

The subjects included in the Course of Instruction are chosen from the following:—Practical Mathematics, Heat Engines, Applied Mechanics, Practical Geometry, and Engineering Drawing.

The Institute authorities are prepared to furnish periodical reports to employers concerning the progress made by their apprentices, and also to notify employers of any absences or departure from conditions laid down.

The fee for the complete Course is £1 10s.

Day Courses for Printing Trades' Apprentices.

A Day Course in Typography has been provided for apprentice compositors who are nominated by their employers.

A number of printing firms give their apprentices facilities to attend these classes, and it is hoped that similiar privileges will be given by other employers in the printing trades.

In this course, instruction is given in English, Printing Trades' Calculations, and the Theory and Practice of Typography.

The practical instruction is conducted in the newly-equipped Case Room of the Institute. The equipment comprises the latest patterns of labour-saving frames and case-room furniture, and includes a carefully chosen range of type faces, borders, etc.

The class meets on Tuesdays from 2.30 to 6.30 p.m., commencing in October.

Home exercises are given each week, and it is a condition of attendance at the Course that students work the examples set.

Reports are sent periodically to employers, and any absence of apprentices is at once notified.

An examination is held at the end of the Course, and certificates awarded to successful students.

EVENING DIVISION.

This Division has a Preparatory Section organized with the object of ensuring that students should obtain a sound basis whereon to build up their subsequent studies in Science, Art, or Technology.

There is also an Introductory Section, in which the Courses of instruction are so arranged as to lead naturally to the Specialist Courses. The students are, as far as possible, grouped according to their occupations. Special introductory classes are provided in the departments of Mechanical Engineering, Electrical Engineering, Chemistry, Building Trades, Textiles, Commerce.

An outline of some departments is given hereafter. In the belief that an outline would furnish a useful framework from which to work out appropriate details for Canada, only the materials of such a skeleton or framework are presented.

Mechanical Engineering.

This Department provides instruction suitable for all grades of students in Mechanical Engineering, from those leaving the elementary school up to candidates for University degrees. The Courses are thoroughly modern, all unnecessary details of a purely academic character being eliminated.

The instruction is designed to afford a scientific training for all classes of students ranging from the young apprentice upwards. The student is led by easy stages from the most elementary to the highest branches, and the Courses present an opportunity for a high degree of training in the use of instruments, methods of measurement, calculation, reduction, drawing and designing, which are now, as the result of a better knowledge of principles, rapidly supplanting the old methods of arriving at engineering conclusions.

The object of the laboratory work is to train students in the practice of measurement of quantities—whatever their nature—which belong to the work of the engineer. The engineering industry is developing rapidly; extensive and often very costly experiments are constantly being carried out, so that in a shop which is thoroughly progressive every machine constructed may be looked upon as an experimental one. In order to grasp thoroughly the nature of it, and to enable young engineers to enter upon the experimental side of engineering, a laboratory training has become a necessity. The old method of training by class work alone has been found unsatisfactory. The recent great development in the methods of testing materials and machines has established this branch as an important part of engineering work, and this importance is increasing rapidly. The training necessary for such work is most efficiently obtained in a well-equipped laboratory in which the instruction is correlated with a course of scientific study.

Naval Architecture.

Properly equipped drawing and lecture rooms are now provided for the teaching of Naval Architecture. It is essential that students of this subject should follow out a regularly arranged course of study, and for their assistance the following outline schemes have been prepared.

1st Year.
- Practical Mathematics, 1st Year.
- Naval Architecture, Stage 1.
- Practical Plane and Solid Geometry.

2nd Year.
- Naval Architecture, Stage 2.
- Practical Mathematics, 2nd Year.
- Applied Mechanics, Stage 1.

3rd Year.
- Naval Architecture, Stage 3.
- Practical Mathematics, 3rd Year.

In connection with these classes there are well-finished models illustrating the laying off and details of shell plating, etc., the models being used to illustrate the parts of the laying off and practical work done during the Course.

In the Elementary Stage instruction is given in detail drawing of parts of a ship's structure. In the Higher Stages students may prepare designs for passenger and cargo steamers, midship sections to pass the principal classification societies, and more advanced structural drawings, fairing lines, stern expansion, etc., etc.

Physics and Electrical Engineering.

This Department has for its principal object the provision of complete courses of instruction in the theory and practice of the various branches of Pure and Applied Physics and of Electrical Engineering.

In drafting the programme, special attention has been given to providing for the requirements of the following, amongst others:—

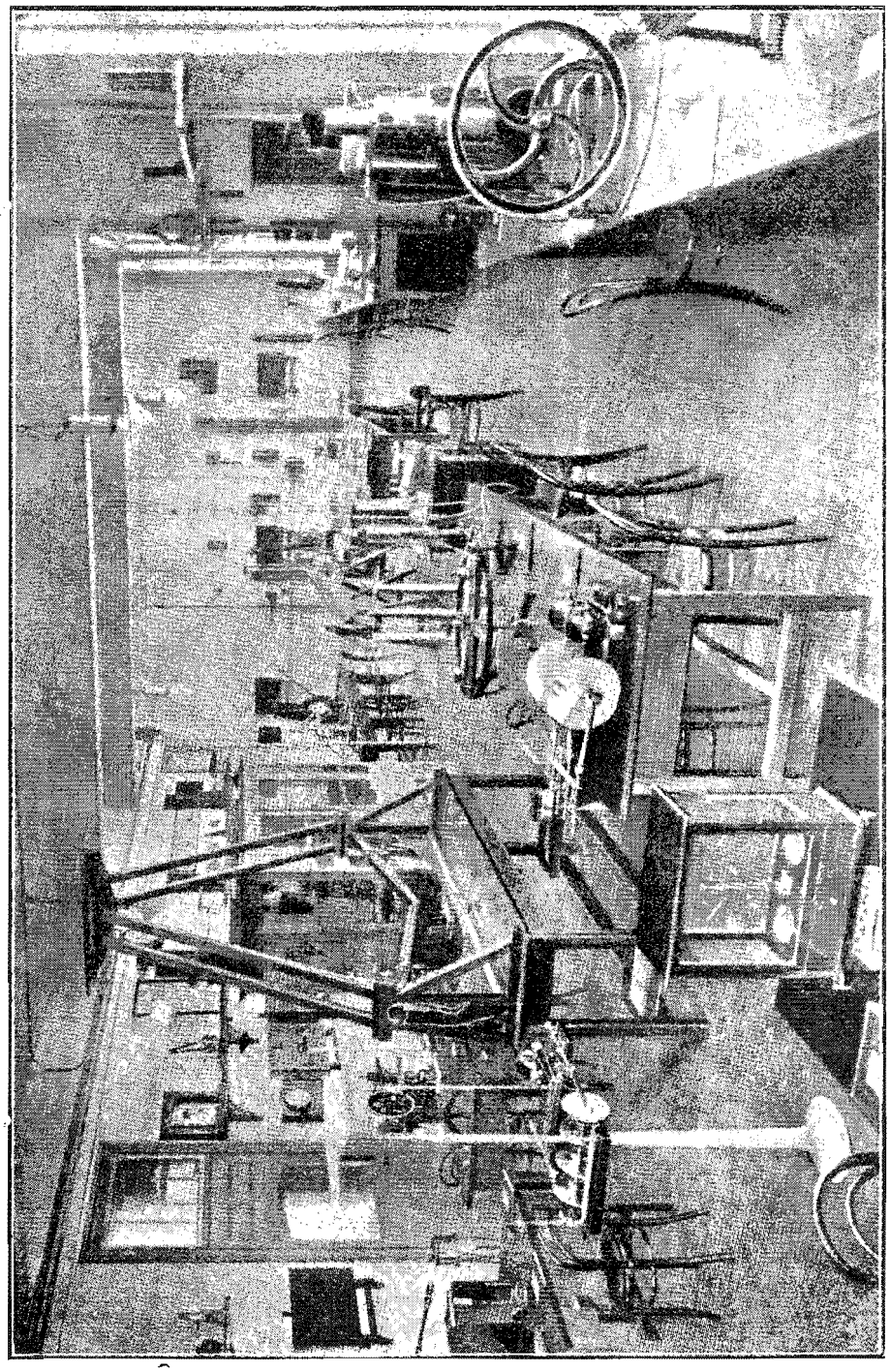
(1) Electrical Engineers; (2) Students whose main requirement is a knowledge of Experimental Science and Pure Physics; (3) Teachers in National Schools and in Secondary Schools desiring to obtain the qualifying certificates of their respective Boards; (4) Students preparing for the B.Sc. degree of the London University in the Departments of Science or of Electrical Engineering; (5) Telegraphists, telephonists, wiremen, and persons engaged in the inspection of buildings, sanitary work or insurance risks; (6) Those occupied in trades dealing with electro-deposition, or other branches of electro-chemistry.

Building Trades and Furnishing Trades.

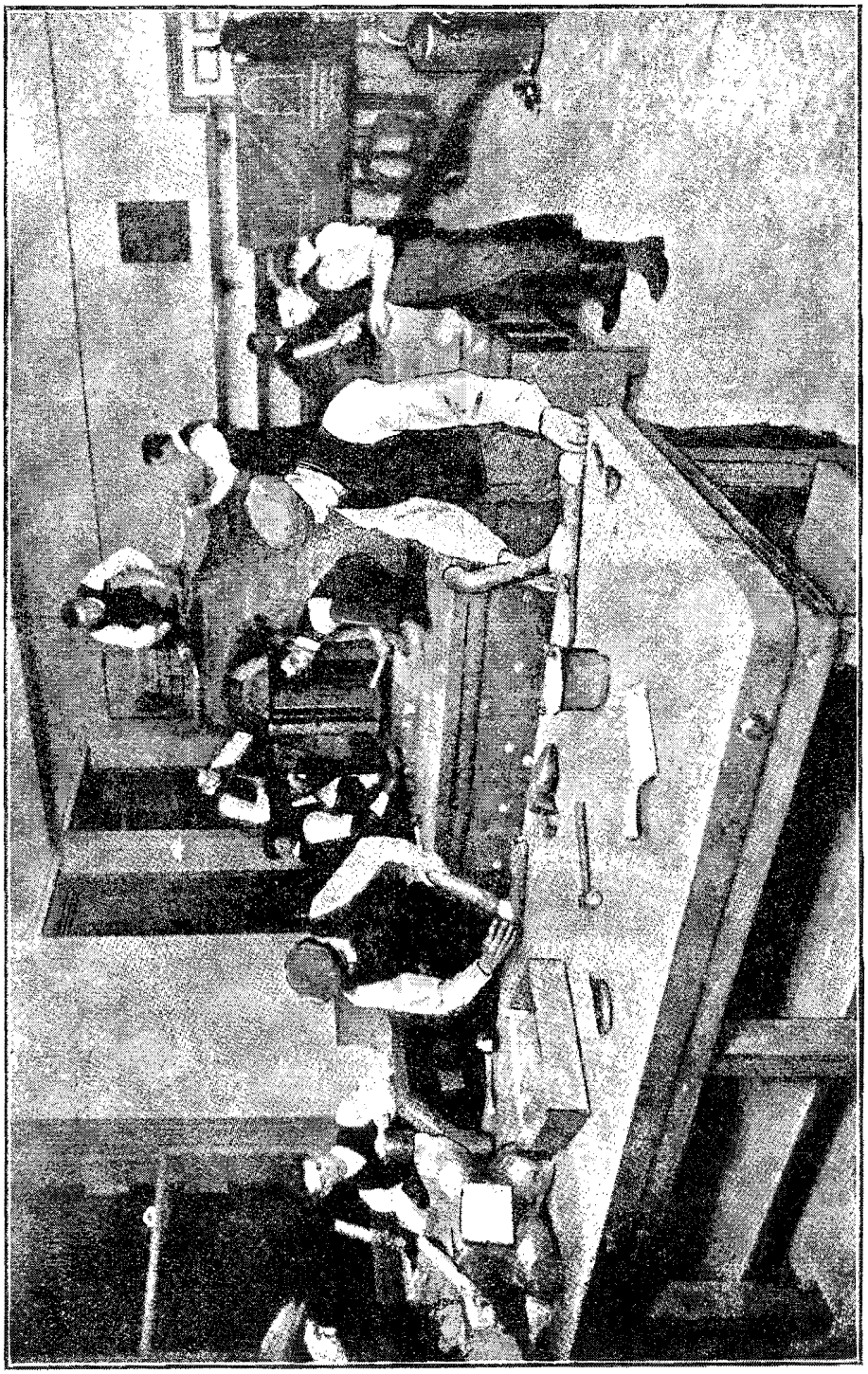
The programme of this Department includes a wide range of subjects, covering the leading branches of the Building and Furnishing Trades.

Considerable freedom is given to the student in selecting his Course. In imparting the instruction in the various classes the special requirements of the trade student and the professional student are constantly kept in view.

In the practical classes instruction is provided in setting out and constructing intricate pieces of work; students are enabled to gain thereby that experience and facility in setting out, and that skill in manipulation which will enable them to undertake such work on their own responsibility.



MECHANICAL LABORATORY: MUNICIPAL TECHNICAL INSTITUTE AT BELFAST.



BUILDING TRADES—PLUMBERS' WORKSHOP: MUNICIPAL TECHNICAL INSTITUTE AT BELFAST.

In addition, students are taught to take off the quantity of materials required, to prepare prices for work in the various trades, and to write reports in connection with building operations.

Students preparing for the various examinations in Building Subjects find the instruction given in these classes exactly what they require.

The equipment comprises five workshops, two lecture rooms, and two drawing offices. The lecture rooms are fitted up in a manner suiting their purpose, and contain charts and diagrams illustrative of the lessons given in the various classes.

EQUIPMENT.

The Building Construction Drawing Office designed to accommodate over 50 students, contains various models and diagrams of building construction details, as well as actual specimens of numerous building materials, and is in all respects planned for the convenience and comfort of the students.

The Joiners' Shop is planned to accommodate about 25 students; specially fitted up and equipped with all tools and appliances in connection with the joinery and cabinet making trades. A feature of the equipment of this room is an exceptionally fine set of models of wreathed handrails, for the use of students in the handrailing class.

The Wood-carving Room contains 23 single work benches, fitted with screws and appliances for holding the work. A varied collection of examples of wood-carving and plaster casts affords the student a wide range of selection.

The Painters' and Decorators' Workshop is fitted up in the most approved manner with work benches and easels. The room contains numerous examples of painting, decorating and lettering. Complete sets of tools used in the various branches of this trade are displayed in cases outside this room.

The Plumbers' Shop is a spacious room capable of accommodating 50 students. It contains a model roof with parapet, gutters, gutter boxes, steps, diagonals, chimney, flats, skews, curb roll, circular dormer, storm window, entablature, and other details found on the modern roof; thus the student receives practice in fixing lead, copper, zinc, tiles, slates and other roof coverings. On the walls are arranged tanks, cylinders and boilers for experimental work in hot-water fitting. There are also complete models in glass of the various systems of domestic hot-water supply, which indicate clearly the circulatory movements and convection currents throughout the entire systems.

TEXTILE INDUSTRIES.

The object aimed at in the lecture Courses on Textile Subjects is to provide a thorough technical training in each Course. The Courses have been planned so as to meet the requirements of as many different sections of the textile industry as possible, due regard being paid to the attainment of efficiency and the avoidance of overlapping.

The lecture and class rooms are fitted up with every convenience for giving instruction in each branch of the work.

This Department is equipped with the most modern and approved types of textile machinery.

Flax Preparing and Spinning.—This plant consists of a complete set of machines and apparatus for roughing, heckling by hand and machine, also speading, preparing, roving and spinning machinery, suitable for linen yarns. Flax tow yarns can also be produced. The plant includes full-sized tow-carder, tow-comber, preparers, tow-rover, and wet and dry spinning frames. Twisting and reeling machines of two types are available for use and demonstration.

Hand Looms.—There are 26 hand looms by various makers; these comprise looms of different reed widths from 16 to 30 inches. The looms are mounted with a variety of warp shedding mechanisms, including treadle, witch and jacquard. Each jacquard machine, of which there are 13, is also mounted in a different way. All the foregoing looms are fitted up with rising and falling boxes at each end of the "lay," which makes it possible to produce a very considerable variety of linen and other woven fabrics.

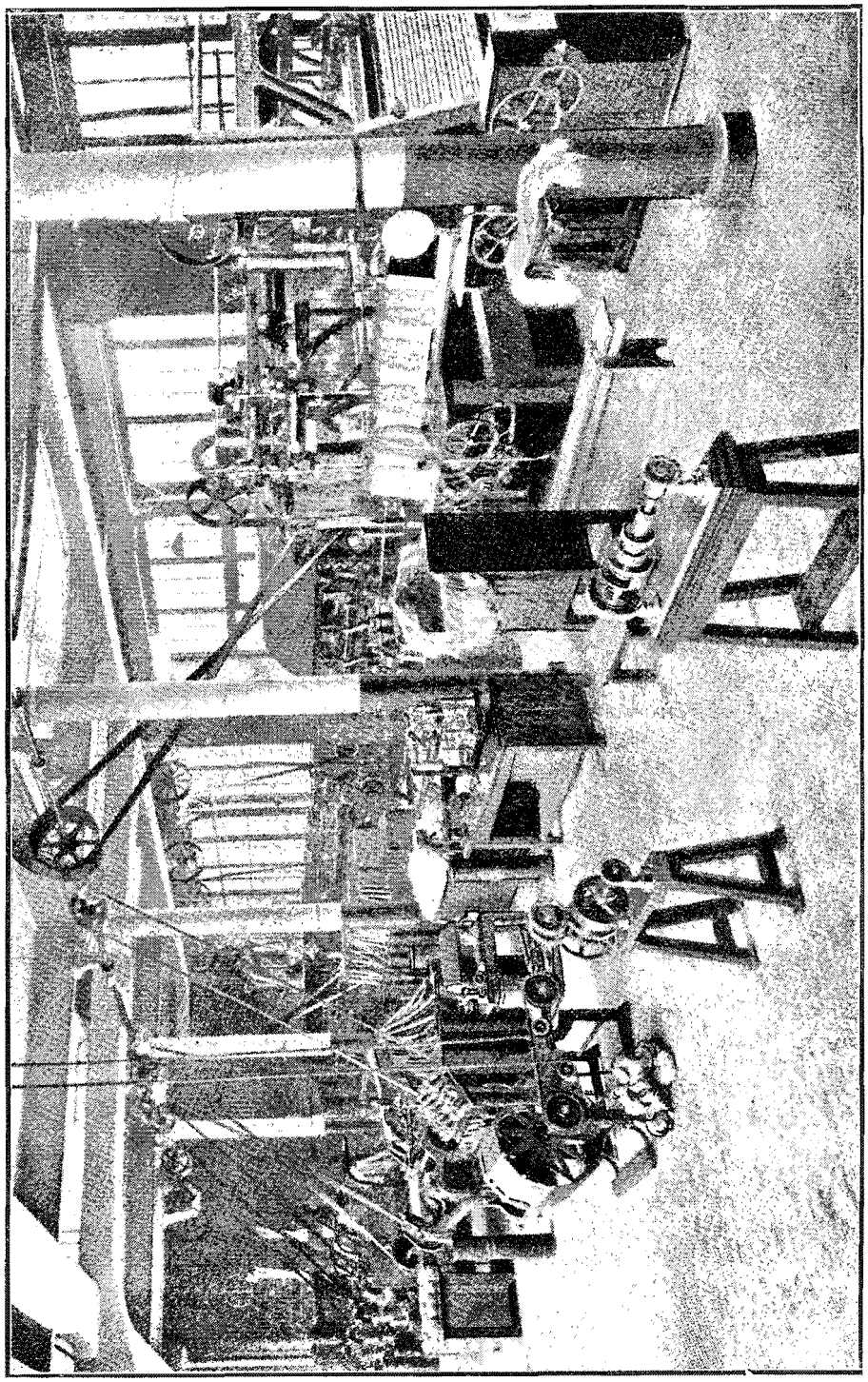
Weaving Preparation, Twisting, Winding, Card Cutting, Lacing Machinery, Etc.—Machinery and apparatus are provided for winding warp and weft yarns, warping by hand or machine, linen dressing and Yorkshire dressing and beaming. Card cutting and lacing machinery are also included.

Power Looms.—The Department is supplied with a considerable quantity and extensive variety of power looms and accessories. Every variety of linen fabric, together with all the chief varieties of wool, cotton and silk can be manufactured. This section of the equipment comprises 16 single shuttle looms of dissimilar widths, 4 of which are automatic pirn or shuttle changers. The looms are variously fitted up with negative (inside and outside) and positive shedding tappets; single and double acting and cross border dobbies; single and double acting, twilling and cross border jacquards of ordinary and fine pitch types. The systems of harness-mounting are comprehensive, including "London," "Norwich," pressure or common, split, leno and carpet methods for "repeating," "lay over," and cross-border patterns. There are also 5 even pick and 8 odd, or pick and pick at will, shuttle box mechanisms which are also variously mounted and capable of producing a wide range of woven products. A 4-shuttle positive pick tape loom together with a considerable number of working models completes the power loom section of equipment.

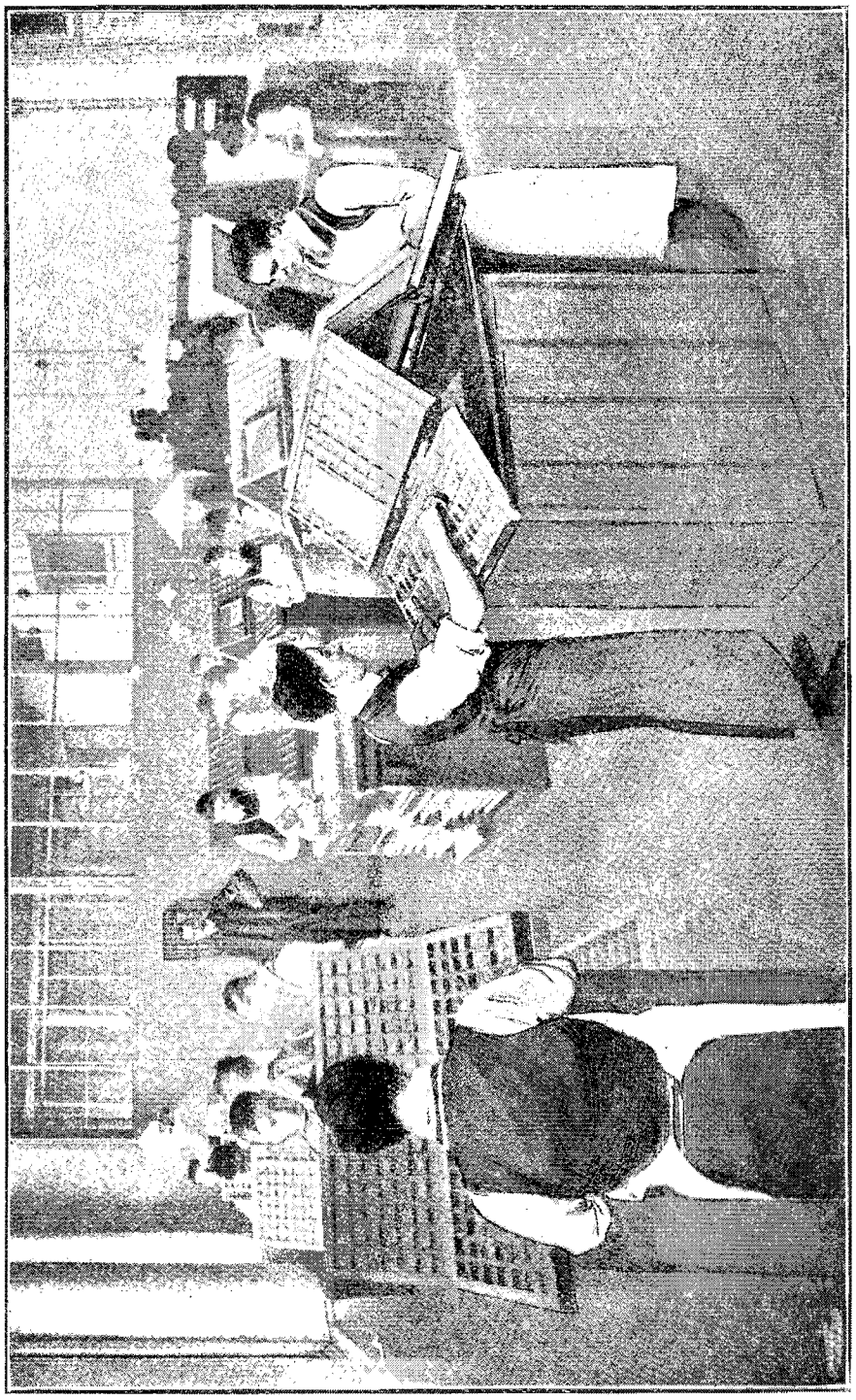
The Textile Testing Laboratory is equipped with instruments, apparatus and machinery for :—

Testing strength and elasticity of yarns; testing strength of woven fabrics; conducting microscopic tests of the various textile fabrics; weighing and testing correct weight and length of yarns; testing the twist in yarns; examining yarns for evenness; conditioning; conducting various chemical tests; determining relative humidity.

NOTE:—A special feature in the Weaving Department was as follows: Every student when he enters receives a number, indicating some experiment or work he is expected to do. He then finds an instructor in the Weaving Room who gives him the necessary information, guidance and help to get started on his project of work. Hand looms are used at first, to give all the students a



FLAX PREPARING AND SPINNING ROOM. MUNICIPAL TECHNICAL INSTITUTE AT BELFAST.



PRINTING TRADES DEPARTMENT—COMPOSING ROOM: MUNICIPAL TECHNICAL INSTITUTE AT BELFAST.

knowledge of the fundamental principles of weaving. There is a large equipment of hand looms of different makes. After experience with these, the student passes on to the use of the power machinery for flax and linen weaving. A student who attends during 4 years will acquire a knowledge of all these different machines, and a clever workman is often able to adapt something from one machine to another, and to improve the work of the one he is on at the factory where he is employed.

Public Textile Testing and Conditioning House.

This has been established in connection with this Institute with the approval of the Department of Agriculture and Technical Instruction for Ireland. It is carried on under the auspices of the Belfast Corporation, and is controlled by the Library and Technical Instruction Committee.

The functions of the Testing House are the examination of textile materials with a view to ascertaining and certifying their true weight, length, condition, and strength, and in addition, the carrying out of such other tests and investigations as may be required in order that spinners, manufacturers, merchants and others, desirous of having tests conducted and an Official Certificate issued, may effect their object through the medium of an independent public authority.

The strictest secrecy is observed with regard to all work sent to the Testing House; as a consequence, the Testing House is not open to the public.

Printing Trades.

The Library and Technical Instruction Committee has established a Printing Trades Department, and has set aside an entire floor 92 ft. by 23 ft. in the extension of the building recently completed. The rooms are exceptionally well lighted, both in the day time and at night.

It will be the special object of these classes to provide a full range of training, so that the student who is limited to one kind of work in his daily occupation will have the opportunity of extending his knowledge to the other classes of work occurring in his trade. The instruction will thus supplement the practical training of the workshop, and provide the means of raising to a higher level the standard of craftsmanship in the various trades.

Technical instruction will be given in the following sections of the Printing Trades, viz.:—

Typography; The Linotype; Machine and Press Work; Designing for Lithography; Lithographic Printing; Bookbinding—Forwarding and Finishing.

The instruction in each branch will be both theoretical and practical. The programme will include such allied subjects as are necessary to render the instruction thoroughly efficient.

The classes will in general be held in the evening, but day classes will be conducted in those subjects for which there is a sufficient number of students.

For the session of 1911-1912 the classes dealt with the elementary stages of the various subjects. As a higher standard of attainment is reached more advanced Courses will be introduced into the programme.

Each Course will call for attendance on two evenings per week.

Day Classes for Apprentices:—At the request, and with the cordial assistance, of a number of employers in the printing trades, the Committee has established an afternoon Course of instruction for apprentice compositors.

Various Trades and Industries.

Under this Department come the Baking Trades, Confectionery, and Tailoring Trades.

Natural Science.

Under Natural Science are taken up, Botany, Biology, Physiology and Hygiene, and First Aid to the Injured.

Pure and Applied Chemistry.

This Department provides classes which will suit almost anyone who requires a knowledge of chemistry in his daily work, whether he be engaged in a chemical trade or preparing for a profession.

Modern views on the teaching of chemistry require that fully as much attention shall be paid to laboratory work as to theoretical instruction. The Chemical Department will be found to be adequately equipped for giving practical instruction in all grades of chemistry.

The two lecture-rooms, capable of accommodating 100 and 60 students respectively, are provided with large and well-fitted lecture-tables, fume cupboards, lantern and diagram screens, etc. Between them, and accessible from both, is the preparation-room. The lecture apparatus, the collections of specimens, of lantern slides, and of diagrams are very complete.

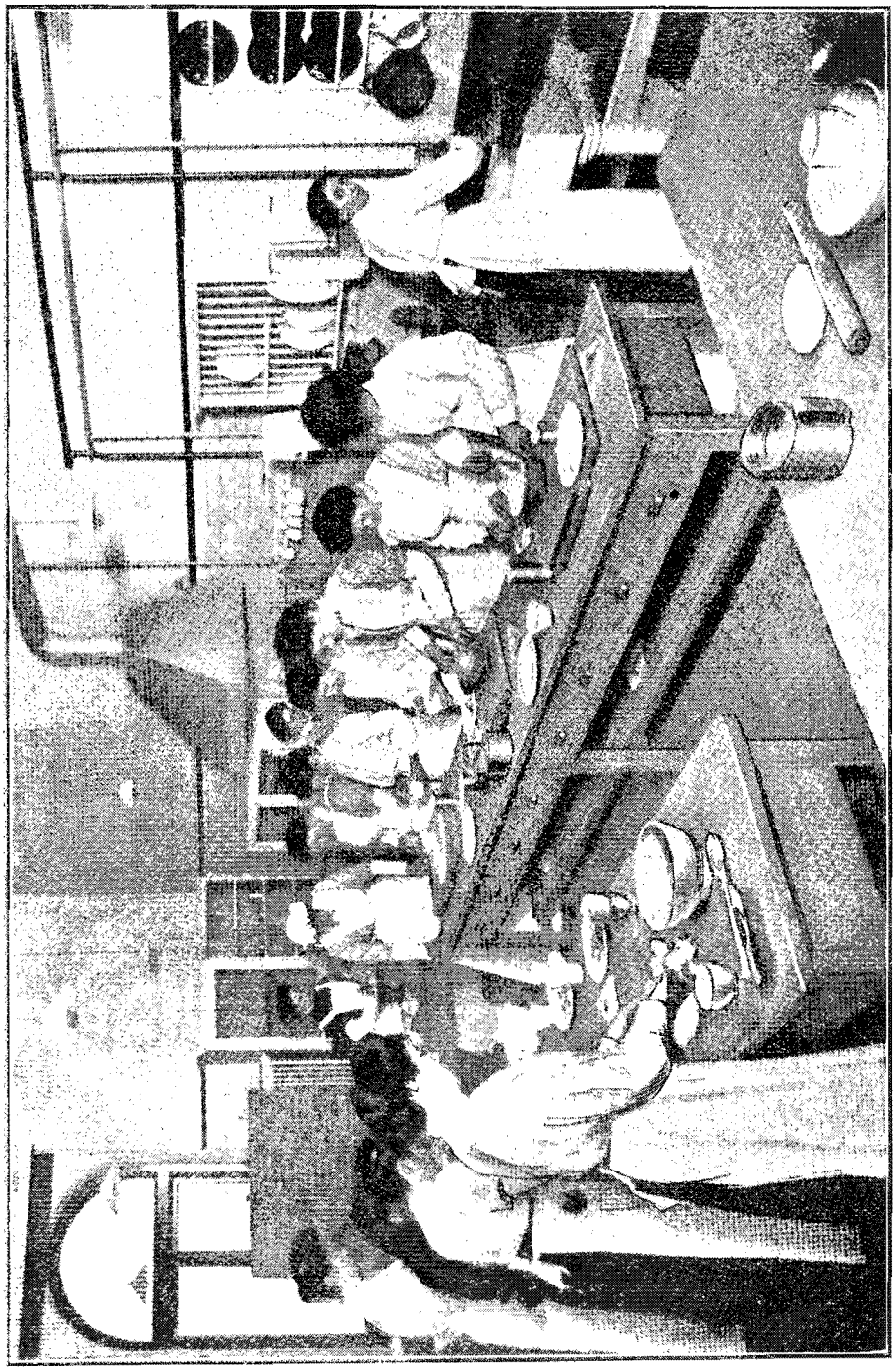
Laboratories:—(1) The main Chemical Laboratory contains 80 working benches, and has separate locker accommodation for over 200 students. Fume cupboards, drying ovens, evaporating niches, and distilled water plant are provided, and there are special benches for furnaces and glass-working. A balance-room and small store for apparatus open off the laboratory.

(2) A small Chemical Laboratory, similarly equipped to the above, is provided in connection with the Bleaching and Dyeing section of the Department.

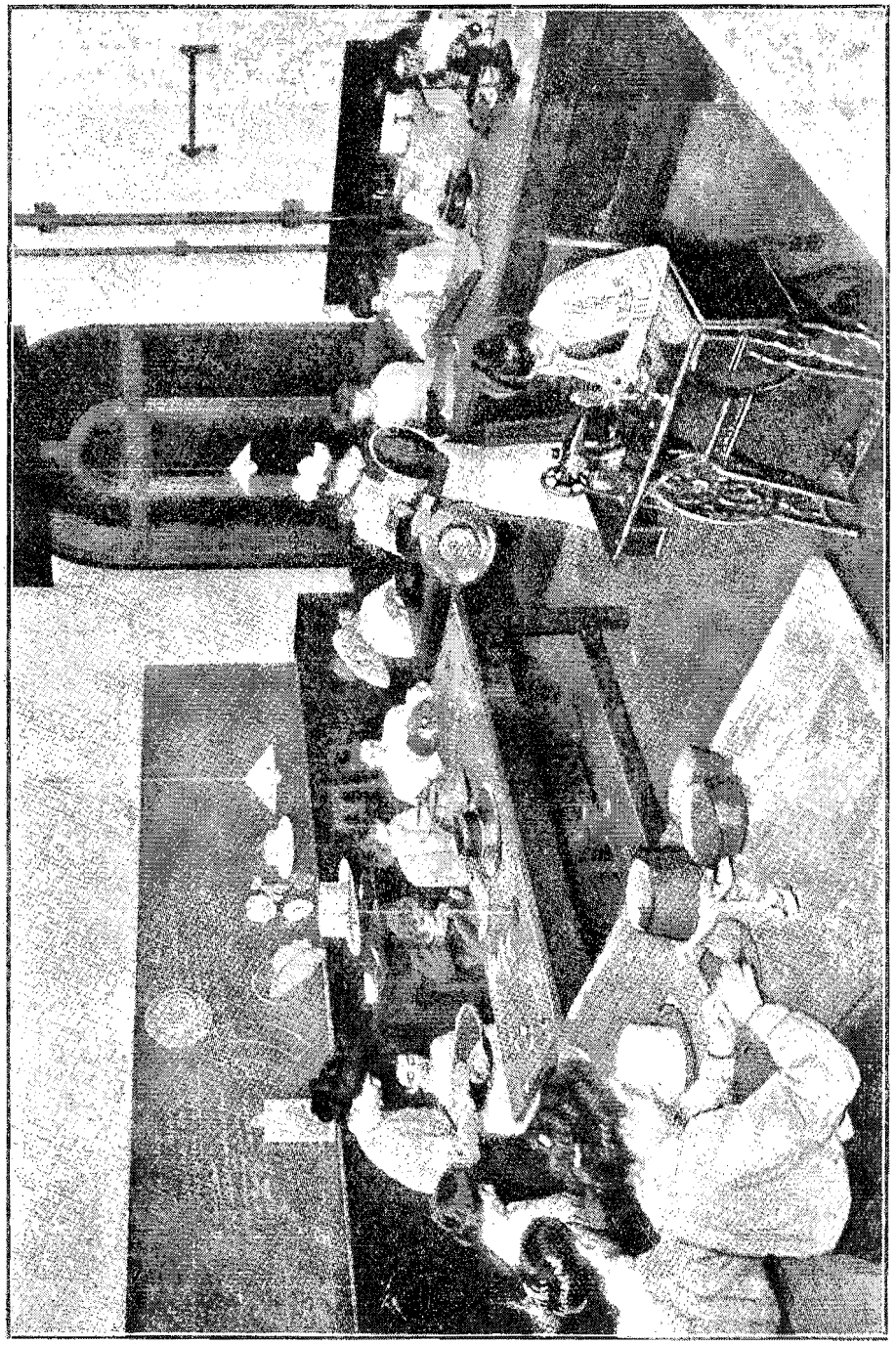
(3) The Bleaching and Dyeing Laboratory is equipped with 16 sets of steam-heated experimental dyebaths, used for carrying out small-scale experiments in dyeing, scouring, etc.

(4) A Finishing and Laundering Room has just been added to the Department. This contains additional machinery for the bleaching of yarn, and complete plant for the finishing of textiles and the study of laundering problems.

(5) A Laboratory has now been fitted up and set apart for the non-chemical work of the Pharmaceutical section.



COOKERY CLASS: MUNICIPAL TECHNICAL INSTITUTE AT BELFAST.



MILLINERY CLASS: MUNICIPAL TECHNICAL INSTITUTE AT BELFAST.

Department of Commerce.

The object of this Department is the provision of systematic Courses of practical instruction in the technique of Commerce. In the classes students are able to acquire that technical knowledge and specialised training which are necessary for present-day commercial administration. Whilst class work cannot provide the natural aptitude or the will-power and perseverance upon which success in business largely depends, it does undoubtedly develop the first-named quality and stimulates the others. The greatest efficiency cannot be attained without a systematic study of commercial subjects, to provide opportunities for which is the aim of the Department.

The rooms have been specially adapted and equipped for commercial instruction. An adequate supply of suitable apparatus, including the most modern time and labour-saving devices, has been provided, and the environment of a well organized business house has been reproduced, as far as possible. The Institute Library is available for students, with books and magazines of much service to them in their studies. The various classes are well provided with useful teaching auxiliaries such as models, charts, maps, etc., and the lantern and gramophone are also used as opportunity offers.

Owing to the development of commerce and the increase in specialism in commercial occupations, the greatest efficiency in these occupations can only be attained by students learning thoroughly the technique of their own and allied businesses. For this reason the Course system has been introduced. In order to economise time and effort, a student who wishes to make progress in his commercial education should undertake a carefully arranged Course extending over about 3 years. It is not deemed possible to lay down in advance suitable Courses of study for all students, but typical Courses appear in the Prospectus.

The Department offers instruction in a wide range of subjects, and the number of subjects is to be increased as the demand arises. The needs of both junior and senior students have been considered and arranged for, and it is possible to prepare in these classes for almost any commercial position.

An Introductory Course, covering instruction of a general character, has been arranged for students who are not yet prepared to take up a specialized Course. Junior students are recommended to consider carefully their requirements before entering upon a course of study. They should remember that it is only on a satisfactory educational foundation laid in the elementary classes that a student can hope to attain success in the advanced Courses.

Classes in advanced subjects have been increased in numbers and variety. There is to-day a great demand for persons who can efficiently discharge the duties of the higher and more responsible positions in business. To fulfil these duties in a satisfactory manner a wide and liberal training is necessary, as well as an extended outlook. To meet this demand the work of the senior classes, whilst providing technical knowledge of an advanced character, aims at enlarging the student's conception of commercial organization, and training his mind to analyze new commercial situations.

The necessity of keeping the work as practical as possible, by maintaining a close connection with business administration and developments, is never lost sight of; and to this end much of the instruction given in the Department is entrusted to teachers and lecturers who are themselves engaged in business.

THE SCHOOL OF ART.

The objects of this School, which is a part of the Municipal Technical Institute, are to give, by carefully arranged and varied Courses of study, a thoroughly practical knowledge of Design, Painting, Drawing, and Modelling, especially in their application to the various technical processes of manufacture and handicrafts, and in their relation to Architecture. It furnishes useful training to those intending to work as architects, designers and craftsmen, and assists those who wish to follow up Design in its bearing upon pictorial composition, such as book decoration, book illustration, and wall posters.

In addition, it is the object of the School to assist those who desire to make Art a part of their general education, and to spread a knowledge of Art and the appreciation of Art work; also to give facilities to those wishing to follow Art as a profession, or to include it in their general qualifications as teachers in Public, National, Art, or other Schools.

The special needs of the City of Belfast are steadily kept in view, so that the public interest in Art work of all kinds may increase, and that the portion of its commerce and industry dependent more or less on the arts of Drawing, Design and Handicraft may be benefited.

Explanation of the Courses.

The stages of instruction are arranged progressively, and students are required to conform to the Course prescribed for them. The Courses are made to meet the requirements of the students and to train them for their respective professions, every consideration being given to individual preferences and capacities. The classification of students rests entirely with the Head Master, and intending students who already possess some knowledge of drawing will be admitted to the Courses at a point suited to their abilities. They may be required to pass an entrance test, and are advised to bring specimens of their work when applying for admission, in order to facilitate classification.

The Three Grades or Stages.—The instruction is broadly divided into *three grades or stages*, and a student passes from a lower to a higher stage on fulfilling certain conditions to the satisfaction of the Head Master, who, along with the teacher in charge, periodically examines the work of individual students. Generally the changes take place about every three months.

The three Grades or Stages are:—(1) Preparatory, (2) Elementary, (3) Advanced. These are carried on during the day and also in the evening.

The Preparatory Course comprises work equal to what would be expected in the upper classes of elementary schools, in evening continuation drawing classes, or in the junior classes of secondary and private schools and colleges.

The work done in this Course consists of short time studies completed at each lesson, supplemented in some cases by home-work, based on the class work.

Intending students who have sufficiently covered this Course along with their general education, will immediately pass to the next stage.

The Elementary Course is equal to the upper grades of Secondary Schools working under the Department's new programme, but is somewhat more extended. It is also similar to the general Courses provided in evening Art classes in smaller towns, or in branch Art classes in larger towns. The work in this Course is of a general character and covers the foundation of all the higher branches of Art work. It will be found suitable as an adjunct to a good general education, and as a help in any division of life's work; the variety of work will enable the student to discover the particular line he or she would care to follow up in the higher branches of study. The Course will be helpful to students of various stages of science and technology, such as textiles, and it forms a Course necessary to be mastered as a minimum qualification for all teachers in National, Intermediate or Private Schools.

Short studies will be completed at each lesson, but more finished studies carried on over a lengthened period may be made by competent students. In some cases the work may be supplemented by home work.

In the *Advanced Course*, the provision made in each section permits students to continue their work and studies to a very advanced stage. A few particulars from Section 2 indicate the scope of all the sections. In addition to the lecture classes in the Principles of Design and the History of Applied Art, there are practice classes for Advanced Design; Figure Composition; and Artistic Handicrafts, as follows: (a) Artistic Handicrafts (not requiring special equipment); (b) Artistic Enamelling; (c) Artistic Metal Work; (d) Artistic Needlework; (e) Stained and Leaded Glass; (f) Lace-making; (g) Writing, Illuminating and Lettering.

SESSIONAL PAPER No. 191d

CHAPTER XXVI: THE ARTANE INDUSTRIAL SCHOOL.

One of the institutions in the vicinity of Dublin, visited by the Commission, was the Artane Industrial School for boys, conducted by the Christian Brothers. Industrial Schools of this type are in a class by themselves, and are not to be considered as constituting a part of the industrial and technical education conducted under the Department of Agriculture and Technical Instruction. However, as there are a number of similar institutions in Canada, it has been thought appropriate to include a brief statement regarding this school, which impressed the Commission most favorably.

The Irish Industrial Schools Act became law on the 29th May, 1868. Industrial Schools in Ireland are strictly denominational. They are established either exclusively for Catholics or exclusively for Protestants. There are 21 for boys and 46 for girls, and one mixed. Of these 18 are for Roman Catholic boys and 3 for Protestant boys; 43 are for Catholic girls and 3 for Protestant girls. The Industrial Schools in Ireland are not to be confounded with Reformatories. The latter presume the juveniles to be guilty of some offence, whereas children are sent to the Industrial School because of destitution, want of proper guardianship and similar causes.

Workshops for Boys.

The Artane School was certified, in 1870, as suitable for the reception of boys. At the time of the visit of the Commission there were about 800 boys at the institution. The institution has a farm and many of the boys are trained for agricultural pursuits. From time to time workshops for various occupations have been added, until now there are 12 workshops in active operation. These include a workshop for each of the following departments:—cabinet making, painting and decorating, house carpenters, weaving, cart and wheelwrights, tinsmiths, tailoring, fitters, boot and shoe making, flour milling and baking, harness making, forging shop.

Apprentices in Junior Department.

In a juvenile workroom printing is taught; and the repairing of the clothes of the boys is taught systematically and carried out efficiently to cover the needs of the institution. A feature of the instruction in this room is worth mentioning. Here all the young boys begin their education in practical work by mending clothes, darning, knitting and making new garments for the boys of the school. What is known as the "dual system" was in full swing among the busy little workers. The older pupil was called the "master," and was

assisted by an "apprentice." After one year the apprentice in turn became master and took an apprentice. The older boy has in each case a younger boy in training, helping him to understand and use the various machines. The boys in this Department were from 6 or 7 to about 12 years of age.

Trade Teaching on a Commercial Basis.

After the general work in the juvenile workroom each pupil is passed into the department of the particular trade selected by or for him. The boy is never coerced into any particular trade. The selection is an advisory one, made only after a careful study of his nature and consideration of his parentage and the occupations of his relatives. After he is put to a trade he is not allowed to change to another.

Instances from one or two trades illustrate the range of work undertaken in each of the trades. The boys make their own clothing "from the sheep's back to the boy's back," as it was expressed. They also weave their own blankets. Another instance: the school grinds its own wheat, some of which it buys from the neighbouring farmers and some of which it imports.

The output from some of the trades is sold in the usual way of business, and the excellent work had won for the school a good name. In the tinsmiths' department the boys were filling a big order for oil cans for one of the railways. In the cart and wheelwrights' department, wheelbarrows and carts were being repaired for neighbouring farmers and others.

Equipment, Discipline, Physical Training.

The equipment of each department on the industrial side was quite suitable for the training of boys to be competent workers in the trades concerned. The keenness of the boys in the work of the various departments was an outstanding feature; and discipline in the industrial department was evidently maintained not by compulsion, but by intelligent interest.

There are 11 school rooms in which the boys go through the ordinary school course. In this department the boys are able to earn grants paid by the Board of Agriculture and Technical Instruction for Drawing. There is also a three years course in Manual Instruction to which each boy devotes 3 hours per week. All the boys go through these classes, irrespective of the trade they propose following.

The school is equipped with a theatre, a concert hall, infirmary, chapel, and commodious dining room.

Much attention is paid to physical training for the development of the boys. Opportunity is provided for supervised play and games. For a number of years the boys had a renowned football team, which won such a surfeit of prizes that they have now given up going out for contests. There was also an instrumental band of between 70 and 80 boys, which had such renown that it was taken over to Meynooth when the King visited there. An immediate result, from the music, was evident in the marching of the boys, their going into and being seated in the dining room, etc.

The appointments of the bathroom, containing 52 shower baths, enabled a set of boys to receive their benefit in 20 minutes. The arrangements provide privacy for the boys and for expedition in bathing. The appointments and condition of every part of the institution were noteworthy for the cleanliness and orderliness which prevailed.

Character Building at a Shilling a Day.

Considering the class from which these boys were drawn—waifs and strays—the boys had a remarkably healthy, happy and vigorous appearance. Ruddy cheeks and vivacity of movement bespoke wholesome development. The atmosphere of apparent contentment, interesting work, quick obedience to directions, were all indicative that the general education made for character-building concurrent with the teaching of particular trades under the care of teachers who were specialists in those trades.

When a boy leaves the institution he receives a small outfit consisting of two suits of clothes, with underclothes, etc. Considering the excellence of the conditions provided, and the results in those matters which have been referred to, the efficiency of the business administration is evident from the fact that the whole cost of the institution amounts to only about one shilling per day per boy. That was possible only because the work on the farm was done largely by the older boys, and a certain amount of food came from that source. The work of the boys in the industrial department also brought in some revenue.

After going over the institution, one could not help being impressed with the thought that the training received by these boys—originally waifs and strays—gave them a more thorough and suitable preparation for living and working than is obtained by most boys whose parents are in relatively poor circumstances. The kind of work done by the boys, and the atmosphere in which it was done, kept awake the interest of the boys themselves and caused it to pervade all school work. One retains a sense of grateful appreciation of the labours of the 27 Brothers, and their corps of assistant workers, on behalf of the young unfortunate, fortunate, lads who come under their care.

DENMARK.

CHAPTER XXVII: THE COUNTRY AND ITS PEOPLE.

Introductory.

Denmark is a country whose geographical position, area and population permit it to be thought of as a whole in such a way that lessons from the development of its agriculture and rural education may be understood. It consists of the peninsula of Jutland and of a number of islands in the Baltic Sea. The area is about 15,500 square miles. Its population in 1911 was 2,757,076, almost wholly Scandinavian, only 3 per cent being foreign born.

The area of land in farms is about eight million acres (8,177,169), and a good deal of it is of indifferent quality. The rural population amounts to 20 persons per 100 acres.

Outside of the city of Copenhagen, which contains about one-fifth of the total population of the Kingdom, three-fifths of the people live in the country itself, and the other fifth in the country towns. About 25 per cent of the population depend upon manufacturing and building industries. The principal items are machinery, pottery, paper and bricks. The number of beet-root sugar refineries is increasing, and breweries and distilleries are decreasing.

The climate resembles that of the eastern coast of Great Britain; and for crop-growing it is not greatly different from that of eastern Canada. The winter is less severe in temperature than in Canada, with a much lighter snowfall; but is scarcely less prolonged or taxing on comfort, by reason of the prevalence of winds and the relative humidity of the air.

The Appearance of the Farms.

The land has generally a slightly rolling surface, and the absence of fences gives it an aspect uncommon in Ontario or Quebec. Everywhere the cattle and horses and a few sheep are tethered. In summer they graze usually upon sown crops and not upon permanent pastures. To move the animals three or four times a day and to water them involves a good deal of labor. The Danish farmer does not mind that. He seems to regard his farm as a factory for the turning out of valuable products from which he derives and retains reasonable profits. Evidently he does not count a large area of land either necessary or conducive to the profits of his business, unless he does enough business and has labor of sufficient volume to occupy and use the land to its full extent.

The fields observed were generally reasonably free from weeds, and the crops were even in stand, giving evidence that the farm work had been well done. Fields of clover were conspicuously numerous, and alfalfa was seen occasionally. The crops of mangolds and potatoes were abundant and looked particularly well. Within the last quarter of a century the area planted with root crops has increased from 46,000 acres to over 600,000 acres, chiefly in mangolds for cattle-feeding. There has also been enlargment of the area in sugar beets for the sugar industry.

Many of the farm buildings and surroundings had the appearance of being kept by people who appreciated beauty in the surroundings of their homes. One was struck by the kind of pictures seen on the walls of even a Husmand's (cottar's) house. There were plenty of good photographs of spots of beauty, inexpensive copies of pictures by great masters, and no tawdry display of gaudy chromos.

The roads were generally well made and in good order for ordinary traffic.

None of the farms, in appearance of crops or general environment, were equal to the best farms in England or Scotland. They could not be considered superior to some of the best farms in Canada. What struck one most impressively was the high level of farming on small and large holdings alike. The Danish farmer, because an intelligent man, is also a thrifty and economical manager. He can get along, make improvements and save money on a much smaller area than satisfies the Canadian farmer.

Sizes of Farms and Holdings.

The sizes of the farms reveal conditions essentially different from those which prevail in Canada. A return published in 1907 puts the total number of Danish rural properties at 250,083. Of these about 70,000 were holdings of under one and a third acres each. The following table enumerates all the other holdings, viz., those having over one and a third acres:—

No. of Holdings.	Size in Acres.	Total Area in Acres.
46,614*	1⅓ — 7⅕	179,604
16,988	7⅕ — 11¼	159,832
28,992	11¼ — 22½	473,598
17,723	22½ — 33¾	496,962
35,257	33¾ — 67½	1,752,121
25,615	67½ — 135	2,346,295
6,502	135 — 270	1,169,484
1,570	270 — 540	574,946
822	540 & over	964,327

*Some of these may have less than 1⅓ acres each.

From the above table it will be seen (putting statements in round figures) that about 2,400 holdings, of over 270 acres each constitute about one and a half per cent of the total number of holdings, and comprise fifteen per cent of the total area.

Holdings.	Percentage of total Holdings.	Size in Acres.	Percentage of total Area.
2,400	1½%	over 270	15%
6,500	3½%	135 —270	14%
171,100	95 %	1⅓—135	70%

The group of 171,100 holders may be roughly described as 63,000 with holdings of from $1\frac{1}{3}$ to $11\frac{1}{4}$ acres each; 47,000 holdings from $11\frac{1}{4}$ to $33\frac{3}{4}$; 61,000 holdings from $33\frac{3}{4}$ to 135 acres. This ratio of working-owners to acres of land indicates the necessity for intensive farming; and taken in conjunction with rural education, co-operation and organization, accounts for the great increase in the number of cows, pigs and poultry maintained, and the enormous increase in the volume of the exports of butter, bacon and eggs.

Frugality, Co-operation, Education.

The country is one, in the main, of peasants and small farmers. They had the appearance and bearing of intelligent, well-dressed and self-respecting people. The farms, almost without exception, showed every outward sign of frugal prosperity. The farmers seemed satisfied with their lot, their progress and the outlook for the future. Notwithstanding a moderate stream of emigration (8,890 in 1910), there has been a steady and considerable increase in the rural population. The numbers of the rural population, in round figures, are given as follows:—In 1880, 1,400,000; in 1900, 1,500,000; in 1910, 1,700,000.

Various observers and students of agricultural situations, with whom the question was discussed in Denmark and elsewhere, attribute the country's marvellous progress to different causes, or lay emphasis upon one or other of different factors. It is admitted and asserted by many that Denmark owes its prosperity in large measure to the co-operative movements. Others, perhaps exercising greater insight, attribute the progress of the co-operation movement itself, and the concurrent advance in agriculture, to the character of the Danish people, which made co-operation practicable and made them desirous of joining in it.

Others again, pushing their quest still further, claim that the general education of the people, more particularly that provided through the People's High Schools, made them willing and able to accept and act upon the ideas and suggestions of the leaders, who saw what could be done with the greatest advantage to the whole people. Here the efforts for education and the efforts for

co-operation shade into each other, and both are conditioned by the race qualities of the nation. Moreover, co-operation for production, for preparation for market, for marketing and for buying are in themselves agencies and instruments of education. Participation in such activities quickens the mental aptitudes, and, by rendering the people more self-reliant, makes them more responsive to expert advice and able to make it fruitful in their own affairs.

Intellectual and Social Preparation.

What is noticeable is that the masses of the people on the farms are advancing together; that their leaders come from all ranks, so far as the size of the holdings is concerned; and that whatever has been found to be a good plan or an excellent practice in one locality quickly becomes the knowledge of all the farmers, and is applied with the modifications necessary to suit their conditions. In the co-operative organization the Husmand, with a holding of only a few acres, has one vote; the large farmer, with many times the quantity of produce involved, has one vote and no more. This recognition of the human, rather than only the property interests involved, is worth thinking about.

It is not probable that the Danish people would have been able to follow out the improvement of their agriculture, to organize co-operative creameries, packing factories, etc., and to profit by the inventions of the time had they not for years had the advantages of processes of intellectual improvement. When co-operation became necessary to enable them to hold their own and to capture the British market for butter, bacon and eggs, they were intellectually and socially able to develop it.

The following table indicates something of the rapidity and extent of the change in the agricultural industry during the past 30 years:—

	1881. (Value in round figures)	1910.
Exports of butter	$ 9,200,000	$ 50,500,000
" bacon	2,000,000	34,000,000
" eggs	300,000	7,000,000
Total	$ 11,500,000	$91,500,000

Intelligence and Persistence.

The improvement in the milking cows furnishes another example of the intelligence and persistence with which the people have co-operated to improve their instrumentalities of production. The soil fertility has been increased by better systems of cropping, and the land further enriched by the manure from the immense quantities of grain and other feeding stuffs imported from abroad. At the same time the improvement in the productive capacity of the individua

cow has been much more notable than the growth in the number of animals. The following table sheds considerable light on that situation.

	No. of Milking Cows.	Value of Exported Butter.
1893	1,011,980	$ 18,720,000
1903	1,089,073	40,320,000
1910	1,280,000	50,500,000

The number of milking cows had been increased by less than 16 per cent. and the value of the butter exported had increased by more than 169 per cent. The increase in the value of the exports of butter is not a true measure of the production of milk. However, one of the dairy authorities in Denmark states that better care and better feed, within the last 30 years, increased the annual yield of milk about 3,000 lbs. per cow. That accounts for $30,000,000 a year in butter. Professor Boggild, a great authority in dairy matters, puts forward the statement that the average yield of milk of the Danish cow in 1908 was 6,170 lbs. In the Isle of Fyen, which has some of the best land in the kingdom, 20,000 cows gave an average yield of 8,100 lbs. of milk each in 1910.

Co-operation and its Results.

The co-operative organizations may be grouped into three large general classes:—

(1) Co-operative organizations for production, such as co-operative creameries (begun 1880), co-operative meat packing plants (begun 1887), co-operative societies for the exportation of eggs (begun 1890), co-operative beet-sugar factories.

(2) Co-operative Societies for analysis and constant improvement of the branches of production; co-operative societies for the breeding of live stock; "Control" societies, etc.

(3) Co-operative Societies for the purchase and distribution of things to be used or consumed in connection with the carrying on of the agricultural work and the homes and life of the people. These things may be taken chiefly as feed for animals, fertilizers, and in some cases seeds, machinery and implements. The first of these Societies was established in 1886, but the movement spread generally from the beginning of 1880. The capital for most of these undertakings is raised by borrowing the amount, for which the members of the Society are collectively responsible.

One is warranted in ascribing to general co-operation amongst the farmers results which in turn become causes of other results. These may be put as follows:—

(1) The development of an attitude of mind towards other farmers and other interests in the locality.

(2) The broadening of the outlook by participation, even to a small extent so far as contribution of property is concerned, in building up and improving the local industry or interest.

(3) The education into ability, for social and public affairs, by active participation in the affairs of the co-operative society or association. The

small farmer, in his degree and according to his output, is put on an equal footing with the largest producer and does proportionately well. The natural leader in business matters is developed, discovered and followed. The man whose ability is chiefly in the direction of talking much and talking well finds his place also.

(4) The relief of the small farmer from some risks of marketing by himself, with the waste of time entailed thereby, and the benefit to him through the larger and stronger organization being able to furnish large quantities of produce of a reasonably uniform quality with fair regularity. Through the Co-operative Society or Association his interests, which of themselves would not be financially large, are served as well by trained men as are those of the largest producer.

(5) The freeing of his mind to attend to the producing or production end of the business on his farm.

(6) The putting of the small farmer in a position whereby he is sure to obtain expert advice from some officer or member of the Society or Association or through it from a government officer.

OPINION OF COUNT CARL MOLTKE.

In an address delivered before a "Conference for Education in the South," at Jacksonville, Florida, in 1911, Count Carl Moltke, Minister from Denmark to the United States, presented a view of some of the differences in the results which have followed from education and co-operation among a rural people in Denmark and those consequences which are likely to ensue where "capital rules supreme, with education as a by-product." Count Carl Moltke said:—

> By good farming we mean modern, scientific farming. Farming now-a-days demands the application of modern methods as fully as any branch of manufacture; it has no use for the primitive or the unintelligent. Hence a population that is going to make a success of farming is in greater need of education than a manufacturing population, because while the latter can be directed by a few shining lights in the community, the farmer is often isolated and has to depend much more on his own resources than does his industrial brother.

Count Moltke concluded:—

> The time when all their (the peasants' or farmers') skill and energy was required—in the 80's—had been preceded by about a century of gradual progress of intellect; it was accelerated by commercial necessity and to a certain degree as a reaction against their natural isolation in rural seclusion from other classes of the people. The prosperity of the country, the magnitude of its trade, its influence on the economic life of the nation in other branches, such as manufactures, is all the making of these modest people without initial capital. How different is such a process from that which results from huge, foreign investments, eager to reap enormous dividends from the labour of a nation economically not fully developed and which may be rushed into semi-civilization by the alluring requirements of powerful undertakings. But, whatever material prosperity may be the outcome of such conditions, it carries no guarantee of harmony, of respect for law and order, and of mutual consideration in the communities which participate therein. The fundamental difference between the two systems is that in the former capital was made a secondary force, sustaining the never-ceasing, unselfish efforts of the pillars of society—the teachers of the people; whereas in the second instance capital rules supreme, with education as a by-product that may fail altogether.
>
> Without high-minded, self-denying men, who teach for the love of their science, love of their country, you have no means of setting a standard for communities, of making them law-abiding, good citizens as well as able tillers of the soil. Therefore, before anything, get good teachers first. Make the instruction attractive to the young men and women on a sound, moral basis, and keep them alive to the responsibilities they assume towards faithful stewardship of what may sooner or later be entrusted to them. In this way, you will have farmers who love their homes, their soil, and their country, and who will form the very element of true conservatism, without which every democracy is bound to decay.

CHAPTER XXVIII: OUTLINE OF THE EDUCATIONAL SYSTEM.

SECTION 1: DANISH NATIONAL SCHOOLS.

The foundation of the National School of Denmark was laid in the Law of July 29, 1814, the provisions of which are still largely in force. The Law defined the administration of the National School. Compulsory school attendance and a system of fines for neglect and truancy were then introduced; regulations were made for the arrangements of studies, for examinations, interior arrangement of school houses and teachers' dwellings, and appointment and remuneration of teachers. Instructions for School Boards and teachers were also included.

The next important legislation was the Law of March 8, 1856, which established the School Funds and contained regulations regarding number of pupils in school, school houses, remuneration of teachers, vacancies, superannuations and Widows' Funds.

In 1867 and 1868 the local administration of Public School matters was organized by dividing the administrative functions between the Municipal Council and the School Board.

During late years, new laws had been passed determining the limits of compulsory school attendance, the plan and scope of studies, appointment and remuneration of teachers, vacancies and superannuation, formation of Teachers' Councils, and school grants.

THE ADMINISTRATION OF THE PUBLIC SCHOOL.

The National School of Denmark (Folkeskolen) is a State-aided municipal institution. Large appropriations are made in each year's budget towards the payment of teachers' salaries and pensions, interest on school debentures, and school purposes generally in needy municipalities. The total appropriation for public school purposes for the fiscal year 1912–13—exclusive of the grants for Normal Schools (Seminarien) and for the training of teachers—amounts to nearly $1,620,000.

Public School matters are administered by the Department of Ecclesiastical Affairs and Public Instruction according to the laws, rules and regulations made in that behalf. The Department, with its legally trained staff, is assisted in the administration of school matters by educationists, and by branch specialists in music, drawing, manual training and physical drill.

Each of the country's "Deaneries" or divisions of diocese, about 80 in number, has in the District Board a supervising authority, consisting of the Chairman of the County Council, the "Amtmand," or principal civil officer of the County appointed by the Government; the Dean, and a third elective

member. This Board has the general supervision of public instruction within the Deanery, and reports annually to the Department on the condition of the schools. In several matters this Board has the power of final decision.

Municipal Council's Management.

The management of school matters in the individual municipalities is vested in the Municipal Councils; in urban districts, in City or Town Councils; and in rural districts, in the Parish Councils. In both cases the Council works in conjunction with the local School Board. The financial matters of the school are managed by the Council, while the supervision of the teachers and their work is vested in the School Board, consisting of the Incumbent of the Parish as chairman, with several associate members elected by the Council to serve 4 years. The School Board is the immediate superior of the teacher; sees that all children of school age attend school; conducts examinations in the Public School and suitable tests of pupils of private schools; selects text books, prepares annual reports on school matters within its jurisdiction, etc.

The teachers have a limited voice, in an advisory capacity, in the administration of school matters—in urban municipalities through the local staff, with the principal as chairman; and in rural municipalities the permanently appointed teachers are given an opportunity to make recommendations in respect of matters that may be submitted to them according to law. These may be questions concerning the course of studies in the individual school, the erection of new school buildings, the re-organization of school districts and establishment of new schools in the district, the allotment of scholarships, the distribution of prizes for assiduity, and the acquisition of books for teachers' and children's lending libraries.

A certain authority in the management of the individual school is vested in its Principal, who has the immediate supervision of the work of the school and of its teachers. To him is also committed the care of the school buildings, and the registration of the pupils. He prepares and periodically submits reports touching upon the work of his school.

Compulsory Attendance.

To insure lawful school attendance, a register is kept in each municipality of all children who have reached school age. A fine is imposed on parents who neglect to promptly report change of residence of such children to or from the school district.

In order to prevent neglect in school attendance, the laws provide certain remedies as against the parents. Those who permit their children to neglect school without lawful cause are fined 3c., 6½c., 13c. and 26c. respectively, for each day during the first, second, third, fourth and succeeding months within any one term. For non-attendance beyond four days in any month an additional fine of 6c. is imposed for each day of non-attendance during the month, though the fine is not to exceed 25c. per day. In default of payment the fines may be enforced by execution and imprisonment.

The fundamental plan of school management in each municipality is drawn up by the local school authorities, subject to the approval of the Department. This plan includes regulations governing the number of schools, the limits of the school districts, the number of teachers and their salaries.

Details as to Public School instruction in the individual municipality are contained in its Course of Studies, which is also planned by the local authorities, subject to the approval of the District Board. The Course of Studies provides among other things for the subjects to be taught to the individual classes or grades of pupils, the standard to be reached in the several subjects by each class or grade, vacations and school holidays, etc.

The Teaching Staff in the Public Schools.

The Seminaries (Normal Schools) provide for training of teachers, four being State Schools, the 16 others being private seminaries subject to State supervision but entitled to conduct examinations of their own students. The Seminary Course covers three years. The annual tuition fee is $10·80 in the State Schools, and in the private schools from $40 to $65. The former give free tuition to teachers' sons, and up to one-third of the number of the students may enter on half fees. The State makes an annual appropriation of $32,400 toward Scholarships for needy students at all the schools, distributed in amounts ranging from $27 to $50 annually. Seminary students must have had at least one year's practical training in teaching before entrance. An examination (in two parts) completes the seminary training, and qualifies the candidate for appointment as Public School teacher.

Special seminaries, one State seminary giving free tuition, and four private ones, qualify women as teachers in primary schools. These students are also eligible to receive State Scholarships.

Qualifications and Appointments.

For permanent appointment as teacher in Public Schools, in addition to graduation, principal teachers must be 25 years of age and have had two years' previous practical work in teaching; others, one year either in private schools or as temporary teacher in Public Schools. All teachers must before appointment show freedom from contagious tuberculosis of lungs and larynx. Teachers who do not belong to the National Church are not eligible to permanent appointment in the Public School. All Principals (head-masters) are appointed by the Government, and all other permanent appointments are made by the District Board (in some isolated cases by the Bishop) on the requisition of the municipal council concerned, who submit the names of three applicants, from whom the Board makes the selection. Substitute teachers may be appointed by the local School Board, subject to the approval of the District Board.

Misconduct on the part of a teacher may be punished either through the Public School administration or courts of law.

The hours of teaching are normally 36 per week, and not to exceed 42 when rural school teachers give tuition in special subjects. As a rule, the rural teacher instructs in all subjects, while in cities specialist teachers are generally employed.

In cities and towns the Principal directs the work of his school. The larger cities have several Principals, one of whom is School Inspector. At some points the schools are under supervision of a Superintendent of Education, individual schools having permanently appointed male and female teachers and specialists. Country districts have male head teachers, assistant teachers, female teachers and primary school teachers. In addition to those there are temporarly appointed teachers of Infant, Winter and Branch Schools.

SALARIES.

The salaries of teachers are fixed by law. Permanently appointed teachers, male or female, in the towns and cities are paid according to two separate scales. The Department makes the choice between these upon the recommendation of the Council of each municipality, and according to population. The initial lower scale for teachers is $405, and the higher $432. Both increase by 4-year periods during 20 years to $756 and $810 respectively. The initial salary for female teachers is $378 and $405, and the maximum is $513 and $540, according to the scale adopted. Head teachers (principals) receive $810 or $864, according to scale, increasing in 3-year periods during 12 years to $1,053 or $1,134.

The salaries of teachers in country schools are likewise graded, commencing for head and single teachers from $243 to $378 and increasing by $54 every fourth year to $513 and $648 respectively. For assistant and female teachers the salaries commence at $189 to $243 and increase by $40.50 periodically to $459 or $513 for the former and to $405 or $459 for the latter.

The salaries of female primary school teachers commence at $148 to $189 and increase by $27 every third year, up to $256 or $297.

The initial salaries are fixed within the foregoing limits by the Department after consultation with the municipal council, with whose consent salaries may be increased beyond the maximum stated.

Salary increases are made on the basis of "years of service" of the individual teacher, according to rules fixed by law.

The head teacher in country districts receives a special honorarium ($6.75 per class) when there are at least seven classes (grades). The care of school rooms may be assigned to rural teachers by the municipality paying at least $20.25 annually for each class room.

The teachers in country districts receive, in addition to salaries, the use of a dwelling with garden and fuel. Dwellings for Principals must have three rooms with outside conveniences; assistant teachers must have at least one room. If an urban teacher is furnished with a house, its rental value is deducted from his salary.

Retirements and Pensions.

Teachers may be discharged either through the courts of law or by the school authorities. The District Board may retire a permanently appointed teacher who applies for discharge without a pension. In all other cases (retirement with pension, or unwillingly with or without pension) the power of discharge lies with the Department.

Male or female teachers who have had permanent appointment in Public School service for 5 years, after having reached the age of 30 years are entitled to a pension if retired through no fault of theirs at the following rates, calculated on the basis of average salary received during the preceding five years:— $\frac{1}{10}$ up to 2 years service; $\frac{2}{10}$ for 2 to 4 years; $\frac{3}{10}$ for 4 to 7 years; $\frac{4}{10}$ for 7 to 10 years; $\frac{1}{2}$ for 10 to 20 years; one-sixtieth added yearly thereafter up to $\frac{2}{3}$ after 29 years.

Widows of teachers, who have the right of pension, receive at the rate of $\frac{1}{8}$ of their late husband's average annual salary for the last five years of his service. Special financial assistance may be granted to the children of a teacher. Every permanently appointed teacher must provide an annuity for his wife, corresponding to $\frac{1}{8}$ of the amount of his salary at any time. In lieu of an annuity he may take out a life insurance policy for fifteen times the amount, payable to her, or he may deposit bonds the interest of which equals the required annuity.

Expenditure in connection with the National School.

(1) The greater proportion of the State grant to schools is expended in the form of salary increases to the teachers. At present this amounts to $1,080,000. The municipalities pay the initial annual salary of their teachers, and the State pays the periodical increases.

Furthermore, the State pays one half (at present about $216,000) of the annual pension burden, including all lawful pensions and financial assistance to teachers, their widows and children. The other half is provided by the *School Funds*.

The State contributes to the support of school work in specially needy municipalities.

Finally, grants are made towards the payment of interest and repayment of debentures on school buildings erected under the provisions of the law of March 24, 1899. (These loans have not been available since 1911).

Private schools (Free Schools), both in the cities and in the country, receive annually State grants amounting to about $29,700 and $12,150 respectively. Schools preparing pupils for any special examination cannot participate in these grants.

The Evening Schools where the youth receive voluntary instruction from the teachers, often in the class-rooms of the National School, also receive annual grants from the State.

(2) The "School Funds" exercise a special function in contributing towards the cost of the National School. There are 21 of these Funds, one in each county. They are partly the medium through which the Government grants are paid to the schools, and partly independent treasuries with their own revenues and expenditures. Their revenue is raised by local taxation in the county, and a portion of their expenditure consists in grants to pay salaries of substitute teachers for the permanent staff.

The School Funds are administered by a special board in each county, called "The School Council," made up of the members of the County Council and a certain number of men elected by the municipal councils for a stated period, the presiding officer of the County Council usually being chairman.

(3) All expenditure towards the National School which cannot legally be met by the State or the School Fund rests with the municipality. Under this head comes the cost of school buildings (except in cases of special State grants referred to), school equipment and libraries, and initial yearly salaries to teachers (to which the State adds periodical increases).

The municipality contributes also towards the Evening Schools and the private schools (Free Schools). The funds required for these purposes are raised by municipal taxation.

THE INSTRUCTION IN THE PUBLIC SCHOOL.

All normally developed children are, within certain age limits, required to attend school. Compulsory school attendance commences at the beginning of the first school term after a child has reached the age of 7 years, and as a rule concludes at the end of the second term after he has reached the age of 14. The school year is reckoned as from May 1 to April 30th, and the responsibility for the fulfilment of compulsory school attendance rests with a child's parents, guardians or employers.

The requirement of compulsory school attendance is met normally by enrolment in the Public School, where children whose parents have not the means to provide for their education receive gratuitous instruction. In the Public School as a rule the instruction is free to all children in attendance, but according to law private instruction may also be given either in private schools or in the home on condition that children, who a rebeing educated outside of the Public School, submit to examination twice each year, either in the Public School of the district or in the private school. The examination is conducted by the School Board. If such children fail to attend, without lawful cause, or give evidence of having received insufficient instruction, they are required to attend the Public School. Statistical reports may be required of private schools, but beyond that no public control or supervision is imposed. Anyone can establish a private school. The control lies in the examination.

In cities the Public School is conducted on the same lines as in the rural districts, and the maximum number of pupils in a class is 35. In addition to the Public School, practically all cities have boarding schools with advanced

work, yet these have a number of free places sufficient for children of parents in straitened circumstances to secure gratuitous instruction.

The annual school period in the Public School is 246 days (41 weeks), leaving 119 for vacation, holidays and Sundays. For individual classes in cities the school period is 21 hours weekly, exclusive of Physical Drill, Needlework, Drawing, Manual Training, and Household Science. In rural districts each class must have at least 18x41 = 758 hours, exclusive of Physical Drill, Needlework, and Manual Training. The Department may make exceptions in this arrangement.

Subjects and Equipments.

The compulsory subjects common to both urban and rural districts are: Danish (an average of at least 287 hours annually in the several grades), Religion, Writing, Arithmetic, History, Geography, Music, Drawing (urban schools only), Physical drill (not compulsory for girls in rural schools), Needlework (in rural districts when employing female teacher).

Instruction may also be given in Nature study, Hygiene, Manual Training, Domestic Science and Physical Drill for girls; and in the higher grade schools, Mathematics and Modern languages. School baths may also be included in the curriculum, both in urban and rural schools. If no gymnasium is available Physical Drill may be given on drill or play grounds, or in the class-rooms with some of the ordinary furniture for equipment. Each class receives 2 to 3 hours weekly, preferably in half-hour periods daily. Organized games and (in summer) swimming may, in a measure, be adopted as a substitute for instruction in Physical Drill. Each school must have adequate playgrounds, and it is recommended that access should also be had to larger grounds for ball games.

Examinations are held in the Public School once or twice each year. Registration of entrance and leaving are made each spring and autumn. The examination of private school pupils is made by the School Board twice each year.

The equipment, books, etc. used exclusively in the Public School are provided by the municipality; books used by pupils both in school and for home study, and those used in home study exclusively, are provided by parents when financially able; if not, the muncipality may provide them free of charge when thought necessary.

The Department issues lists of text-books recommended for use in the Public School, and the State makes annual grants towards the establishment and maintenance of Public School lending libraries for use of teachers and pupils.

The Department provides regulations for the selection of school sites, also standard plans and specifications for the erection and interior arrangement of school buildings in rural districts. The district physician is consulted in the selection of the sites and in the arrangement of buildings. The Department also furnishes suggestions with regard to plans for gymnasia.

Regulations, approved by the District Board, are made to provide for sanitary conditions and care of the school buildings, also for use of schools and gymnasia for other than public school purposes, such as religious meetings, evening schools, other public meetings, etc.

Rural Schools.

In rural districts each municipality has one school district (generally more), and each district has either (1) one school with one or more grades for children of all ages, or (2) a central school for the older children, with one or more primary schools for the younger. As a rule the Course of Studies is common for children of both sexes.

The number of teachers required at any school is determined according to the school attendance. If the average attendance of children in any class, for two years in succession, has exceeded 37, it must be brought down to that limit. As one teacher can instruct two classes (grades), the maximum number of pupils in a school with a single teacher is 74; in a school with 2 teachers, 148, etc.

Children up to 10 years of age may attend the Primary School, which, as a rule, is divided into two grades—children of 9 to 10 being in the senior grades, and those under that age in the junior.

In a few sparsely populated and poor districts of the country there are still schools with unexamined, temporarily appointed, low-salaried teachers. These are called Branch Schools, Winter Schools (open during the winter term only) and Kindergartens for children up to 9 years of age. The number of pupils in such a school must not exceed 35.

The school attendance is arranged so that each class (grade) receives instruction either for six half-days or for three whole days each week. This arrangement is generally combined in such a way that the pupils of the senior grade attend oftenest in winter and those of the junior grade most frequently in summer.

The Rural High Schools constitute a special class of the private schools. They are boarding schools, and give instruction to young men and women who have already passed through the Public School. They give instruction in popular and higher branches of learning (the People's High Schools), or in special practical branches (Agricultural, Horticultural or "Husmand" schools). State grants are made to such schools as well as to needy pupils.

SCHOOLS FOR ADVANCED INSTRUCTION.

Of schools giving advanced instruction—the so-called "High Public Schools" —some are State, others Municipal, and still others private schools. They may be divided into two classes: (1) the Secondary School, with four yearly grades, for children 11 to 15 years of age, which may include a further class, the High School (Realskole); and (2) the Collegiate (Gymnasiet) with three yearly grades, for youths of 15 to 18 years of age.

The final examination of the Secondary School which admits to the Collegiate is known as the "preliminary examination." The final examination of the Collegiate is called the "student examination" (artium) and admits to the University.

The Department may, upon certain conditions, empower municipal or private schools to conduct examinations with the same effect as do the higher State public schools, provided they comply with the same requirements as to studies and teachers' qualifications.

The right to conduct a Collegiate examination is conditional upon the staff of teachers having passed a State examination in pedagogy and ability to teach. The examinations at the municipal and private Secondary Schools are partly—as regards certain subjects—State controlled. The daily instruction in the advanced schools is placed under the supervision of two educational experts employed by the Department. One of these is in charge of the higher municipal and private schools (Collegiates), and the other of the municipal and private Secondary and High Schools.

Annual State grants are made to the municipal and private Collegiates, as well as to the Secondary and High Schools outside the limits of Copenhagen.

THE NATIONAL SCHOOL IN COPENHAGEN.

There is considerable difference in the Public School administration in Copenhagen and in other municipalities, the former having more self-government than the others in school matters.

The highest school authority here is a Board consisting of the Chief Magistrate (Over President), one of the Mayors, and one of the Deans of the City. Subordinate to this Board is a Superintendent of Education and two Assistant Superintendents. The immediate supervision of the individual schools rests with the local School Boards. Each school has its Principal and Assistant Principal, besides a permanent staff of regular and specialist teachers.

The school Principals receive as yearly salary $1080, increasing to $1404; male teachers receive $432, increasing to $972; female teachers $432, increasing to $702.

There are two principal groups of municipal schools, viz:—Fee Schools and Free Schools, both for children of school age. The former charge the very moderate fee of 27 cents monthly for each pupil, but this is sufficient to secure the maintenance of a more select class of pupils than is the case in the Free Schools. All schools have 7 grades. Instruction is given to each class for one-half of the day, and two classes of children are taught in each class room daily, one in the forenoon and one in the afternoon. A few municipal schools give advanced instruction in secondary grades for children from 11–15 years of age.

SECTION 3: TECHNICAL INSTRUCTION.

INTRODUCTORY.

Technical Schools were originally begun only as Evening Schools about the middle of last century, so that in all the provincial towns such schools have now been in operation for a long time, and in all the country round new ones are still being established. Though such schools were considered indispensable, their activities for many years remained on a rather primitive level as to financial support and as to method of instruction. However, in exterior conditions these schools have been greatly improved during the last 30 years, chiefly because

of Government aid, constantly increasing, for the erection of appropriate school buildings, maintenance, etc., as shown by the following amounts granted in 1909–10:—

To the Technical School at Copenhagen	$ 24,570
" carrying on of schools in Provincial towns	60,750
" subjects of general instruction	4,050
" training of teachers	10,800
" assistance of pupils	13,500

There are now 145 state-aided Technical Schools in Denmark (excluding Copenhagen), at 91 of which special buildings have been constructed, the Government having contributed one-third of the total building cost, including the price of the land.

During the period from the school year 1889–90 to 1907–08 there has been an increase in the number of pupils from 6,961 to 15,737, and in the hours of instruction from 74,317 to 215,727. In the Technical School of Copenhagen 3,509 pupils were instructed in the year 1907–08.

Due to Private Initiative.

Everywhere the schools are established on private initiative, and are carried on as private schools subventioned by Government. From the beginning the management of the schools was in the hands of the local Mechanics' Associations; but later on, particularly in the cases of the more important ones, it has passed to the so-called Technical Societies, to the boards of which, owing to their financial contributions, one or more members are delegated by the Mechanics' Associations.

The local governing boards, whether Technical Societies or Mechanics' Associations, have in addition to their own contributions received contributions from other local institutions, such as municipal bodies, county treasuries, savings-banks, etc., for carrying on the schools.

Private contributions, including school fees, amounted in the school year 1907–08 to $83,730, (in 1889–90, $26,900); in Copenhagen in 1907–08 the amount was $18,240.

The salaries of the teachers (generally giving lessons by the hour) vary from 14c. to 68c. per hour, 41c. on the average. The teaching staff consists, in a great measure, of teachers employed at public schools, of men expert in technical and artistic science, and of some mechanics.

At the beginning the schools were essentially Evening Schools for mechanics of all kinds, but later on a number of schools, particularly the larger ones, added Day Classes, with instruction specially adapted to builders' workmen, engine-builders and painters. In the Day Schools at Copenhagen, Odense, Aarhus, Randers and Aalborg pupils of the above trades can have the highest technical training for mechanics.

Up to a few years ago only male pupils attended these schools, but now it has become usual for female pupils to attend, the latter being instructed either with the males, or (if their number should be sufficiently large) in separate classes.

Subjects of Instruction.

The instruction, usually carried on during the winter months, from October till April, but in a few schools also in April, May and June, comprises the following subjects:

(1) Further instruction in the general elementary subjects (Danish, Arithmetic and Writing);

(2) Drawing, preparatory and professional (under the latter the painting classes);

(3) A number of mathematical and similar subjects, intended to produce technical improvement;

(4) As to a great number of schools, some commercial instruction;

(5) In a number of schools, instruction in one or two foreign languages;

(6) Of recent years, extended instruction of a cultural kind, particularly by means of lectures on subjects from the history of civilization, fine arts, literature or biography.

Everywhere instruction in general school subjects is carried on almost in conformity to the same instruction in the schools for children. The same applies to the other merely theoretical subjects, for which it has been possible from the very beginning to procure a staff of teachers able, as to the matter of teaching, to give instruction equal to that reached in any other kind of schools through many years' practice in teaching the same subjects.

Instruction in Drawing.

As to the instruction in Drawing the condition upon the whole has been quite different. Though from the beginning this has always been the head section of the Technical Schools, there was no instruction in the proper sense of the word, because of the lack of teachers pedagogically trained and of scientific methods of teaching.

Until about 20 years ago there was a merely mechanical copying of drawings, without any instruction attached thereto, so that while a great number of works of very fine appearance were produced, the personal development which ought to have been gained by the pupils was lacking.

During the last 18 years, however, strenuous efforts have been made to render the Drawing instruction thoroughly scientific, especially through Government instruction courses for Drawing Masters. Though the latter plan has been in operation for many years, only since 1890 has the attendance of teachers at work, as well as of candidates, been increasing. In 1890 the number attending was about 50; in the financial year 1908-1909 about 240 teachers and candidates were admitted to the courses, 129 being bursars and 111 receiving the instruction free.

In the preparatory Drawing instruction particular stress is laid on lectures and examinations, so that Geometrical Drawing and Projection Drawing are becoming, (1) Geometry and, (2) Elementary Descriptive Geometry with Drawing exercises.

In continuation of this plan it is intended gradually to transform the instruction in Professional Drawing so that instead of being a mere production of Drawings from problems already solved, it should consist of professional instruction by means of lectures, together with sketching and examination, and besides this of solving problems rationally placed before the pupils by means of Drawings worked out.

Inspection and Government Grants.

An Inspector appointed by the Ministry of the Interior has superintendence of all the Technical Schools outside of Copenhagen. The same Inspector conducts, on behalf of the "Kultusministerium" (i.e. Ministry of Ecclesiastical Affairs and of Public Instruction) the courses for Drawing Masters above mentioned. As these courses (running from 5 to 12 weeks) are generally attended through 4 or 5 years, the Inspector, besides thus superintending the improvement of Drawing Masters, is enabled to watch and guide the work of these teachers in the schools.

Every year all Technical Schools (outside of Copenaghen) subsidized by Government, as well as new schools desiring to share in the yearly distribution of the Government contribution, forward to the Ministry of the Interior a petition containing a short statement of the school work during the last school-year. The Government contribution is then fixed for each school, in proportion to the numbers of pupils and lessons. A part of the total grant is kept out of the calculation to enable the Ministry to give extraordinary contributions to schools whose conditions may render such desirable. The Technical School at Copenhagen receives a fixed yearly contribution from the Government.

SECTION 4: THE PEOPLE'S HIGH SCHOOLS.

To anyone familiar with the names used to classify schools in other countries and not acquainted with the development of education in Denmark the designation "People's High Schools" is apt to be misleading. They represent a movement and institutions that have been called, by eminent Danes who have intimate knowledge, by such names as "Peasants' High Schools", "High Schools of Yeomanry" (H. F. Feilberg), "Popular High Schools" (Alfred Poulsen), "People's High Schools" (Jacob Appel). These schools are Denmark's original contribution to organization, method and practice in education.

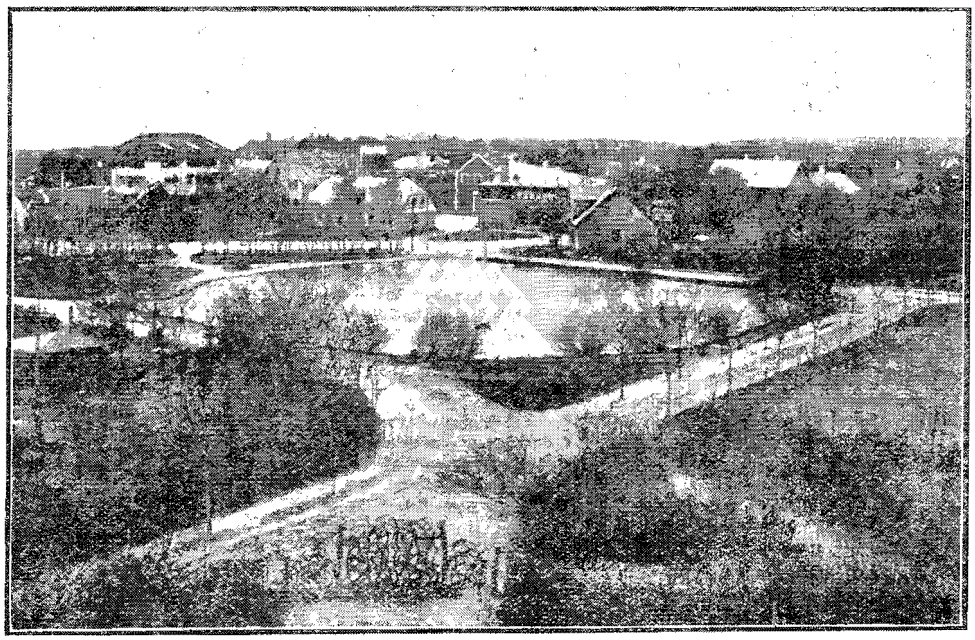
High Aims.

In the large the movement was planned, and the schools are still conducted, for the purpose of, (1) developing a quick sense of responsibility for life, (2) fostering a love of and devotion to Denmark and, (3) cultivating moral, intellectual and practical qualities which enable and move the individual students to do more work for Denmark and to obtain greater satisfactions in life for themselves.

Mr. Jacob Appel, who, when the Commission was in Denmark, was Minister of Church and Education (Kultus Minister), in an address published in 1904, says: "It is an entirely national movement which has caused the development and success of the People's High Schools in this country. I feel convinced that the work of the High Schools has for long strongly influenced the Danish nation and Danish social and intellectual life. Our intention has been and will be in the future to make each single man and women capable of sharing the blessings of social and intellectual life." In the same address he says: "The student of the Danish High School passes no examination, he has no privileges at all. He only goes back again to his work."

In this connection H. F. Feilberg says: "At this revolutionary school, no examination, no certificates, no compulsory attendance at lectures." The movement "was as first looked upon as a fantastic dream of impracticable minds impossible to realize, or, when perhaps realized, producing day-dreamers."

Mr. Alfred Poulsen says: "There must not be advantage gained from frequenting such a school but that which can be neither weighed nor measured, nor on which a pecuniary estimate can be placed. No other profit must be de-



People's High School at Askov.

rived from the instruction than the increase of inner worth which all good learning gives." He quotes in this connection the words of Hughes in "Tom Brown's School Days." When asked: "Why do you send your son to school?" he answers: "If he only can become an honest, useful, truthloving Englishman and a gentleman and a Christian—that is all I wish for." Mr. Poulsen adds: "The man who has said those words, thoroughly understands the aim and object of our Danish High School."

In an address delivered in 1901, Mr. L. B. LaCour, himself one of the foremost leaders, said:

> But what object do the schools pursue? The schools are working towards the three great aims of the Danish people during the present age—(1) to foster love of the country and national feeling; (2) to educate the people to make proper use of the free constitution which we obtained peacefully in the year 1849; and (3) to prepare the young so as to give them a better chance in the fight for existence as it is now raging in all trades and not the least in agriculture. To solve this problem it is first of all necessary to develop the personal character, to make of the young true men and women, and this is chiefly and best done by means of free lectures, giving instructive and interesting examples of the history and by a more intimate knowledge of the best of the literature of the nation. As Bishop Grundtvig (the original founder) says in one of his best songs, "It is the best possession of man to know God and himself. Make every man a servant of God and a master of his task." In those few words are contained the double object of school work, namely, universal and professional education.

They were not established to lead straight to better pay, more profits, or better positions as such. They pointed to nothing so definitely as to the hope held out to young men and women of entering upon the joy of life with enthusiasm inspired by the glory of a historical past, by the power of language spoken and sung, by the inspiring uplift of literature, by the beauty in nature and by the dignity and meaning of human life.

The Susceptible and Accessible Age.

Young men who attend in winter and young women in summer are admitted not before 18 years of age and seldom after 25. Mr. Alfred Poulsen says: "They are all schools for grown-up people. Grundtvig (who conceived the plan) held to the opinion which experience has shown to be right that it is at the age of 18 to 25 that the intellectual faculties are most accessible to intellectual influence. Before that age the mind is not sufficiently developed, and meditation cannot be awakened. Later on, in more advanced age, most minds will be occupied with the practical duties of life, but the age of strong emotional feelings and arduous longings, 'the sturm-und-drang' period natural to youth, is the best time for sowing the seed of knowledge and for exercising the personal influence of the teacher. For on the latter all depends."

Feilberg says: "In youth the eyes commonly are wide awake. All the gates of the intellectual and emotional nature of man are opened. Youth is the sowing time for the harvest to come. The deep impressions received in youth will stamp a man's mind and will do so for life."

Evolution and Growth.

From time to time there has been a tendency towards and then away from including industrial and agricultural education within the High Schools them-

selves. At first, subjects appropriate for practical education were taken up at some of them. At a later stage a few schools developed two branches which were both kept up at the same institution, namely:

(1) High School with liberal education.

(2) High School with vocational education for farmers, joiners, carpenters, builders, fishermen.

In such a school all the pupils met together daily to take some lectures together. They all lived together. That gave a unity to the life of the school. A few of this type still continue. Then the third stage, in which the schools are just now, presents this situation: about 50 People's High Schools proper; about 30 People's High Schools with a vocational (that is, agricultural, housekeeping or technical) side; about 20 Agricultural Schools; and about 13 Housekeeping Schools.

In Denmark it is generally held desirable that young grown-up people, who are to be occupied in agriculture and housekeeping, should begin their later education with a High School course before attending one of the vocational schools. As a matter of fact the majority of the Principals of the Agricultural Schools have themselves been pupils of some High School.

At the beginning of the movement instruction was provided only for young men. Afterwards a course for young women was provided during three months of the summer. A still later development was made in providing through one Extension High School, at Askov, for advanced courses for the further education of some who might become teachers or principals in the High Schools and others. In this course the men and women attend together through the winter months.

At Askov there is also a special course annually for 20 young teachers connected with People's High Schools. The course is one in general subjects (sciences, mathematics, etc.) and continues three months; it is usually taken by a teacher in each of two or three years.

The Development of other Schools.

The People's High School, as a school for liberal education only, has had a very close connection with the progress of agriculture and the development of technical education. Mr. Alfred Poulsen says: "The Agricultural or Technical Schools or Colleges are closely related to the High Schools. The persons who superintend them are on a friendly footing with the High Schools, and their whole plan is laid out upon the same principles. They work hand in hand with them, receiving not only the majority, but as they say themselves, their best pupils from the High Schools."

It is estimated that about one-half the students at Agricultural Schools have first been pupils at the People's High Schools. On the whole the feeling seems to be rather general against putting "practical," "much scientific," or "agricultural," instruction into those People's High Schools which are not distinctively vocational.

THE SCHOOLS TRANSFORMED THE NATION.

From 1870 to 1880 agriculture in Denmark underwent a great change. The system of farming, based chiefly on the growing and selling of grain, was failing. The exportation of grain was the chief channel through which the surplus products of agriculture brought revenue to the country. Under the leadership of wise and patriotic men the attention of the rural population was directed to the development of dairy husbandry and more particularly to the production of butter. That was well begun by 1880. It then became evident that if the Danish butter was to obtain a good place and a good price in the English market it must be produced of a better, more uniform and dependable quality. Further, it would be necessary to provide greater quantities, and that continuously throughout the year, in order to maintain a hold upon markets which had been acquired.

Mr. Alfred Poulsen states:

> Then arose as by magic the large co-operative dairies, which get their milk from larger districts, ordinarily from a whole parish. By this mode of proceeding it was rendered possible for our butter to gain its good reputation in the English market. The quickness and precision with which this change was carried out, is due partly to the leading agriculturists of our country and partly to the High Schools. By their help a set of young, energetic men were brought up to understand the importance of the new ideas; and to secure the success of the new principle of co-operative manufacture, some of them, after a very short course of instruction, were able to undertake the responsible work as managers of the larger and smaller co-operative dairies. * * * * * The greater part of the men and women who manufacture this butter are pupils of the High Schools. I might, if time allowed it, quote many sayings of men, who in different branches of industry have made themselves prominent. They all agree in this, that the young people who have frequented the High Schools are much more to be relied upon, more industrious than their comrades who never had the opportunity of attending them. To be brief, I shall content myself with stating a remark recently made at the Congress of Antwerp by Mr. Peschke Koedt, one of our most influential merchants. He said: "The Popular High School is one of the most prominent factors in the economic life of the country."

"HIGHLY DEVELOPED COMMON SENSE."

It is not claimed in Denmark by the most ardent friends of the People's High Schools that an education along the lines of national hero-worship, with poetry and other elements of patriotic delight, must necessarily advance towards good agriculture, good butter-making and good cattle-raising. The belief is that these schools were thoroughly attractive to the peasants and developed the habit of taking in and considering knowledge.

It is common knowledge in Denmark and wherever the methods of Danish agriculture and agricultural commerce are known that (1) in grain and root crops, and live stock and products from live stock, the yields have been increased; (2) qualities have been improved; (3) cost of production has been lessened; and (4) better prices have been obtained. Mr. T. P. Gill of Ireland says the authorities in Denmark generally rely more upon the "highly developed common sense of the Danish farming class as brought out by their High School education, and their system of organization for the spread of improved methods of farming, than they do upon any special technical training in the schools. The intelligence of the Danish farmers is so sharpened and broadened, and they have at hand so efficient an instrument in their system of organization, that they are capable of

appreciating at once the results of investigations as they come from the universities and laboratories, and are in a position to apply the knowledge thus received. At the same time the greatest care is taken that there shall be no lack of special technical education."

Sir John Gorst, at one time President of the Board of Education of England, has mentioned that the education imparted to the rural population by the People's High Schools and the Agricultural Schools is an essential reason why Denmark has risen from being one of the poorest of European countries to be one of the richest.

Peasantry Enlightened, Wealth Diffused.

Bjornson's saying is often quoted: "Denmark has the most enlightened peasantry in the world." Perhaps nowhere else does one find the people in general better educated. With education as with wealth, there is a general diffusion which brings the average to a high level without leaving large numbers unhelped. In Great Britain, for example—to which (according to Mulhall) Denmark stands second in average of wealth per head of population— there are a few very rich people, a majority of people of moderate means, and a lamentably large number continually approaching a state of economic distress. On the other hand, in Denmark the well-being is generally diffused. The average wealth of two persons, one of whom owns one million dollars and the other one hundred dollars, cannot be regarded as $500,050 by any stretch of the imagination by the man who owns only the one hundred dollars.

How the High Schools Originated.

At this point it is appropriate to narrate briefly the origin and development of these schools. It appears that the idea of them and the first steps towards carrying the idea into effect were due to Bishop Grundtvig (1783-1872) a famous Danish poet and historian. "If great genius for one thing is known by its power of uniting and combining together, then Grundtvig undoubtedly is our greatest man. He is in a word the national hero of ours." (Poulsen). He was characterized and moved by human sympathy to work for his fellow man. This feeling showed its influence especially in his love for the uncultured, unartificial man. Like Carlyle, he venerated the common sense of the farmer and the horny hand of the labourer.

In a letter written in 1841 to King Christian VIII, Grundtvig developed part of his idea, saying that,—

> Among the teachers of the High School there ought to be at least one who was "a master of the mother tongue, not only as it is found in books, but as it lives in the nation; at least one who knew and loved our fatherland's history and was able to picture it vividly in words; at least one who knew and loved our national songs in their old form, as well as in the new, and was able to lead the choir himself or have an assistant to do it; at least one who had seen much of our fatherland and knew the nation, the trades and the resources; and, finally, one learned in the law was to be desired, one who could give the youth a true and living apprehension of our fatherland's constitution and laws, formerly and now."

After him came Kristen Kold. The following is what Mr. Ludvig Schroder, of Askov, stated regarding the precise nature of Kristen Kold's contribution to the success of the High School movement:—

> Kristen Kold contributed more than anyone else to prepare the way for the influences of the High School in the large broad strata of the population. He also set the example of making the life at school as home-like as possible for the young people who were brought together there. Finally, it is he who, having engaged women teachers in his school, began to collect young women as pupils in the summer, while the winter was given up to the young men. Grundtvig sketched the plan, but Kold laid the foundation securely and well by showing that the schools must first try to enliven the youth, and after that to enlighten them.

The Schools Developed the People.

The first school was founded in 1845, four years before the era of the present constitutional government; but the movement took a new sweep and pace after the disastrous war with Prussia, and the loss of a large part of territory, in 1864. The work of the first leaders has since been carried forward, amplified and evidently improved, by bands of noble men and women, chiefly of peasant or small yeoman origin, who have inherited the vision of the great leaders and have maintained their enthusiasm joined with faith in a great future for Denmark and an abiding faith in the providence and wisdom of God.

The development of Denmark gave a peculiarly appropriate setting for the work which these schools have undertaken and done so well. Rather less than a century and a quarter ago the Danes were serfs. The boon of self-government was gained in 1849 without bloodshed. Their history from the beginning of the century had been one of severe national disasters and partial recoveries. When the climax to the impairment of their size and power came with the loss of the southern provinces, after the war with Germany in 1864, the people were disheartened to such an extent that their leaders feared they might wholly lose faith in the future. Resolution to avert the threatened evil and remedy the condition was the impelling motive of those in sympathy with the aspirations of Grundtvig.

The People Developed the Schools.

Under the leadership of the men who have been chiefly responsible for the People's High Schools, private initiative has played an ample part in the progress of the country. An outstanding characteristic of the Danes from the time of the old Vikings has been a spirit of selfreliant independence. Since they gained self-government they have been characterized by the keenness with which they seek after knowledge. The nation, through the personality of its people, gives one the impression that it hungers and thirsts after intelligence. Out of such conditions and material the educational and co-operative movements have grown. Each of them has had its part in making Denmark intelligent, capable and rich. One does not find supine contentment. Perhaps that might be to such a people a weed rather than an enriching crop.

Before the war of 1864 there were only 20 High Schools in Denmark, but in the few years, 1865-70, 50 new People's High Schools had entered upon their work.

At the present time there are about 50 People's High Schools proper, about 30 with an Agricultural side, about 20 Agricultural Schools, and 13 Housekeeping Schools, all similar in plan of organization and maintenance. The first two kinds are attended by about 7,000 pupils annually, in about equal numbers of young men and young women, and the third kind by about 2,000 students. The 5 largest People's High Schools were attended in 1906 by more than one quarter of the whole number, whereas the 38 smallest ones had not more than another quarter.

The Agricultural High Schools grew out of the People's High School movement first as a branch on the parent stem, and afterwards as separate institutions, following similar methods but having agriculture and the related sciences as the main portion of the subject matter. The Agricultural Schools are located generally in the neighbourhood of a People's High School. In some cases teachers lecture in both schools.

At the People's High School the course for men occupies only five or six months of one winter, and the course for young women only three months of one summer. The courses at the Agricultural Schools occupy about the same time. Allowing for those who attend an Agricultural School after attending a People's High School and those who attend twice, about one person in every five who annually come to the age of 18 years in the rural population attends a People's High School (liberal, agricultural or housekeeping). The proportion has been steadily increasing. After the young people go through the comparatively short course, as a rule they return to their homes and to farming work. It is estimated that there are at the present time in Denmark nearly 150,000 men and women who have attended these High Schools. Mr. Thornton says that when the Parliament assembled in 1901 it was found that 30 per cent of the members of the Upper and Lower Houses had been High School pupils.

The High School pupils exert a marked influence on the social and intellectual life of the people by the spirit of comradeship and friendship which is maintained after their attendance at the High School ceases. Scattered throughout Denmark in 30 or 40 different towns, "High School Homes" have been established and maintained. These are in the nature of simple hotels, with plain living accommodation, a few rooms for meetings, useful libraries, etc. When ex-students of High Schools have occasion to visit the towns they make these High School Homes their headquarters.

Courses of Study or Work.

History takes the most important place among the subjects, and particular stress or emphasis is laid upon Danish (the mother-tongue), and Literature. A good many lectures are given on Geography, Physics, Anatomy and Hygiene. Some time is devoted to Arithmetic, Drawing, and in some cases Surveying.

Physical Culture is regarded highly, and receives much attention. The schools maintain that rational bodily exercise is of the utmost importance for the health and vigour of the body, for the capacity to do mental work, and for

the strengthening of moral qualities. The regular daily gymnastics are considered of not less importance for students who come from hard bodily exercise than for those engaged in sedentary occupations.

Singing is more than a subject, a course, or an art; it becomes an atmosphere, a feeling and interest, which embraces all others. It is inseparable from High School teaching. The pupils sing one or two songs before the commencement of every lecture, and very often afterwards. When it is remembered that there are three to five lectures a day besides the other educational work, it becomes evident that the remarkably rich collection of historical, national and vernacular songs and hymns which the Danes possess is put to a generous use.

In brief, the work at the school, as gathered from observation by the Commission and discussion with the teachers and others, is characterized chiefly by the attention given (1) to History, the Mother-tongue, and Literature; (2) to Physical Culture and Singing; and (3) to other subjects, including some sciences and practical work. Many of the teachers and others are opposed to the extension of practical work in the High Schools proper.

The Spirit and Method.

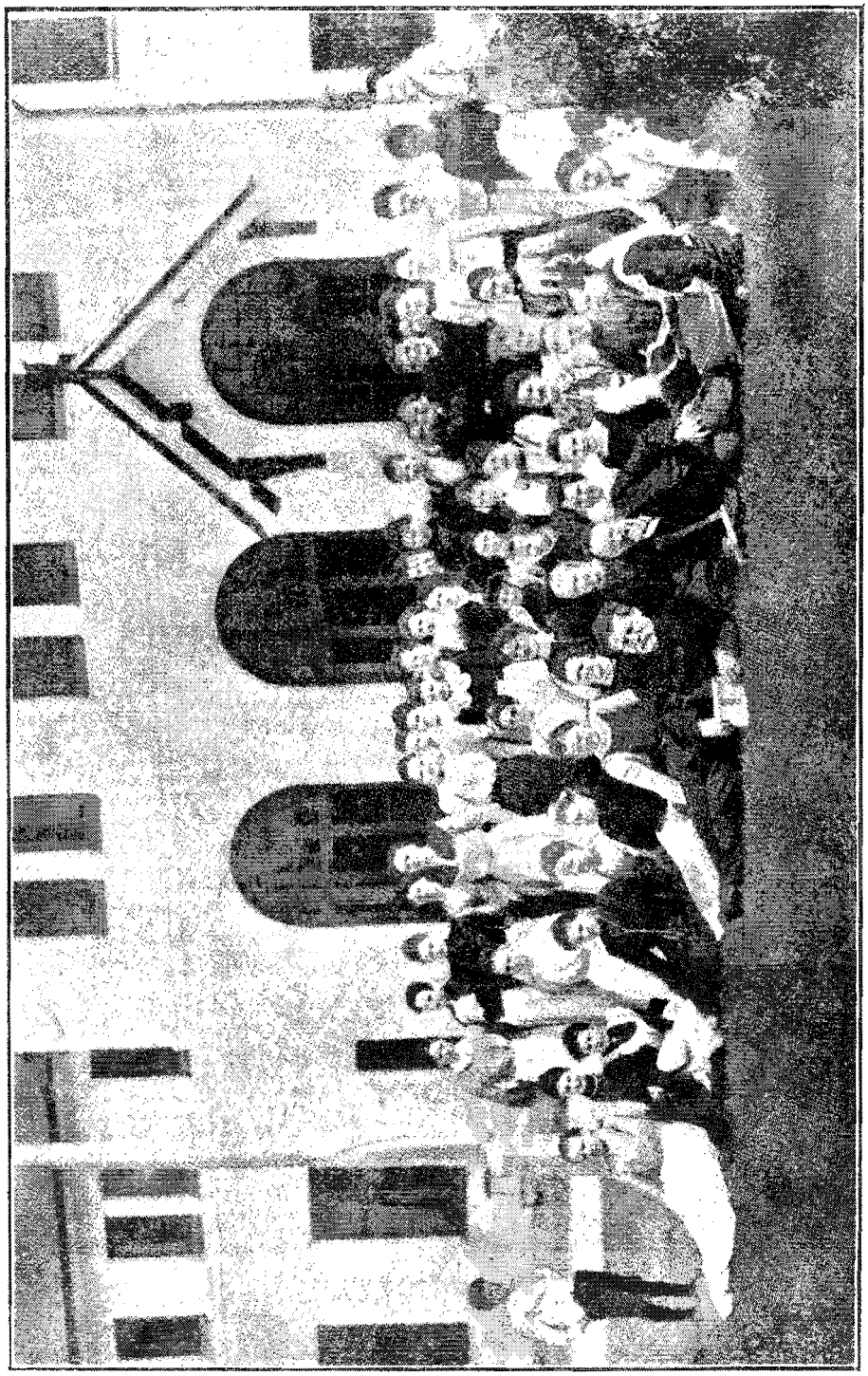
The Danish teachers state that no one is able to judge of the course by an inspection of the time-table and the different subjects mentioned on it. The claim is made that the importance and emphasis should be laid upon *how* information is imparted and education given, and upon *who* it is that gives it, rather than upon *what* is the subject matter. "The mark to be aimed at is not to learn this or that, much or little, but to be made prepared for the teaching of life." The wife of the Principal, in her relation to and influence upon the students, is one of the powerful factors.

The lecture method is the one chiefly employed. Books play a very subordinate part in the work of the school, although pupils acquire a love for reading and ability to use books which influence and enable them to go further after they have left school. In the teaching of History a great deal is made of the characters of the men and women who stand out as having originated, shaped or directed the conspicuous movements in national or world affairs in the past. In all the High Schools one sees portraits or busts of the great men and women of Denmark who are renowned for services rendered to the nation. Some leaders now want to modify the course in History by including British and American history and economics, as these have come to play such an important part in the life and outlook of the Danish nation at the present time.

In 1910 Holger Begtrup, who is regarded as one of the ablest High School men in Denmark, said: "It is the special business of the High School to show with clear emphasis how we, through union with England and America, are helped in our journey to that higher human development our race is striving after."

Attention at Lectures.

The use of notebooks by the students while the teacher is lecturing is discouraged. The object is to have the pupils come under the sway of the lec-



SUMMER STUDENTS OF THE PEOPLE'S HIGH SCHOOL, LYNGBY.

turer, in order to be impressed by the main ideas of his discourse, rather than to have them retain a distinct and clear recollection of the data or facts which he may have stated. "On that very point where the ability of the teacher meets the wants of the pupils, there exactly lies the task of the school."

Experience does not show that every lecturer can hold the attention of all or even of a majority of the pupils on all subjects when no notetaking is encouraged and no examination is expected. One member of the Commission in observing a large class of women, during a lecture on a science subject, estimated that not more than one-third of the class were paying reasonable attention to the subject of the discourse.

Social Qualities Developed.

The students dine together. In the dining rooms visited the appointments were of the simplest sort. In some of them table-cloths were used, in others there was a table-cloth only at the table of the Principal, with oilcloth covers on the others. The seats were long benches without backs. The good-fellowship which prevailed was in itself an evidence and means of further education. At the close of the meal one heard everywhere the salutation, offered by neighbour to neighbour and promiscuously as the room was being left, "Velbekomme" (May it do you good). On all hands there was plenty of good humour and evidence of genial comradeship among the students and between the students and teachers.

The features that stand out boldly as the results of the school are the awakened interest in the meaning of history and literature, the culture and friendships which come from living and studying together for a period of three or five months as the case may be, and the subtle, strong and evidently enduring influence of singing historical, national and patriotic songs and hymns together.

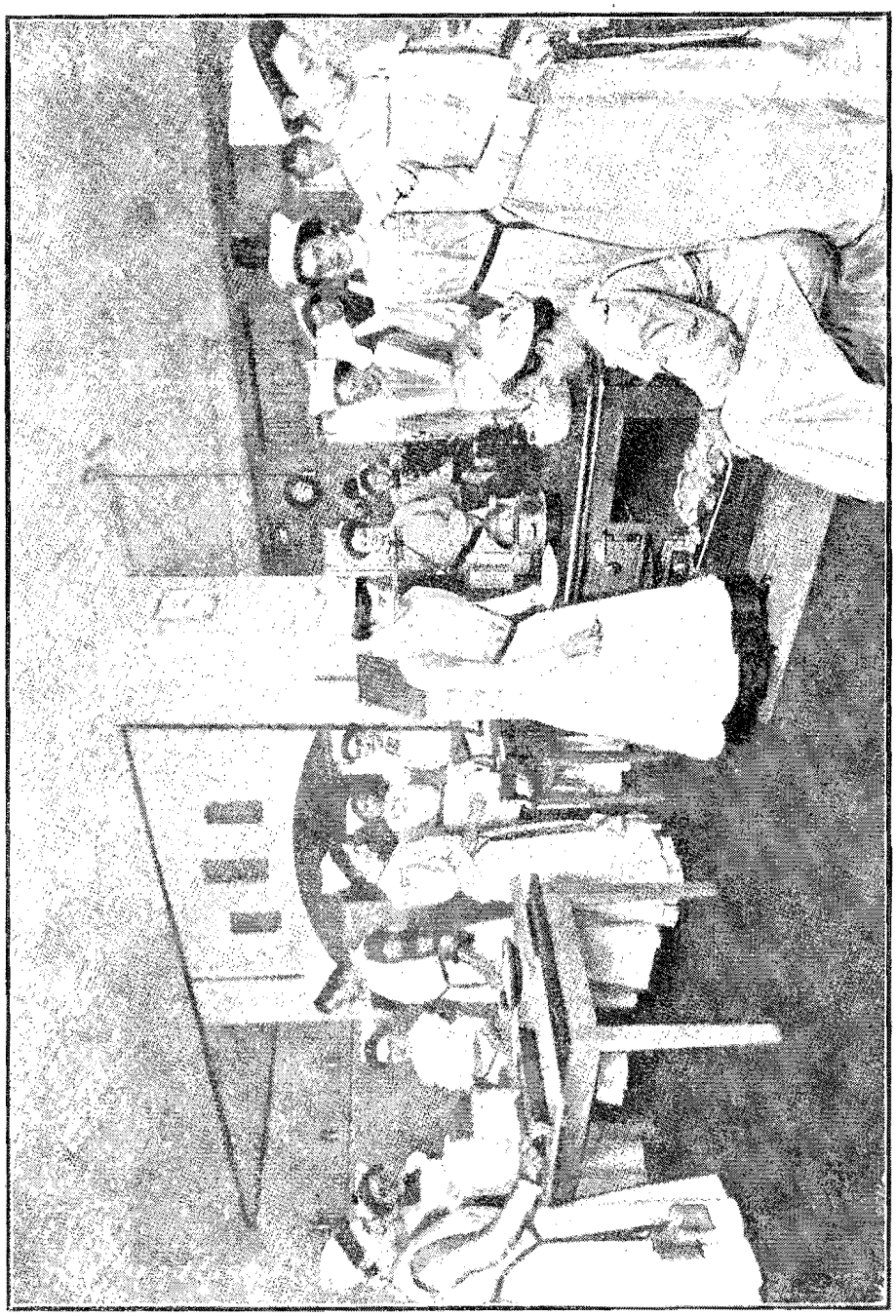
How the Schools are Financed.

The People's High School is really a private institution receiving some assistance from the State. They were all founded by private means and, with some exceptions, are owned by the Principal of the school. In a few instances hundreds of the peasants (small landed proprietors), feeling the need of the school, voluntarily subscribed towards the cost of its establishment. To entitle the school to receive a grant from the State it must have been attended by at least 10 pupils for two years, and conducted in a satisfactory manner. The means whereby the latter fact is established was not made clear.

Besides the amounts which are provided by the State as Scholarships for the poorer students, grants-in-aid or subsidies are paid by the State to the Principals and owners of the Schools in the following way: A grant of 500 Kroner* is given every year to each school; 10 Kroner is paid to the Principal every year for each student in attendance. Besides there is a grant calculated upon the expenses of the school, so far as salaries, books, apparatus and interest

*A Kroner may be taken as the equivalent of 27 cents.

SEWING CLASS AT HASLEY.



HOUSEKEEPING SCHOOL—HASLEV.

upon investment are concerned; but no High School proper can receive more than 3,000 Kroner a year.

It is not likely that these High Schools could have succeeded but for their inexpensive character. They are organized, appointed and equipped in the very simplest way. They are residential schools where the pupils all live together. Each student brings to the school the bedding required and some other small articles necessary. The total fees will average about 30 Kroner (about $8) per month, including board and residence. The total outlay of the student, including expense of travel, books, etc., would be between $50 and $65 for the five months course. The fees vary somewhat and are slightly higher (47 to 27 Kroner per month) at some Agricultural Schools.

Many Scholarships are Provided.

The State co-operating with County Councils provides a sum to be expended yearly in Scholarships for the poorer students. These Scholarships are distributed among the Counties on the basis of the number of students of the previous year. Each subsidised pupil may receive a Scholarship up to 20 Kroner per month of attendance.

In order to obtain a Scholarship a candidate must fill up a schedule in which he makes a statement as to his means (which the parish council must attest), showing whether he or she has had a Scholarship before, and giving particulars of the expenses at the High School he or she proposes to attend. If he wishes to go to an Agricultural School, he must give evidence that his general education is sufficient to allow him to follow the instruction. Where there are more candidates than Scholarships the County Council may give preference to the older candidates. Of all the pupils in attendance at the High Schools, Agricultural Schools and Housekeeping Schools, probably one-half receive Scholarships. No difference is discernible, if it ever exists beyond the inner consciousness of the persons who have received the Scholarships, between those who attend with that help and those who come on their own or their parents' or guardians' resources. Application for or acceptance of a Scholarhip is not regarded as anything to be ashamed of. As one Dane has said: "Misfortune lies in poverty only when accompanied by ignorance, immorality and impiety." In the case of the subsidised students, the Scholarship will, as a rule, pay about one-half of the total cost.

The reported attendance of young women at four High Schools proper visited was: Askov, 125; Haslev, 150; Ryslinge, 206; Vallekilde, 275.

In the case of an inquiry in 1907, 17 per cent of the pupils had formerly attended a High School; in most cases the student who takes a second course attends a different High School from the first one attended. There is no second year course, as such, following the first year course, with the exception of the course at the Extension or Advanced School, at Askov. There are special courses in several of the Schools, as for example at Ryslinge for Teachers of Physical Culture, 5 months for men in winter and 3 months for women in summer.

The Uplift of Rural Life.

The People's High Schools have become the centres of wide and far reaching influence outside the immediate education in their own courses. In close proximity to most of the largest High Schools proper there are an Agricultural School and a Housekeeping School. The People's High School, at Askov, may be taken as representing the largest development in this respect. Close by it is a Weaving School for girls; and a Sloyd (or Swedish Manual Training) school for teachers. Then there is an Agricultural Demonstration Station just a stone's throw distant; in the vicinity an Agricultural School; and at a distance of two or three miles a School for Housekeeping Occupations.

One feature which must not be overlooked is the influence on the solidarity of feeling in the nation as a whole through students coming from one district to attend the People's High School located in another district. That is quite general.

The Chairman of the Commission travelled a good deal in Denmark, visited farms and conversed with farmers of different types from the husmand, farming three acres, up to the President of one of the Farmers' Associations who farmed three thousand acres of his own property. Typical of the attitude of the others towards the People's High Schools were Mr. and Mrs. Neilson on a 70 acre farm near Odense. They had both been students of a People's High School. The home and its surroundings gave every evidence of comfort, intelligence and refinement. The farm had the appearance of being managed by a working farmer who had adequate practical knowledge and ability. When Mrs. Neilson was asked whether she regarded her course at the People's High School as having been of value to her, she answered: "Yes, certainly yes, it gave a meaning to life for me." Her husband said the same thing in other words. When asked further as to what particular subjects, or part of the course, they now recognized as having been most beneficial to them, they agreed in putting History, Physical Culture and Singing among those which they regarded most highly. They were representative of many others whose intelligence, gentleness, vigorous ability and most courteous good-will are helping to make the nation prosperous and happy.

THE PEOPLE'S HIGH SCHOOL AT RYSLINGE.

Mr. and Mrs. Alfred Poulsen's school may be taken as typical of the best and largest of the High Schools proper. The ground covered is indicated, and only indicated, by the subjects and the time devoted to each.

WINTER COURSE FOR YOUNG MEN (5 months.)

Subjects.	*Time.*
Danish and Composition	6 hours weekly.
Danish History	6 " "
Universal History	6 " "
Social Science	1 " "
Danish Literature	2 " "
Arithmetic	3 " "

Geography	3	hours	weekly.
Nature Science	4	"	"
Drawing and Surveying	2	"	"
Agricultural Conditions	1	"	"
Physical Culture	6	"	"
Writing	about 24	"	in all.
Book-Keeping	about 24	"	in all.
Reading and Singing			in the evenings.

SUMMER COURSE FOR YOUNG WOMEN (3 months.)

Subjects.	*Time.*		
Danish and Composition	6	hours	weekly.
Danish History	6	"	"
Universal History	6	"	"
Danish Literature	2	"	"
Arithmetic	3	"	"
Geography	3	"	"
Nature Science	4	"	"
Handwork (Sewing, etc.)	9	"	"
Physical Culture	6	"	"
Singing	2	"	"
Writing	about 24	"	in all.
Reading aloud			

THE PEOPLE'S HIGH SCHOOL AT VALLEKILDE.

This represents the type which includes the industrial vocational. Mr. Valdemar Bennike made the following statement to a company of English visitors in 1909.

The students are of all ages over 18 years, most of them between 20 and 25, and come from all parts of the country and all classes of society, though the majority belong to the class of small freeholders and cottars, which is so numerous in our country.

Now I should like to give you the picture of a single day here in the winter months, when we have from 190 to 200 young men under our care from the beginning of November to the end of March.

The bell rings them up at 7 o'clock in the morning. They then dress, make their beds,sweep out their rooms,wash, and at 7.30 are ready for a cup of coffee and a bun.

At a quarter to eight the principal (Mr. Paul Hansen) has morning prayers with his household; there also are to be found most of the students, though attendance is not compulsory.

At eight o'clock, four mornings in the week, I give a lecture on geography, and thereby I try to show the audience what relation there is between man and the earth, and how far the people in the various countries have succeeded in reducing the soil to subjection. A song suited to the theme is sung before and after all lectures. On the two other mornings our Free Kirk clergyman lectures on Church history.

Breakfast comes at 9.15 and consists of a couple of sandwiches and a glass of home-brewed ale.

At half past nine the artisans go to a special department in a house a few minutes' walk from here, where they are taught what belongs to their various trades; carpenters in one room, bricklayers in another, painters in a third, and so on. Most of their time there is taken up in learning to execute working drawings. Likewise the fishermen go to their special department, where they are taught navigation and all the natural history of fishes and other water-animals, sea-plants, etc.

The farm-lads stay here in the central building and are divided into four classes held in various rooms; and for two hours practise writing and drawing. From twelve to one the principal gives a lecture on the history of Denmark, the political history as well as the history of civilization, dwelling more especially on the lives of noted men and women of the last century, whose work we are continuing.

At half-past one comes dinner in the large room below.

At half-past two the artisans and the fishermen go to their own departments again until six o'clock. The farm-lads in the meantime are taught accounts and arithmetic for an hour in two classes. At half-past three these last have gymnastics according to Ling's system.

At five various teachers lecture to the farm-lads only, on physics, on the geography of Denmark, on hygiene, and on the history of the world.

At six supper is taken.

From 7.30 to 8.30 lectures for the whole school are given on the history of Danish literature by Mr. Hansen, and on various subjects by the other teachers, Mrs. Hansen twice a week reading aloud from the best of our poets, and I once a week showing lantern slides or glass photographs from all parts of the world, and explaining them to the pupils.

From 8.30 to 9.30 the artisans and fishermen have their gymnastics while the others have leisure time for the rest of the evening. But you will understand there is not much leisure time for any of them; what there is is used for writing letters, reading, conversing, playing or short walks.

At 10.30 the electric light is put out in the schoolrooms.

Since Vallekilde School was begun by the late Ernest Trier, in 1865, it has had 11,416 pupils—6,391 men and 5,025 women.

THE PEOPLE'S HIGH SCHOOL AT ASKOV.

The timetables of the High School at Askov are illustrative of those of other schools, although there is wide variation in their arrangement at different schools.

SUMMER COURSE FOR YOUNG WOMEN (3 MONTHS).

Hour.	Monday	Tuesday.	Wednesday	Thursday.	Friday	Saturday.
8–9.	Social Science.		Geography.		Nature History.	
9–10.	Physical Culture.					
10–11.	Danish.	Arith.	Danish.	Arith.	Danish.	Arith.
11–12.	History of Literature.		Universal History.			
	Dinner.					
1.30–2.30.	a. Drawing. b. Handwork.	Handwork. Drawing.	Drawing. Handwork.	Handwork. Drawing.	Drawing. Handwork.	Handwork. Drawing.
2.30–3.	Singing.					
3.15–4.15	Reading.	Hygiene.	Reading.	Hygiene.	Reading.	Danish.
4.30–5.45.	Handwork.					
6–7.	Lecture.					

WINTER COURSES FOR YOUNG MEN AND YOUNG WOMEN IN THE ADVANCED OR EXTENSION SCHOOL.

(6 Months Each).

FIRST WINTER.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8-9.....	History of Language.		Mathematics.		Hygiene.	
9-10.....	Physical Culture.					
10.30-11.30	Natural History.		Universal History.		Natural History.	
11.30-12.30	Discussion on Norse History.	Discussion on Physics.	Geography.		Arithmetic.	
12.30-2....	Drawing.					Discussion on Mathematics.

Dinner.

3.15-3.45..	Singing.					
4-5.....	Social Science.		English. German.	Lecture.		English. German.
5-6.....	Danish.	Danish.	Discussion on Universal History.	Danish.	Discussion on Universal History.	Danish.
6-7.....	History of Literature.			Norse History.		

SECOND WINTER.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8-9.....	Applied Mathematics.		Geography.		Universal History.	
9-10.....	Physical Culture.					
10.30-11.30	Natural History.		Universal History.		Natural History.	
11.30-12.30	Algebra.	English. German.	Algebra.		Discussion on Universal History.	English. German.
12.30-2....	Drawing and Laboratory Practice.					
	Dinner.					
3.15-3.45..	Singing.					
4-5.....	History of Religion.		Social Science.		Biology.	
5-6.....	Reading Room.		Discussion on Norse History	Danish.		
6-7.....	Literature.			Norse History.		

SECTION 5: THE AGRICULTURAL SCHOOLS.

The Agricultural Schools have grown up out of the efforts of the farmers and their leaders to instruct and train young men for following farm life without subjecting them to influences from surroundings, instruction or occupations which would be likely to wean them from country life.

They are all residential schools; the pupils live together in a manner similar to that which has been described at length under the People's High Schools. In addition to the class rooms, and a small museum stocked with specimens useful for illustration and demonstration, the Agricultural School has a farm connected with it as part of its equipment.

The farm is not managed or run as an experimental station, and only to a very small extent does it use illustration plots. An illustration is given of the management of the farm as a whole according to the system and methods

which yield the best results in the locality. The Principal is also the managing farmer. The preservation and increase of fertility, and the quantity, quality and suitability of the crops for market and for consumption, are considered. The numbers and the kinds of live stock are determined by the capacity of the farm as directed towards making profits. Since the institution receives a comparatively small grant from the State, it must be managed as a profit-making establishment, or at least in such a way as to make ends meet after paying salaries and providing for the upkeep.

At several places Agricultural Demonstration Stations, which are subsidized by the State and are not connected with the Agricultural Schools, offer additional opportunities for the students to observe the nature and progress of experiments. These are mainly directed towards the illustration of methods whereby the scientific knowledge and principles, that have been proven of value, are applied to land, crops and live stock for profits.

The Agricultural Schools generally are located each close to one of the People's High Schools, and in some cases some of the teachers lecture in both schools.

Like the High Schools, they are private enterprises receiving a small subsidy from the State, varying from about $1,500 per annum downwards according to size and public service rendered. The combined subvention received by each Agricultural School from the State and the Local Authority averages about $1,000 per annum.

The State grants Scholarships to assist needy students. The conditions are similar to if not quite identical with those which obtain in the case of Scholarships for the People's High Schools. Scholarships are from 100 Kroner to 150 Kroner per student and cover about one-half of the expense including travelling, books, etc.

Students and Courses.

The Agricultural School, which at first grew as a branch from the High School stem, follows the High School methods, but has agriculture and the related sciences as the main portion of its subject matter. Students pass no examination for admission and receive no certificate at the end of the course.

After leaving the elementary school at 14 years of age, the boys return to their homes for a few years; then, after 18, they go for one or two winters to People's High Schools to continue their education. They then return to farming, or first take a course at an Agricultural School. The popularity of these Agricultural Schools and the proof that they meet a felt want among the people, is made clear by the fact that each winter they are attended by about 2,000 pupils.

Students are admitted from 18 to 25 years of age. They all come with a practical knowledge of farming operations and of farm work and management. The instruction is theoretical, the aim being to leave the students with clear ideas of the application of the principles of agricultural science to farm work and management. An effort is also made, by lectures and otherwise, to let them

acquire such an understanding of their work that they will like it better and have an intelligent appreciation of its relation to the progress and prosperity of the community.

The ordinary course continues five or six months. At some of the schools a number of the pupils continue three months longer for special studies of plants and matters suited to the work of the summer months. To this extent it may be said that two courses are provided—one of five or six months from November to May and a fuller and more extended course continuing during May, June and July. August, September and October are vacation months alike for the People's High Schools and the Agricultural Schools.

Gymnastics by Swedish Method.

All the Agricultural Schools have Gymnasiums of large size for the number of pupils. Here, as in the People's High Schools, the system of gymnastics followed is the Swedish, which lends itself to the training of the students without much apparatus.

The method of this gymnastic is very simple. It uses very little apparatus, and may even be carried on without any whatever. All it requires is a large open floor or a hard clay court. Bars and ladders and wooden horses are used where available, but they are not essential. The system is primarily a scheme for general bodily exercise prompted by individual will power. It seeks to cultivate the will through the greater control of the body. It is, indeed, a system of carefully thought out organic education. Like all true sense culture, it belongs more properly under the head of mental culture than under the head of what is commonly meant by physical culture. Notice some of its fundamental principles. It dispenses with music, because the rhythm then becomes the guiding factor in place of the human will. It dispenses with all action on the part of the instructor during the class movement, for this would substitute imitation for the directing power of the will. Both of these provisions are very subtle, and they do accomplish their purpose. The movement is explained and illustrated by the instructor, and each child knows perfectly what is to be done. But he must do it himself of his own volition and quite unaided by music or model. All commands are short and clear, so that they may reach the intelligence with the utmost directness and speed. The response must be equally quick and direct. The first command—"Attention!" asks that the faculties be alert and ready to act, and the body in a suitable position of vantage. The second command names the part of the body to be called into action. The third command tells the direction of motion. The last command describes the motion and calls for it. Thus: "Attention—right leg—upward—bend!" Each word is spoken quickly and distinctly. The exercise is not only meant to develop the body through the muscular exertion required, but still more to develop the power of command. The exercises are all light, and the majority of them would scarcely bring fatigue if persisted in for considerable periods of time. But where the system is well carried out, and the commands follow one another in fairly rapid succession, mental fatigue comes before muscular fatigue, and indicates very positively where the work is being done. The whole purpose of the Swedish drill is to increase the health of the body, to make it alert, quick, usable; above all, to put it under the absolute control of the will. (From "Education and the Larger Life," by C. Hanford Henderson; Houghton Mifflin Company, Boston, Mass.)

THE LADELUNDE AGRICULTURAL SCHOOL.

This school in the vicinity of the People's High School at Askov may be taken as a type of the best and largest Agricultural Schools. It was established in 1879. The school farm contains 80 acres. The institution is owned and managed by the Principal or Director. It has extensive laboratories where much work is done in the analysis of feeding stuffs and artificial fertilizers. That is done under arrangement with Agricultural and Co-operative Societies.

The Agricultural Course continues 5 months. It is attended by about 100 students.

There are four other courses:—

For Creamery Buttermakers, 5 months (Nov. to March);

For Testers for Dairy Record Associations, 6 months (Nov. to April);

For Creamery Buttermakers, 4 months (April to July);

For " " " in testing milk and cream, (September).

The Agricultural Course of 5 months includes subjects as follows:—

Subject.	*Time.*
Agriculture (including soils, plant cultivation, rotation of crops, manuring, plant diseases, etc.)	150 hours.
Management of live stock (including poultry)	180 "
Danish	60 "
Arithmetic	60 "
Book-keeping	30 "
Drawing	20 "
Chemistry	70 "
Physics	70 "
Botany	10 "
Geology	8 "
Bacteriology	15 "
Agricultural History	15 "
National Economy	12 "
Surveying	20 "
Dairy Work	12 "
Machinery and Implements	18 "
Physical Culture	1 hour daily.

The fees for tuition, board and residence are as follows:—

1st month, 47 Kroner; 2nd month, 42; 3rd month, 37; 4th month, 32; 5th month, 27.

The total fees for the 5 months' Course are equivalent to $48.

THE AGRICULTURAL SCHOOL AT LYNGBY.

This school is managed on the same general plan as the Ladelunde School. A farm of 15 acres belongs to the school. Close by it are a People's High School, and an Experimental Station. In the vicinity is a remarkable museum which represents the externals of the progress of Danish peasant life from the rude conditions of one thousand years ago. A series of buildings resemble those of many centuries, with utensils, tools, implements and weapons of the periods themselves.

In another building there is a permanent exhibition of modern agricultural implements, to which manufacturers and agents send machines, implements and apparatus, with particulars of prices. The exhibits must be left for one year at least, at the end of which time they may be left, taken away altogether, or replaced by newer or other articles.

The School is attended by about 120 students. The students who take the 9 months' Course are in a separate class from those who take the 6 months' Course. They take a few subjects together.

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THE AGRICULTURAL SCHOOL AT DALUM.

The school was founded in 1886. It is private property, owned by the Director, but established by the financial aid of a great number of farmers, chiefly small proprietors, from the whole island, who felt the need of such a school. The State and Local Council grant yearly subsidies in furtherance of its work. All the pupils are boarded and lodged at the school. It has two chief Courses annually, one in Agriculture and one in Dairying, besides occasional short Courses for special purposes. The pupils come from all parts of the country.

1. *Agricultural Course.* This Course extends over six months (November to April). There are about 140 pupils, mainly the sons of small proprietors, their ages varying from 18 to 35 years, the average being 23 years. Nearly all are pupils from the elementary schools, but the majority have spent five months at a High School before coming to Dalum.

For such subjects as Arithmetic, Drawing and Land-Surveying the pupils are divided into two or three classes, according to ability. All the other subjects are taught in common by means of daily lectures and frequent oral discussions for which the pupils prepare themselves by means of text-books. There is no terminal examination and no leaving certificate.

The chief subjects taught are: (1) physics, chemistry (soils and their treatment); (2) anatomy and physiology of animals; (3) botany (including plant pathology), the cultivated plants and their culture; (4) tending and feeding of stock; (5) dairying; and (6) agricultural book-keeping. Besides these subjects, series of lectures (without examination) are given in political economy, the history of agriculture, and general history. The school day extends over seven to eight hours;3-4, lectures;1-2, discussions; 1, gymnastics; 2, land-surveying, arithmetic, etc. The State grant is $792 a year, the subsidies from the County Councils of Fyen amount to $288. Some of the poorer pupils get about $36.40 (about half the expense incurred) from a Governnment grant distributed by the County School Boards. The cost of the course, including instruction, board, lodging, and the necessary books, amounts to about $13.20 per month.

2. *Dairying Course.* This course extends over a period of four months (April-July). There are about 25 pupils, of an average age of 22 years, who have been working from 3 to 8 years in butter and cheese factories. Their previous education is similar to that of the winter pupils, and the mode of teaching is similar to that in the winter course. Besides arithmetic and writing the following subjects are taught:—

Physics (including mechanics and engineering chemistry); botany (including elementary bacteriology); anatomy and physiology of animals and their tending and feeding; dairying (history and general theory); practical instruction is given in milk-testing (Fjord and Gerber systems), in general book-keeping and differential reckoning (Fjord system) for the paying of the milk according to the cream percentage.

A special subsidy of $528 a year is given by the Government for the dairying course. In connection with the school a model dairy is maintained, to which the Government contributes $264 a year. The poorer pupils obtain grants of

about $28.80 each through the local authorities, the total cost of the course amounting to about $50.80. Besides these two main courses the day school occasionally gives short courses (1-4 weeks in duration) for crofters and small farmers in milking, testing of milk, and the working of small farms.

3. *The Farm.* The farm attached to the school is run on business principles and for profit, in such a way as to serve as an example to ordinary farmers. The pupils are made acquainted with the whole book-keeping of the farm, and are allowed to examine the stock and general work, but no practical farm work is directly taught in the school. The farm is 92 acres in extent, excluding the space occupied by buildings, garden, and football field. It is divided into nine fields of equal size (9½ acres), besides a field of permanent pasture. The soil is very variable. The following is the rotation of crops:—

1. Rye.
2. Sugar beets and seed mangolds.
3. Oats.
4. Mangolds.
5. Barley.
6. Oats.
7. Clover and grass.
8. Grass.
9. Mangolds and different forage plants.

The average yield per acre is about 50 to 60 bushels of grain, 25 tons of mangolds, and 15 to 16 tons of sugar beets.

The stock consists of 30 milking cows, 20 bulls, heifers and yearlings, 100 pigs and about 150 fowls. The breed of cattle is the Red Danish.

In winter the rations of milking cows in full milk are 4½ lbs. hay, 11 lbs. straw, 80 lbs. mangolds, and from 7 to 11 lbs. cake. During the summer about half the daily fodder (cake and hay) is given in the stable, the other half they get in feeding outside (tethered).

The average produce amounts to 8,700 lbs. of milk or 340 lbs of butter per cow.

SECTION 6: THE HUSMAND SCHOOLS.

There are 3 Husmand Schools in Denmark. They were established as private enterprises, to meet the recognized need of the Husmand (small farmer) for special instruction in the small cultures of his occupation.

THE SCHOOL AT RINGSTED.

The School at Ringsted is typical of the others . It and one at Barrov in West Jutland each received a State grant towards their establishment, in the form of a loan of 60,000 Kroner at the rate of 3% interest. The grant from the

State towards maintenance is 6,000 Kroner per annum. The School has two excellent demonstration kitchens for cooking. There are ample experimental plots for cereals and fodder crops; and illustration areas for general farming, for stock-keeping and fruit and vegetable growing, with large poultry premises.

The School was founded in 1903. By the end of the sessions of 1910-11 the Courses of 5 or 6 months each had been taken by 668 men and 610 women; and the short 11 day Courses by 1,592 men and 1,926 women.

The Summer Courses are of three kinds:—
A 6 months Course for young gardeners;
A 6 months Continuation Course for young farmers;
A 5 months Course in housekeeping.
The Winter Courses are of four kinds, and are each of 6 months:—
A Course in agriculture;
A Course in industrial work;
A Course in gardening;
A Course in housekeeping.

During both summer and winter there are 9 different 11-day Courses for men and women. These include agriculture, horticulture, care of animals, bees, fruit-growing, flower growing, cooking, dressmaking, maid-servant work and care of children.

The instruction is both theoretical and practical. During the summer students have 3 hours of lectures and 8 hours of practical work daily. In addition to the subjects already mentioned, instruction is given, to those who desire it, in some of the homely crafts, such as soldering, broom-making, cobbling, etc. In addition, there are studies and training in reading and reckoning, gymnastics, singing and general lectures.

Fees, Finances, Motto, Etc.

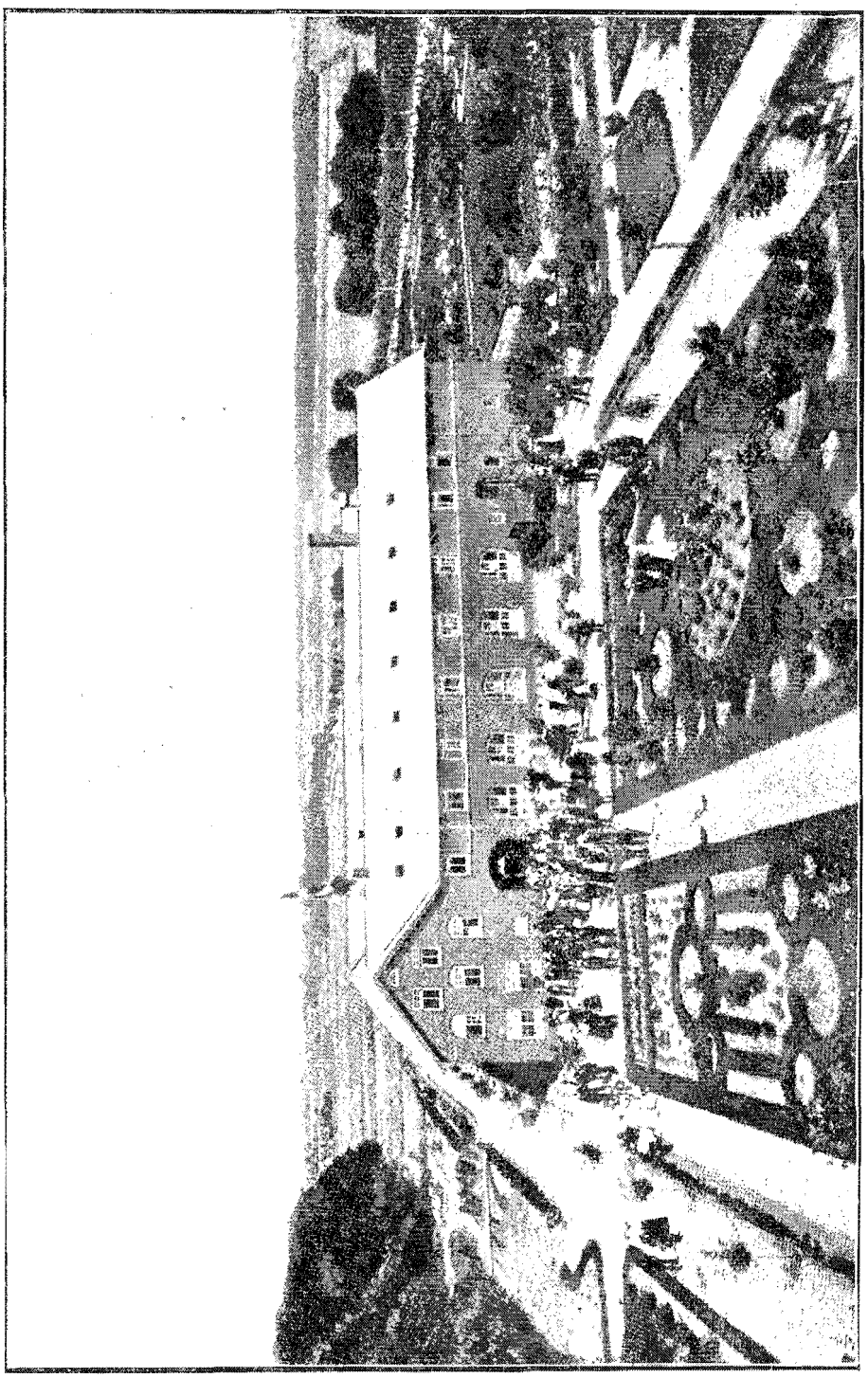
The fees for the 5 and 6 months Courses amount to 200 Kroner and 240 Kroner respectively. The fee for the first three months is at the rate of 45 Kroner per month. It drops to 25 Kroner for the last month. The fee includes instruction and board. An additional fee of from 18 Kroner to 36 Kroner is charged for the whole Course from those who have single, double, or four-bed rooms with special conveniences or comforts.

The State grants Scholarships up to 30 Kroner per month to enable students to attend.

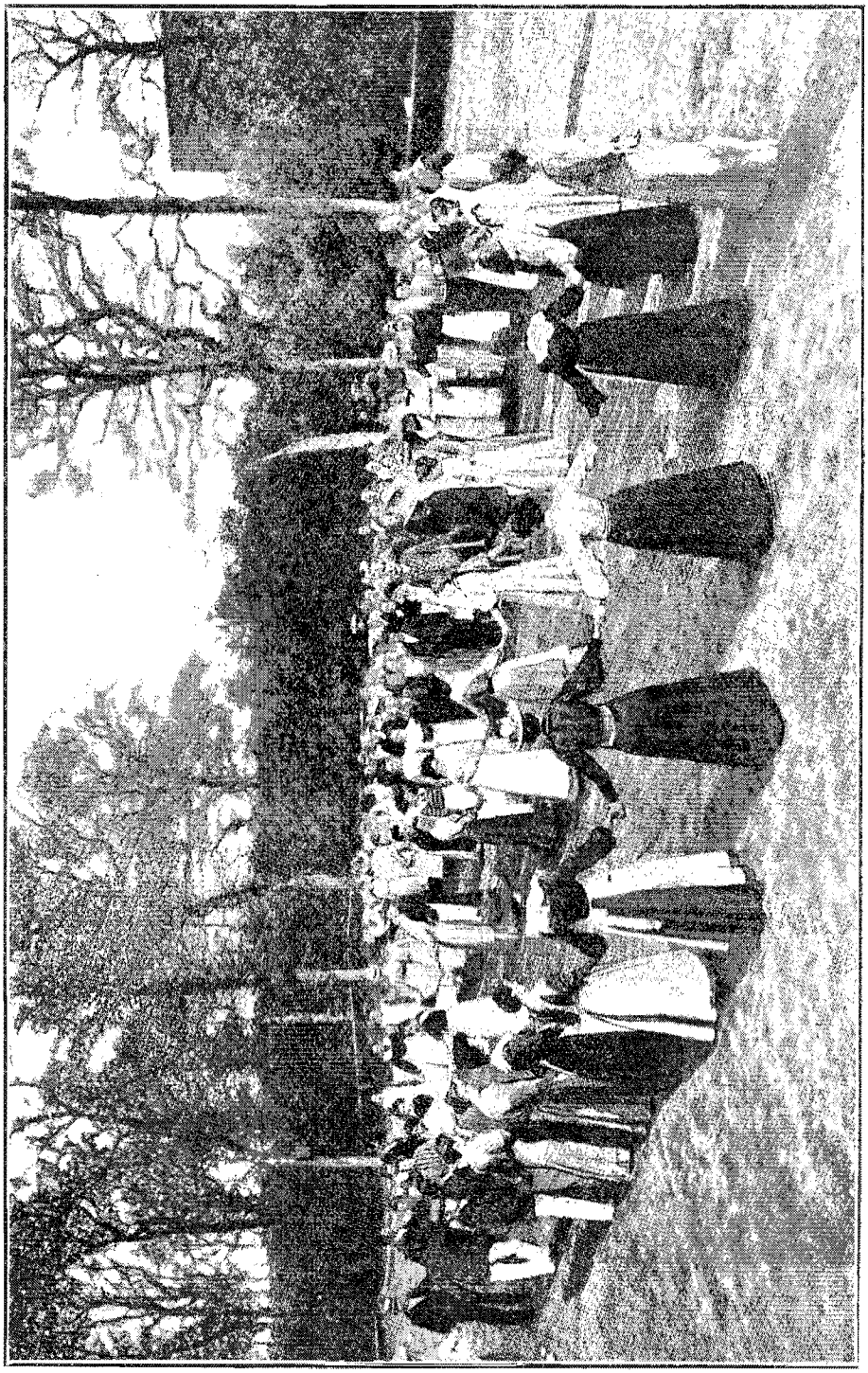
The fee for the 11-day courses is 30 Kroner for each Course, including board and residence.

The State grants Scholarships, including an allowance for travelling expenses, for these short Courses.

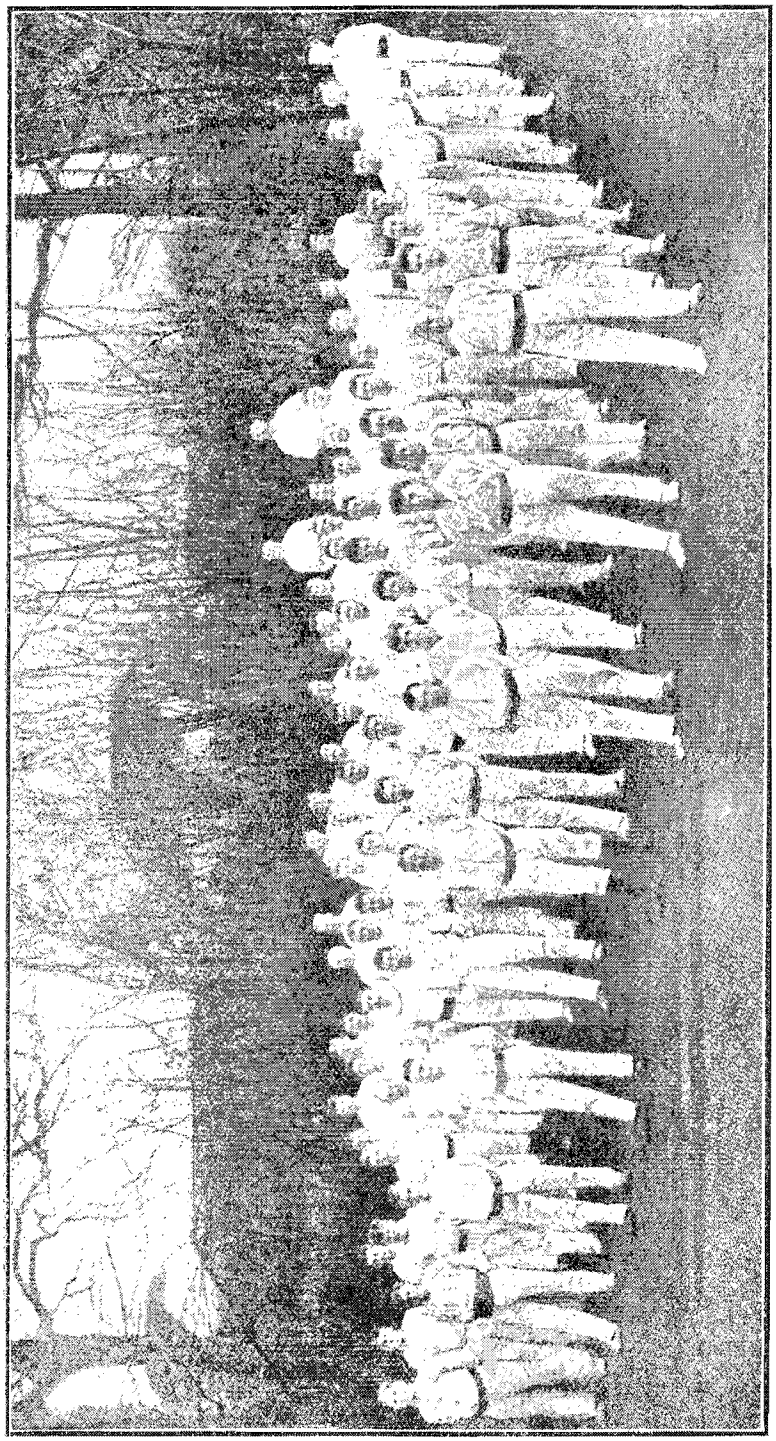
About 40 men and women were in attendance at one short Course during the visit of the Commission. As distinguished from pupils in the People's High Schools, they are encouraged to use their notebooks freely—at least those whom we observed were doing that.



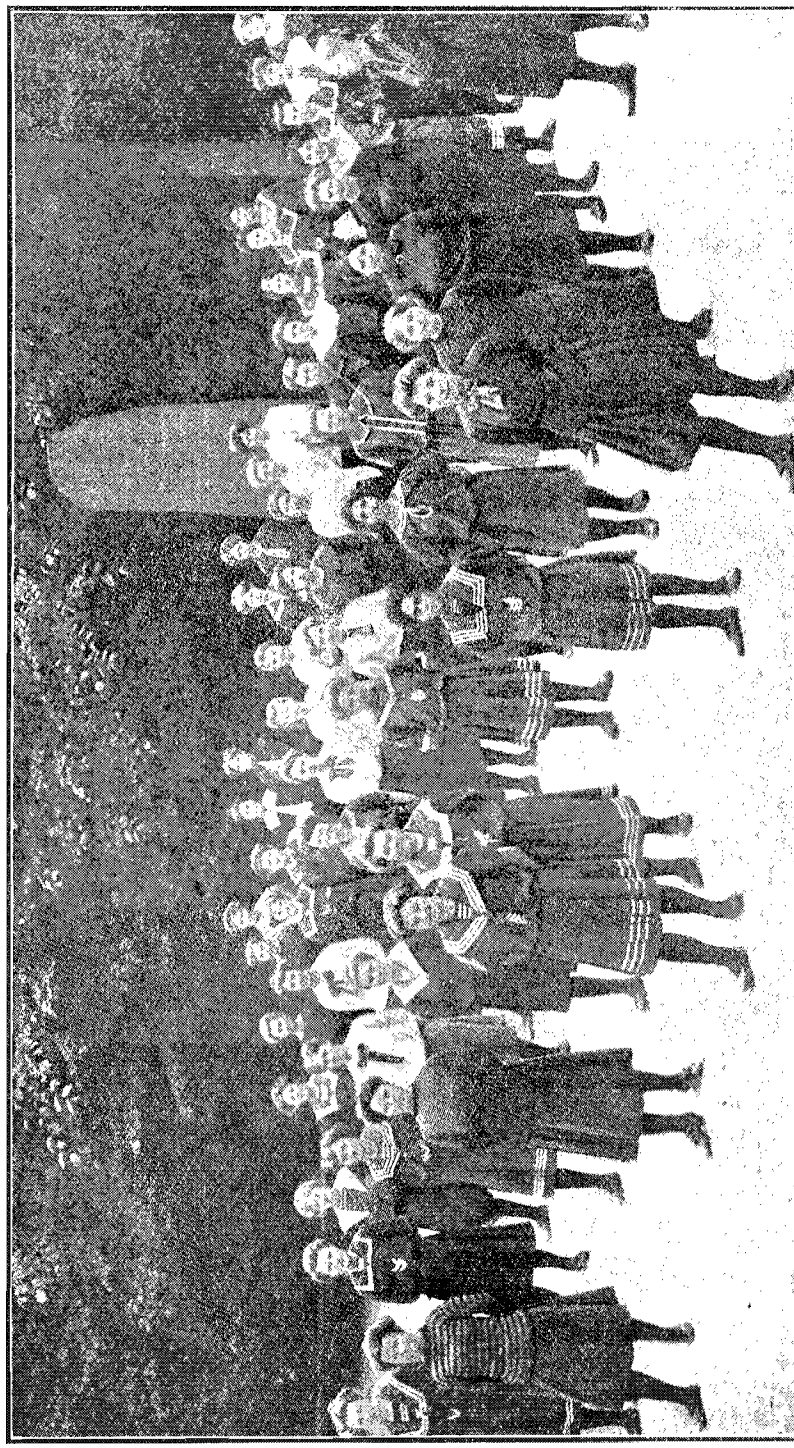
HUSMAND SCHOOL AT RINGSTED.



RECREATION AT RINGSTED.



PHYSICAL CULTURE AT RINGSTED.



PHYSICAL CULTURE AT RINGSTED.

The motto and device of this school are an example of the spirit and aim which seem to permeate the People's High Schools, the Agricultural Schools and the Husmand Schools. A free translation of the motto runs thus:—"He who does what makes other people happy, will be still happier himself". The device is an owl on a spade. It does not require much power of interpretation to think of that as Wisdom and Work.

SECTION 7: A SCHOOL FOR WOMEN FOR RURAL HOUSEKEEPING.

A few miles from Askov, a visit was paid to an institution for training young women for the duties of housekeeping and associated work at farm homes. As in the case of the People's High Schools and the Agricultural Schools, the institution is owned and managed almost independently by the Director and his wife, who are the principal instructors. Two Courses are held in the year, each lasting five months. Twenty young women are received each time. They are mostly from the families of farmers, who own and cultivate farms of from thirty to sixty acres. The students live in the institution. The cost of the Course for five months, including board, is 200 Kroner per pupil. The school has been going during five years. The classes are in housekeeping, cooking, sewing, dressmaking, gardening, poultry keeping and dairy work. They are for the direct purpose of training and informing young women in such a way that they may be competent in the duties that await them at the farm homes to which they return.

The following brief statements may be more useful than a mere printing of the headings of subjects of the Course of study.

The 20 pupils are divided into 3 groups. One group spends one month in the family kitchen, that is the kitchen which is used for the family of the principal and the teachers. The group of students is allowed 55 ore (13c) per day for each person in the group. They are expected to provide and serve wholesome meals within that amount.

During that month another group of pupils spends the time as follows:—One week in the institution kitchen, receiving instruction and being trained and gaining experience by practice. The following week, the forenoons in cleaning the rooms and preserving fruits, and the afternoons in gardening or other outside work. The third week, again in the institution kitchen. The fourth week, the forenoons in the care of the rooms, with sewing and dressmaking, and the afternoons in laundry work and ironing.

The pupils of the third group take the same kind of work as those of the second group, alternating with them in the institution kitchen week about during the month. The following month the second group changes with the first group, and in the next month the third group has its chance in the family kitchen. The six or seven pupils in each group stay together as a group during the whole of the course. The principal's wife, who is a trained and experienced teacher in Domestic Science, spoke well of the advantages of small groups of pupils over individual or separate work and study.

How the Day is Spent.

The following table will illustrate how a day is spent;—

First Group.

5.45.....Get up; arrange rooms.
6.30.....Oatmeal breakfast, with morning singing.
7 to 8.....House cleaning and laying table for family.
8.....Breakfast of family and teachers.
8.30 to 9.30.....Lecture.
9.30 to 12.....Practical work in the kitchen.
12 to 2.....Dinner and cleaning up.
2 to 2.30.....Rest, or have time to themselves.
3.30.....Coffee.
4 to 5.....Lecture.
5 to 8.....Free time, except for those who, in turn, make the supper.
8 to 8.30.....Supper.

Second and Third Groups.

5.45.....Get up; arrange rooms.
6.30.....Oatmeal breakfast, with morning singing.
7 to 7.45.....Theoretical instruction as to what is to be done during day.
8.30 to 9.30.....Lecture.
9.30 to 12.....Practical work—cleaning rooms, preserving fruits, or alternate weeks sewing and dressmaking. (Three of the group lay the table for dinner).
12.....Dinner.
1 to 3.30.....Gardening or other outside work; on alternate weeks work in the laundry.
3.30.....Coffee.
4 to 5.....Lecture.
5 to 8.....Free time.
8 to 8.30.....Supper.

In addition to the foregoing, students are expected to read a good deal, to write reports and to make calculations in connection with the work they do.

At the beginning of the Course ten periods are devoted to general instruction. After that, while they are working in groups, all the twenty pupils receive instruction in one class by lectures from 8.30 to 9.30 in the forenoons and from 4 to 5 in the afternoons. During the Course twenty-five dinners are studied as to the nutritive value of the commodities which make them up. The value of the food was put at from six to seven cents for a two course dinner per person. Each group, during some time in the Course, receives instruction in cookery for invalids.

Each student has a plot of about 25 ft. x 18 ft. in the garden for practice and instruction work. Each grows some of all the common vegetables on the plot. Besides these plots, there are larger plots which are rented by the groups of students from the proprietor, worked by themselves and used to provide most of the vegetables for their food. This is done for the sake of economy and also for the training which the girls receive in management in all its applications.

As in the case of the People's High Schools and Agricultural Schools, the poorer pupils may receive a bursary or Scholarship. It amounts to 25 Kroner per month, which, as in other cases, would pay about half the total cost of the five months Course when the cost of travelling to and from school, books, etc. are added to the 200 Kroner charged for the course itself.

Short Courses of fourteen days each are given three times during the year. Ten pupils are received at a time for the short Courses.

An example of the kind of work which is being done elsewhere: At the cooking school in connection with the Agricultural School at Haslev, 20 students from the adjacent People's High School receive instruction during their three months' Course; and a five months Course is provided in winter for girls of the locality. Before the cooking schools became common, there were travelling teachers for the wives of Husmend.

SECTION 8: ROYAL AGRICULTURAL AND VETERINARY INSTITUTE.

The following statement from the Report of the visit of the Scottish Commission on Agriculture to Denmark in 1904 describes the Royal Agricultural and Veterinary Institute at Copenhagen as fully as may be useful for Canada. The Canadian Commission concurs in the expressions of appreciation by the Scottish body.

The Royal Agricultural and Veterinary Institute in Copenhagen is the supreme teaching body (in Agriculture). This magnificent institution, which alike on account of its size, its revenue, its staff, its equipment, and the valuable contributions to agricultural and dairy science that have emanated from its research laboratories, forms one of the finest and most important colleges in the world, was established at the expense of the State for the purpose of training veterinary surgeons, teachers of agricultural science, agricultural experts and land stewards, and the sons of the larger farmers who desire to add to their knowledge of practical farming a complete course of training in the sciences relating to it.

The college buildings occupy a convenient situation in their own grounds at the outskirts of the city. They afford very ample and suitable accommodation. The main building forms three sides of a large quadrangle, and it contains about ten lecture rooms and about thirty additional rooms occupied as laboratories and museums. The rooms are all large, lofty and well lighted, and the numerous museums are filled with immense collections of illustrations and specimens of surpassing interest and value.

The veterinary department, in addition to its lecture rooms and museums, occupies a separate building in the fourth side of the quadrangle, which is separated from the main college building by a space of about 40 yards. This distance is found to be sufficient to prevent any nuisance from the live stock kept in the stables and hospitals. No live stock is kept at the college except what is required for the instruction of the veterinary students.

Students and the Courses.

The total number of students attending the college during the past session numbered about 300, of whom 130 were students of Agriculture proper, including Dairying, while the remainder were students of Forestry, Horticulture, Land-Surveying, and Veterinary Science.

The Course of study in Agriculture extends normally over two years, but a supplementary third year's Course is given, and is attended usually by a small number of advanced students who are qualifying for appointments as agricultural teachers. No shorter Courses of instruction are arranged than for a period of two years. Formerly many students attended the classes for one year only, but now the great majority take the full two years' Course.

The veterinary students' Course extends over four or even five years, and the full Course is taken by all the students, as that is essential to enable them to pass the necessary examinations.

Of the total number of agricultural students, Professor Bang expressed the opinion that about one-half intended to return to farming, and the remainder were preparing themselves for various situations.

The students, as in the Scottish universities and colleges, are non-resident, and provide their own board and lodgings in the city as they please. The fees charged for the regular Courses of instruction are very low, amounting to not more than $14 to $19 each.

Theoretical Instruction and Research.

Alike in the agricultural and veterinary departments the subjects taught, and the arrangements of the classes, are similar to those in all similar institutions in this and other countries, and need not therefore be detailed. It is however, important to note that no farm is attached to this great college, nor is any attempt made to teach the students any branch of practical farming. The instruction given is purely theoretical, and the students are expected to acquire a knowledge of the practice of agriculture—where alone it can be learned— on the farm itself. The staff of the college includes 22 professors and lecturers, besides 12 assistants and tutors, and contains in its ranks a number of able men, of whom Professor Bang has a world-wide celebrity on account of his important researches and discoveries in animal tuberculosis. Attached to the college are large research laboratories, which receive an annual subsidy from the State of about $36,960 per annum, in addition to the annual subsidy of $70,040 given to the college. It is entirely due to this liberal support that the staff and equipment of the college have attained to such a high standard of ability and completeness, and that it has been possible to carry on these researches, which have produced results of such wide-reaching importance, not only to the dairy industry of Denmark and of the world, but also to the whole human race in those countries where tubercular disease has been for so long a dreaded scourge.

CHAPTER XXIX: AGRICULTURAL ORGANIZATION IN DENMARK.*

Agricultural organization has contributed materially towards the general development of Danish agriculture. Though old in years it is only within the last generation that it has really developed and branched out.

Denmark possesses many conditions favorable to growth of organization. Distances are short; population is comparatively dense; the people, generally speaking, live under similar climatic and economic conditions; and through their municipal system, founded in 1840, and through the influence of the Rural High Schools and Agricultural Schools they have gradually become ripened to support a well-developed organization.

The great railway extensions (1870-1880) created a new freer outlook for the people, and did much towards neutralizing the peculiarities and social class distinctions of individual districts, removing the former sense of isolation, facilitating personal contact and thereby that sense of co-operation which is the foundation of a richly organized life.

When hard times at the close of the seventies rolled over Danish agriculture like a tidal wave, refuge was again sought in that help which had formerly stood the test—organized effort. A large number of organizations were started which have undoubtedly done a great deal towards enabling the people to successfully ride the storm.

The Royal Danish Agricultural Society.

This is the chief corner-stone of agricultural organization, being not only the oldest organization of its kind in Denmark, but as stated by the celebrated historian, Prof. Edward Holm, "undoubtedly the first organization of importance which has been formed in our Mother Country for the purpose of promoting a great national aim". Its establishment in 1769, in the period preparatory to the great agricultural reforms brought about at the close of the century, was the result of the agrarian agitation of that day; and from its very inception the Society secured the co-operation of many of the best men of the country in its work for economic progress in Danish agriculture.

During the past four and a half generations the Society has promoted and carried through a multiplicity of useful measures which changing times and conditions have suggested, and which were considered beneficial to agriculture. It has nursed them, tested them, and when they succeeded brought them over the difficult starting points until they could be safely transferred to the State or to independent institutions.

*Condensed from a statement kindly provided by Mr. H. Hertel, Secretary, Royal Danish Agricultural Society.

The State Government has frequently sought the counsel and acted on the advice of the Society, to whom it has referred the administration of measures which had its endorsement and financial support. This applies at present to the services of consulting experts in the several branches of agriculture; supplementary training of creamery buttermakers; official tests of agricultural machines and implements; and various lines of field experiments which are placed under the immediate supervision of special committees appointed by the Society for the purpose.

Outside of expert matters, the State Department of Agriculture does not directly employ agricultural experts (as in France, England, Norway and Sweden), nor any specially qualified Agricultural Council (as in Prussia and Belgium); hence the Government uses as its advisers the Royal Danish Agricultural Society, the Royal Agricultural College, the Central Co-operative Associations, the Veterinary Board of Health, and others.

Other fields covered by the Society are:—Publication of Agricultural Literature, Training of Pupils, Creamery Instruction, Feed Stuff Control in the Free Port of Copenhagen, and the investigation by committees of matters and conditions of immediate importance to agriculture. The Society endeavors to solve practical questions in a practical way through prize awards and public lectures; awards prizes and medals for agricultural industry, and gifts of books to Parish lending libraries; organizes agricultural conventions; and acts generally as a connecting link between domestic and foreign agricultural institutions. The management consists of 3 Presidents, 36 Directors, Secretary and Treasurer. The Presidents and one-half of the Directors are elected by the members of the Society, the other half by Farmers' Associations, one member for each county. Thus every section has opportunity to affect the activity of the Society, which becomes truly the representative of Danish agriculture.

The membership is between 750 and 800, and the annual fee is 20 Kroner ($5.40).

Farmers' Associations.

When the agricultural reforms were carried through in the latter part of the eighteenth century and conditions were created for rural progress, patriotic men conceived the idea of establishing organizations for "the promotion of morality and ability among the rural population." These developed later into Farmers' Associations, which have greatly increased in importance, and now stand as the organization through which effect is given to the general development of agriculture.

The first local Farmers' Association was founded in 1805; in 1850 there were 25 Associations, in 1860 about 40; now there are 116, with a membership exceeding 86,000, who pay in annual fees 201,000 Kroner (about $54,270).

The activities of the Farmers' Associations are directed more particularly along cultural and technical lines, while as a rule they do not touch social and political problems. Their main efforts include live stock shows, exhibitions and lecture courses. They direct farm competitions, local field experiments, and

the co-operative purchase of fertilizers and feed stuffs; they also carry on local fertilizer experiments, etc.

Some Associations publish official organs for their members; others issue annual reports. A number of them employ consulting experts.

The work of these Associations is managed by Boards of Directors elected by the members at their general meetings, held once or twice a year, in the Spring and Autumn.

Provincial Organization.

To avoid the danger of the work and efforts of the Farmers' Associations becoming weakened or divided on accont of too many locals being established, and as a number of problems presented themselves which could not be handled by their individual limited means, the Local Associations have formed themselves into five Provincial Associations. The latter have developed a great and important activity through the large Provincial live stock shows and exhibitions, through the lecture courses in Local Associations, publication of hand books, herd competitions, establishment of benefit societies, competitions among well cultivated small holdings with educational trips for the owners, establishment of local field experiments and demonstration fields, establishment of domestic science night schools, etc. Each Provincial Association holds an annual meeting of delegates to which Local Associations send representatives, when the programme of the following year's work is discussed and formulated. Such annual meetings of progressive farmers from different localities contribute greatly to the advancement of the work of the Local Associations. Their work is here submitted to a test and investigation that makes for increased solidity; and that brings uniform efforts to bear upon subjects which can be promoted only by being handled uniformly in all localities in the Province.

National Executive.

Many of the problems being identical in all parts of the country, the several Provincial organizations formed, in 1893, a National Executive of 13 members selected from the five provinces. This Executive determines matters that are to be submitted to the Provincial meetings of delegates, and seeks to increase the influence of the Provincial organization with all the Locals included in the Provincial Associations.

Small Holders' Associations.

Although the Farmers' Associations of late years have sought in an increasing measure to assist the owners of small holdings, it was anticipated that the time would come when the latter would demand their own special organizations. In 1901 Small Holders' Associations were started. Although in a measure working along the same lines as the Farmers' Associations, these newer organizations, on account of their special conditions and the difference between the smaller and the larger farms, have paid special attention to matters which the older associations as a rule did not touch, viz:—seed culture, market gardening, bee and poultry keeping, domestic industry, etc.

In 1902 the individual Small Holders' Associations formed five Provincial Associations, and in 1903 a National Executive of 11 members whose object it is to work for organized co-operation among the individual associations, and to represent all the Locals included in the organization in their relations with the State and with other institutions of various kinds.

The five Provincial Associations comprise:—in Jutland 380 Locals with 20,600 members; in Zeeland 198 Locals with 12,000 members; in Fyen 110 Locals with 4,000 members; in Lolland-Falster 20 Locals with 1,350 members; in Bornholm 15 Locals with 1,000 members. This gives a total of 723 Local Associations with 38,950 members; and adding 116 Farmers' Associations with 86,000 members, we have the marvelous showing of 839 Associations of agriculturists with 124,950 members within a territory no larger than that part of the Province of Quebec south of the St. Lawrence River and east of Quebec City.

SPECIAL ASSOCIATIONS.

During the past two decades a large number of special organizations have grown out of the Farmers' Associations, and these have taken up special problems for solution and have given them closer attention than the Farmers' Associations could possibly bestow upon individual objects.

Horse and Cattle Breeders' Associations were formed after the passing of the Domestic Animal Act of 1887. The first of the *Swine Breeders' Associations* was started in 1894. The first *Sheep Breeders' Association* was formed in 1903. Usually each Breeders' Association includes a parish, and has for its object the development of domestic animals by the use of good sires to selected females owned by the members. There are now about 270 Horse, 1,260 Cattle, 253 Swine and 102 Sheep Breeders' Associations in Denmark. They have all to some extent formed Provincial organizations in order to promote uniformity in their work.

Three large *Poultry Associations* work for the advancement of the poultry industry. Other organizations seek to promote *Bee Keeping*, etc.

The *Dairy Record Associations*' object is to place the live stock industry upon a profitable basis, by the discovery and disposal of unprofitable individual animals. They carry on a systematic investigation and record of the feeding and of the milk and butterfat yield of the individual cows in the herd. Other branches of the farmer's business such as swine, etc., are gradually being brought in under a similar system of control, and conditions are thereby created for an improved system of farm book-keeping. The first Dairy Record Association was inaugurated in 1895; now there are more than 500, and these in turn have organized provincially. The work of these Associations is being copied by other countries and is receiving considerable well merited attention abroad.

Finally, reference may be made to a number of branch organizations of the parent stock which seek to improve the fruit industry, gardening, plant culture, etc., but space does not permit of detailed description.

The *Agricultural Credits Associations* were established under Law of 26th March, 1898. Their object is to advance to their members temporary loans for current working expenses. The loans may not exceed 3,000 Kroner ($810)

in amount nor nine months' time in a year. The State Treasury has placed 5,000,000 Kroner at the disposal of these Associations, payable in cash and drawing interest at the rate of $3\frac{1}{2}$ % per annum. There are at present 168 such Associations, 123 in Jutland and 45 on the Islands.

Dairying Organizations.

Dairying is the most important special branch of Denmark's agricultural industry, and two kinds of organizations have been formed for its advancement, namely, *The Creamery Associations* and *The Danish Creamery Buttermakers' Associations.*

The former, 21 in number, include 900 creameries. They conduct educational butter shows and lecture courses. They gather and compile statistical information and records to show the economic side of creamery management. They conduct co-operative purchase and distribution of creamery supplies, etc. These Associations have also formed Provincial organizations in Jutland and Salland for the purpose of providing a connecting link between the individual Associations, and on the whole to watch over the interests of the industry. Further, following the example of the Farmers' Associations, the Provincial Creamery Organizations have formed a National Executive composed of the presiding officers of the several Provincial organizations who enquire into and make recommendations regarding subjects which ought to be brought up for consideration and discussion at the annual meeting of the delegates, and on the whole work for united action within the dairy industry.

The Buttermakers' Association was founded in 1887. It works for professional development by the union and increased training and ability of its members. It is divided into 24 Locals, each with its committee of management and self government. It holds an annual meeting of delegates and publishes an official organ. It has now a membership of about 1,800 and is directed by an Executive Committee of 7 members.

These dairy organizations have, in turn, branched out. There are, for instance, six Butter Export Associations of which the most important is *Danish Creameries Co-operative Butter Export Association* with an annual business of upwards of 12,000,000 Kr. Another has an annual turn over of about 8,000,000 Kr.

There are also the *Danish Creameries Butter Marks Association* with a membership of 1,326 creameries. Its object is to use a uniform Trade Mark, registered in Denmark and in England, on all packages containing Danish butter.

There are also the *Danish Creameries' Co-operative Supplies and Machine Shop* and various others.

Co-Operative Associations.

Reference to the Export Associations brings us into the field of organized Co-operation. We consider 1866 as the year of its birth, when the first co-operative store was established, but it is only during the latter two decades under the pressure of declining markets that co-operative activities have gained full power.

The Co-operative Associations have taken up joint purchase and sale, joint production and improvement of farm products.

Through 1,164 co-operative creameries, 38 co-operative pork packing establishments, and more than 1,250 co-operative stores, through Danish Co-operative Egg Exports, through some 20 Associations organized for the purchase of supplies, fertilizers, feed stuffs, etc, they contribute towards the widest possible dissemination of the results of experience gained from time to time. Through them the farmer is in a large measure placed under the control and supervision of his peers, and gradually trained to keep his own wilfulness within certain well defined limits, and let his minor individual interests give way to the greater common interests.

The co-operative principle is gradually creating a feeling of solidarity, a community spirit allied with the best thought of the times.

The several co-operative organizations have joined forces through centralization. The co-operative creameries have already been referred to. The co-operative pork packing establishments have formed an organization, known as *The United Danish Co-operative Pork Packing Association*, to look after their joint interests in relation to the legislative powers, to transportation and market problems, and for the rational development of the swine industry, etc.

The co-operative stores have established a wholesale house from which 1,250 stores are supplied with merchandise.

Danish Co-operative Egg Exports is in reality the union of some 550 Local egg circles.

The several Provincial organizations formed in 1898 the *Central Co-operative Committee of Denmark* to watch their joint interests abroad. Ten Provincial and National co-operative organizations are at present represented on this Committee, and others may obtain representation upon a two-thirds vote of the Committee. "The Co-operative Journal" is the official organ.

The foregoing sketch of the agricultural organization is drawn in broad lines and omits much. For instance, the *Agricultural Mutual Benefit and Educational Organizations* are also worthy of mention, such as domestic servants, workmen, savings and insurance Associations, etc.

Sufficient has been said, however, to convey an impression of the throbbing, comprehensive, practical and energetically directed agricultural organization which in its many ramifications has contributed so much towards agricultural development in Denmark, and which has in several ways served as an example to other countries.

TRAVELLING SCHOLARSHIPS.

For more than half a century, under the auspices of the Royal Agricultural Society of Denmark, grants were made to assist young farmers to visit some of the best farms in the various districts in the Kingdom. The following is quoted from the evidence of Dr. Robertson before the Canadian Parliamentary Committee on Agriculture: "When I went to Denmark first, 25 years ago, I learned that the leaders of the movement for the improvement of agriculture there recognized the value of the teaching power of the most successful farmers in the Kingdom.

The Royal Agricultural Society by means of grants enabled hundreds of young farmers to learn the systems and methods of farming from many of the best farms in the country. These young farmers lived and worked and learned on these selected farms. The period might be three months or six months or a year; and sometimes a young farmer would work on two, three, or even four such farms before he returned to his own home. I, myself, visited a farm where 70 such student farmers were working. They were not going to college to be trained in the theories; they were on this farm to learn how that farmer farmed to make money.

"That farmer kept 250 dairy cows. He also grew a large quantity of sugar beets. I think he had 700 acres in that farm. These young farmers were given instruction in the theories once a week. The practice was not confined to large farms. All over Denmark the best farmers of the locality could have their farms approved and receive these young farmers who came under grants from the Royal Agricultural Society. In general the conditions were that the student farmer must work for three or six months or a year, and at the end of every period write a report to the Society upon what he had seen and done and learned. In a few years the best practice of the best farms became the common knowledge of the farmers of the whole kingdom.

"By means of that system the best farms, where the men were doing remarkably well, became known all over Denmark, and more than that their systems and methods were adopted. Afterwards came the co-operative organizations for creameries, and bacon curing estabishments. These co-operative societies are for managing some part of the agricultural business of the locality and not for doing the farmwork. Every locality is practically doing for itself in detail what the Royal Agricultural Society did for the Kingdom long ago. The community spirit which the Danes have in a very large measure—more than we have as yet, perhaps because of the conditions of their national life in the past—has been applied to the problems and difficulties of the farms; and so they have risen from poverty, from dire poverty after the war with Germany, to being regarded as the most prosperous agricultural people as a whole on the face of the earth to-day. I know localities in Canada where farmers are doing better than in Denmark. I know such localities also in the United States and in England and Scotland. The Danes excel in having levelled up in general; we in Canada excel in the exceptions. Take one illustration. They send large quantities of butter, bacon and eggs to the United Kingdom. They get high prices because of the superiority of the quality resulting from their methods of managing. They take out of the United Kingdom annually over eight millions of dollars more than other nations obtain for an equal quantity of the same products. They get more, as a premium on the quality of their butter, bacon, and eggs, than is spent on our whole system of rural education in Canada. That is a large tribute collected from a foreign nation by the ability of these people. They are using it for further training and further enlightenment and further development. Fifty years ago students were sent from Denmark to Scotland to study agriculture there. Since that time the practice continues for some farmers' sons to spend 6 months, a year or more on Scottish farms.