

that they were not confined to the religious and mercantile classes, but were open to the few agriculturists who cared to attend them. After annexation the Christian missions established several schools, that at Lahore as early as 1849. Government soon followed their example and founded schools in the cities and larger towns, while District officers founded and maintained schools at minor places out of Local funds.

History.

In 1854 the Educational department was first organized. It was administered by a Director of Public Instruction, with 2 inspectors, 10 deputy, and 60 sub-deputy-inspectors. The schools directly supported by Government numbered 108 (4 District, 100 *tahsil*, and 4 normal schools). The department cost about 2 lakhs per annum, and in addition a cess of 1 per cent. on the land revenue provided for the maintenance of numerous village schools. The Persian script, already in use throughout the Western Punjab, and in two-thirds of the indigenous schools of the eastern Districts, was unhesitatingly adopted as the standard; but the choice of a language offered greater difficulties. Punjābi is not a literary language; and Urdū, though unpopular, was so generally in use, especially in the law courts, that it was perforce adopted. Gurmukhī and Hindī schools were, however, to be encouraged wherever the people desired them.

Difficulties in administration soon arose. All the schools were under the direct control of the department, and District officers were dissociated from their working. The lower grades of officials were foreigners, imported from Hindustān and without influence over the people. Accordingly, in 1860, all the vernacular schools were entrusted to the Deputy-Commissioners and *tahsildārs*, the unpopular inspecting agency being abolished. But this measure failed to provide for the professional supervision of the schools, and it was soon found necessary to appoint an inspector in each District as the Deputy-Commissioner's executive agent and adviser in their management. In the same year provision was made for the levy of school fees. Superior Anglo-vernacular *zila* (District) schools were also established, and the personnel and curriculum in all schools improved. In 1864 Government colleges were established at Lahore and Delhi, and in 1865 a scheme for an Oriental University was formulated. In 1868-70 the status of village schoolmaster was improved, the minimum salary being fixed at Rs. 10 a month; but funds ran short, and, as the immediate result of this measure, a number of schools were closed. The decentralization of finances in 1871, however,

enabled the Local Government to devote more adequate funds to education, and the village schools rose rapidly in numbers and efficiency.

As now constituted, the inspecting staff of the department consists of a Director of Public Instruction, 5 Inspectors, 2 Inspectresses, 9 assistant inspectors, 28 District inspectors, 24 assistant District inspectors, and 2 assistants to the Inspectresses. The Director and two of the Inspectors are Europeans and members of the Indian Educational Service, as are the principal and three professors of the Government College, the principal and the vice-principal of the Central Training College, the principal of the Mayo School of Art, and the head master of the Central Model School, Lahore. The rest of the staff is drawn from the Provincial service, which also supplies a professor and five assistant professors to the Government College, the vice-principal of the Mayo School, the assistant superintendent of the Central Training College, the registrar of the office of the Director of Public Instruction, the superintendent, reformatory school, and the reporter on books, Educational department. Four members of this service are Europeans. The assistant inspectors are selected from the Subordinate service, which comprises 197 appointments in all, and supplies teachers to the principal colleges and schools. The majority of the teaching staff, except that of the Government high schools, are, however, employed by local bodies, District boards, and municipal committees, which engage teachers for the schools under their control subject to certain departmental rules, or borrow members from the Subordinate service for the more important posts.

The Punjab University at Lahore was established in 1882. Prior to that year colleges and schools had been affiliated to the Calcutta University. In 1868 a proposal to establish a Punjab University had been negatived by the Government of India; but a grant-in-aid of Rs. 21,000, equal to the annual income from private sources, was sanctioned for the improvement of the existing Government College at Lahore, and in 1870 Sir Donald McLeod inaugurated the new Punjab University College. The senate of this institution established an Oriental school and college at Lahore, its objects being to promote the diffusion of European science, as far as possible, through the medium of the vernacular languages, and the improvement and extension of vernacular literature generally; to afford encouragement to the enlightened study of Eastern classical languages and literature; and to associate the learned

Present organization.

The Punjab University.

and influential classes with Government in the promotion and supervision of popular education.

In 1877, on the occasion of the Imperial Assemblage at Delhi, the movement in favour of a Punjab University was revived and resulted in its incorporation under Act XVII of 1882. The University was empowered to grant degrees in Medicine in 1886, and degrees in Law and Science in 1891. There are five Faculties—Oriental Learning, Arts, Law, Medicine, Science and Engineering. The Syndicate is the executive committee of the Senate. Under the Indian Universities Act of 1904 the Senate has been reconstituted. It now consists of 75 ordinary fellows, of whom 60 are nominated by the Chancellor and 15 elected by the Chancellor's nominees. There are also 10 *ex-officio* fellows, 2 of whom are also ordinary fellows.

Collegiate  
education.

Prior to 1870 the Calcutta University had dominated the higher secondary education of the Punjab; but soon after that year the Lahore College began to hold its own examinations, which were better adapted to the requirements of the Province. After its incorporation as a university the number of graduates was at first very small, only 16 qualifying in 1883-4, in which year the expenditure was Rs. 21,000. In the next six years, however, progress was rapid. Diplomas, being passports to higher employment under Government, were eagerly sought after, and in 1889-90 as many as 41 students graduated, and the expenditure had risen to Rs. 60,912.

✓ In 1883-4 there were only three Arts colleges: the Government and Oriental Colleges at Lahore, and St. Stephen's College at Delhi. The number of candidates for matriculation was 551, and of passes 224, the average cost of each student's education being Rs. 400, and the total expenditure on colleges Rs. 79,223. By 1889-90 the number of Arts colleges had risen to seven, and that of matriculation candidates to 1,016. Passes had increased to 462, and the expenditure to Rs. 2,06,346, while the cost of each student's education had fallen by Rs. 65, owing to the levy of higher fees and the larger number of students. In 1888 the Dayānand Anglo-Vedic School at Lahore, established by the Arya Samāj, was raised to the status of a college, and became in a few years one of the most largely attended in the Province. Another important unaided institution, the Islāmīa College at Lahore, was opened in 1892 by the Muhammadan community; and in 1897 the Sikhs established the Khālsa College at Amritsar. By 1900-1 the number of Arts colleges had risen to 12, with

2,148 matriculation candidates and 1,214 passes. Expenditure had risen to Rs. 2,89,582, but the average cost of a student's education was only Rs. 185, or less than half its cost in 1883-4.

The only college which imparts higher professional teaching is the Lahore Medical College. Established in October, 1860, it was raised to collegiate status in 1870. In the latter year it had 68 students. In 1887-8 a monthly fee of Rs. 2 was imposed. In 1889 the erection of the Lady Lyall Home for female students added to its usefulness.

The Law School at Lahore is of collegiate status, and prepares students for the degree of Bachelor of Laws. Founded in 1870 with two departments, an English and a vernacular, and a two years' course, it was remodelled in 1889-90, and the course extended to three years, only graduates in Arts being admitted to the Licentiate in Law examinations. In 1891-2 intermediate and LL.B. classes were formed, and two sets of examinations prescribed, one leading to the Licentiate, the other to the LL.B. degree. In 1897-8 the number of students had reached 434, the highest limit; but the supply for trained lawyers was in excess of the demand, and in the next three years the numbers fell to 248.

The following table shows the chief results of university examinations:—

| Passes in  | 1883-4 | 1890-1. | 1900-1. | 1903-4. |
|--|--------|---------|---------|---------|
| Matriculation . . . . .                            | 224    | 384     | 1,214   | 1,121   |
| First or Intermediate in Arts or Science . . . . . | 39     | 87      | 244     | 233     |
| Ordinary Bachelors' degrees . . . . .              | 13     | 41      | 127     | 133     |
| Higher and special degrees . . . . .               | 3      | 8       | 42      | 42      |

Secondary schools are either middle or high. A middle school usually contains a primary as well as a middle department. A high school, in addition to its high department, usually contains these two also. The middle course extends over three classes, and terminates in the case of vernacular schools in the middle school examination. The high-school course extends over two years, and ends with the entrance examination of the Punjab University. English is not taught in the vernacular schools, and is commenced only at the upper primary stage in the Anglo-vernacular schools. The vernacular is thus the medium of instruction for all departments up to the third middle class, English being the medium only in the high department.

The effective organization of secondary education dates from

1860. As education spread, it became easier to obtain men capable of teaching up to the entrance standard, and it was thus found possible to increase the number of high schools at comparatively small cost. The vernacular middle schools progressed even more markedly. In 1877 the Punjab Text-Book Committee was appointed to prepare suitable English and vernacular Readers, and in 1880-1 the establishment of the Central Training College helped to provide better qualified teachers.

In 1883-4 there were 25 high schools with 912 scholars, and 198 middle schools with 5,107 scholars. In the next six years the number of high schools had risen to 41, with a satisfactory increase in the numbers on the rolls; and though the number of middle schools had decreased, the number of scholars had risen. In 1882, in accordance with the recommendations of the Education Commission, all schools except those attached to training institutes were made over to local bodies for management, and rules were framed to encourage their conversion into aided schools, the further extension of secondary education being made dependent on *private institutions*. Scholarships were made tenable on a uniform system, and Jubilee (now known as Victoria scholarships) and *zamin-dāri* scholarships were founded to foster education among Muhammadan and Hindu agriculturists. Fees were raised, and a system of payment by results was introduced into the grant-in-aid rules. Special attention now began to be paid to moral and physical instruction and to school discipline. In furtherance of the new educational policy of the Government of India, one high school in each District has, since 1904, been maintained as a state institution.

Primary  
education  
boys).

The first step in primary education was an attempt to raise the indigenous schools of the Punjab to a higher level of efficiency. But this scheme failed; and it was found necessary to convert the principal indigenous schools into Government schools, or branches of mission schools, or to bring them more or less under the influence of District or municipal committees. The educational cess, however, realized so little that salaries sufficient to attract competent teachers could not be offered, although no attempt was made to provide a school for every group of villages. It was accordingly resolved to reduce a number of schools in order to raise the efficiency of the remainder. The result was that schools were accessible only to a small proportion of the boys of school-going age; and Sir Charles Aitchison recognized the necessity of improving the indigenous schools, *without destroying their distinctive*

character, by the offer of liberal grants-in-aid on easy conditions. The system was accordingly reorganized, the management of the schools being transferred to local bodies, which were, on the other hand, required to devote a fixed proportion of their income to primary education. Revised grant-in-aid rules provided for payment by results and staff grants to certificated teachers employed in aided schools. Specially liberal grants were made to indigenous and low-caste schools. The introduction of inter-school rules and good-conduct registers conduced to the moral, as the gymnastic instruction did to the physical, progress of the boys. The recommendations of the Education Commission of 1883 rendered it possible to give effect in greater detail and with greater precision to the policy inaugurated by Sir Charles Aitchison. Schools and scholars increased in numbers and efficiency, though the imposition in 1886 of higher fees on sons of non-agriculturists reduced the number of boys of that class in the lower primary department. By 1889-90 the number of aided schools had risen to 300, with 10,000 pupils; and they continued to progress until 1896-7, when the growing popularity of the Government schools, combined to some extent with the pressure of bad seasons, checked their advance. On the other hand, the District boards, with many pressing calls on their resources, could not meet the demand for primary education. Numerically, primary schools show but a slow advance, but in efficiency their progress has been marked. The abolition of the lower primary examination in 1898 enabled the course of instruction to be made continuous for fully five years, and permitted controlling officers to devote more time to questions of organization and discipline, methods of instruction, and so on, at their inspections. In the upper primary department more time was allotted to object lessons and elementary science.

In 1886 the necessity of a simpler and more practical curriculum for sons of agriculturists led to the establishment of *zamīndāri* schools. In these, half-time attendance only is required, and they are closed during each harvest. Elementary reading and writing, in the character chosen by the people, and arithmetic by native methods, are taught. Qualified teachers in these schools received extra pay, and arrangements were also made to train teachers in those subjects in the normal schools. From 1886 to 1892 the schools prospered; but the people then began to realize that they led to nothing, as they did not fit boys for Government employ, and

ever since they have been losing ground. In 1901 the *zamin-dāri* schools numbered only 187, with 3,887 pupils. In view of their increasing unpopularity, steps were taken in 1904 to open village schools with a simpler course of studies, planned with special reference to the requirements of agriculturists. The Punjab possesses a few special low-caste schools. These are mainly dependent upon missionary enterprise, and are, like all indigenous schools, eligible for grants-in-aid on easy conditions.

Female  
education.

Encouraged by results in the United Provinces, several girls' schools were opened in the Punjab as early as 1855, and in 1862 Sir Robert Montgomery held a great *darbār* at Lahore in order to enlist the co-operation of the chiefs and notables of the Province. Under this impulse nearly 1,000 schools with 20,000 girls had been opened by 1866, but the results were unsubstantial and the attendance soon fell off. A sound system of female education was only founded in 1885-6, in which year it was attempted to make the existing schools places of healthy elementary education, adapted to the simple requirements of the people, and rewards for diligent work were substituted for payments for mere attendance. An Inspectress of Schools was appointed in 1889. As yet, however, female education can hardly be said to have taken firm root except in the Central Punjab (Lahore, Amritsar, Gujrānwāla, Siālkot, and Jullundur), where Sikh influences are strong, and among the Hindu element in the western Districts. There is, however, throughout the Province much private teaching, almost exclusively religious, by Hindu, Sikh, and Muhammadan women, and, as far as religious objections allow, by the ladies of the Zanāna and other Christian missions. And the most gratifying feature of recent years has been the steady increase of private enterprise on behalf of female education, several unaided schools, notably the Kanya Mahā Vidyālla at Jullundur, having been opened. The establishment in 1905 of the Normal School for Women at Lahore marks a new era in the development of female education in the Province. Its success, which depends much on the sympathetic co-operation of the educated classes, will to a considerable extent remove one great obstacle in the way of the advancement of the education of girls—the lack of qualified women teachers.

Special  
education.  
Training  
institutions.

The Lahore Central Training College was opened in 1881, the first of its kind in India. Since its foundation most of the secondary schools have been supplied with trained teachers, and a few years ago the Punjab was able to spare a number

of trained and experienced men to assist in revising and improving the training school system in the United Provinces. There were at first two classes: the senior English, which prepared teachers for higher work in English secondary schools; and the senior vernacular, which trained men for all kinds of purely vernacular teaching in secondary schools. In 1883-4 a junior English class was opened, to train teachers for the primary classes of Anglo-vernacular schools. With the extension of university education, the preliminary educational qualifications were raised; and since 1896 only B.A.'s, or those who have read up to that standard in a recognized college, are admitted to the senior English class. For admission to the junior English class men must have either passed the intermediate examination or attended the classes of a college for two years. In 1904 this institution was completely reorganized. The staff has been strengthened, the period of study has been raised to two years, a clerical and commercial class has been added, and the number of available stipends much increased. A teacher's degree examination, open to all graduates in Arts who have attended the Central Training College for another year after passing the senior Anglo-vernacular certificate examination, has also been instituted.

Normal schools were originally founded to train teachers for both middle and primary schools, but have been restricted to training for the latter alone since the organization of the Central Training College. The schools are under the control of the Inspectors; and in pursuance of the policy of having one in each circle, normal schools were established at Jullundur in 1887 and at Multān in 1891. Normal schools.

Prior to 1886 the Medical and Veterinary Colleges, the Law School, the Engineering Class of the Punjab University, and the Mayo School of Industrial Art were the only real technical institutions in the Province, the few so-called industrial schools being mere workshops in which inferior articles were made at a high cost. In the three following years, however, some progress was made, the chief step being the establishment of the Railway Technical School at Lahore to provide instruction for the children of the railway workshop employés. This school has a primary and a middle department; the course of study is much the same as in the ordinary schools, with a progressive course of carpentry, drawing, and practical geometry. The functions of the Mayo School were also extended, and private industrial schools were encouraged. An entrance examination in science and a clerical and commercial examination were Technical education.



also instituted, the one in 1897, and the other in 1900. The movement thus begun bears fruit, and some industrial schools have sprung up at the larger training centres, such as Amritsar, Ludhiāna, and Delhi; but the number of students is still small. In ordinary schools also the course of study has been remodelled, so as to include practical mensuration and agriculture in primary schools, and to develop the powers of observation by object lessons.

European  
education.

The schools for Europeans and Eurasians in the Punjab were included in the scope of Archdeacon Baly's inquiry in 1881. No less than 440 children of school-going age were then found to be receiving no education whatsoever. Under the Resolution of the Government of India passed in that year, however, the grants to existing schools were increased, and Rs. 11,945 was given by Government for enlarging school-houses. The absence of an enactment making attendance at school compulsory, the apathy of parents, and the migratory character of the European and Eurasian community have been great obstacles to advancement. The schools, especially in the plains, labour under many disadvantages, the lack of trained teachers being specially felt. Of recent years the progress made has, nevertheless, been considerable. In 1903, 46 Europeans and Eurasians passed the matriculation, 94 the middle, and 102 the primary school examination.

Muham-  
madan  
education.

When in 1871 attention was first directed to the backwardness of education among Muhammadans in India, inquiry showed that in the Punjab the Musalmān community had availed itself of the facilities offered as fully in proportion to its numbers as the Hindus. Much had been done to foster the study of Arabic and Persian. Indeed, the latter had been favoured at the expense of vernacular languages and literatures, and it was felt that no special measures for the advancement of Muhammadan education were required. It was, however, found that Muhammadans seldom prosecuted their studies beyond the middle schools, and that few attended colleges. Muhammadan boys spent years in learning the Korān by rote in the mosques, and thus reached manhood before their education could be completed. The poverty of the Muhammadans as a community, and the fact that they were mostly agriculturists, also militated against their higher education. Progress was, however, made, and in 1883-4 the Muhammadan college students were thrice as numerous as in 1870-1. Nevertheless, their number in the secondary schools and colleges remained proportionately far below that of the Hindus, and the necessity

of special measures was realized. In 1887 Jubilee scholarships (now called Victoria scholarships), tenable in high schools and colleges, were founded by Government; and local bodies were authorized to establish them for middle schools. In addition, half the free or semi-free studentships in secondary schools and scholarships were reserved for Muhammadan boys. The community itself also began to realize the necessity for self-help, and various societies were started which organized Anglo-vernacular Muhammadan schools in the cities and large towns. The result was a rapid advance in higher Muhammadan education, though the Hindus and Sikhs still retained the lead. In the ensuing decade the community showed a growing preference for the public schools, especially those in which English was taught, and availed itself fully of the scholarships and studentships offered, though the societies continued to maintain many schools with or without Government grants-in-aid. The following table shows the number of Muhammadans under instruction in public institutions:—

|                           | 1891.  | 1901.  | 1904.  |
|---------------------------|--------|--------|--------|
| Arts colleges . . . .     | 123    | 309    | 338    |
| Secondary schools . . . . | 13,900 | 19,512 | 21,133 |
| Primary schools . . . .   | 36,252 | 43,772 | 50,440 |
| Special schools . . . .   | 513    | 1,224  | 1,103  |

In 1883-4 the proportion of the population of school-going age in the Punjab under instruction was 4.2 in 100, and in the course of the next six years it rose to 7.8 per cent., but since then it has showed no advance. This is mainly due to the steady decline of private schools, which do not conform to any of the departmental standards, and are not inspected by the department. People either send their boys to the public schools, or keep them at home to help in domestic or other work. The percentage of males in British Districts able to read and write was 6.8 according to the Census of 1901, and that of females 0.37. The most advanced Districts are Simla, Amritsar, and Multān; the most backward are Hissār, Rohtak, and Gurgaon.

General educational results.

Fees in Government schools and colleges are fixed, and the proportion of free and half-rate studentships is also specified. Schools and colleges which receive aid from Government are bound to observe the rules laid down for them in this behalf. Unaided schools, however, are quite free in the matter of fees. The majority of them charge very low fees, as compared with

Finance.

the Government and aided institutions. The following table shows the main features of educational finance in 1903-4:—

EXPENDITURE ON INSTITUTIONS MAINTAINED OR AIDED  
BY PUBLIC FUNDS

|  | Pro-<br>vincial<br>revenues. | District<br>and<br>municipal<br>funds. | Fees.    | Other<br>sources. | Total.    |
|--|------------------------------|--|----------|-------------------|-----------|
|  | Rs.                          | Rs.                                    | Rs.      | Rs.               | Rs.       |
| Arts and professional colleges . . . . . | 1,71,718                     | 7,983                                  | 68,282   | 28,198            | 2,76,181  |
| Training and special schools . . . . .   | 1,05,748                     | 10,930                                 | 8,760    | 28,665            | 1,54,103  |
| Secondary boys' schools                  | 1,00,549                     | 2,77,256                               | 4,42,744 | 99,424            | 9,19,973  |
| Primary boys' schools . . . . .          | 8,123                        | 3,58,909                               | 91,897*  | ...               | 4,58,929  |
| Girls' schools . . . . .                 | 69,904                       | 63,141                                 | 42,303   | 79,936            | 2,55,284  |
| Total                                    | 4,56,042                     | 7,18,219                               | 6,53,986 | 2,36,223          | 20,64,470 |

\* Including receipts from other sources.

Registered  
publica-  
tions.

In 1901 the number of publications registered under the Printing Press and Books Act was 1,478. Of these, 425 were poetical works and 409 religious treatises. Language and pictures came next, with 113 and 82 respectively. Except perhaps in its popular poetry modern Punjab literature displays little originality, and many of its productions are merely translations of English works into the various languages and scripts of the Province.

News-  
papers.

The number of newspapers published in 1903 was 209. The only important English newspapers are the *Civil and Military Gazette* and the *Morning Post*, published daily at Lahore and Delhi respectively. The native-owned newspapers include 31 published in English, 1 in English and Urdū, 164 in Urdū, 6 in Hindī, and 7 in Gurmukhī. The leading papers are more or less actively political, their columns being devoted mainly to the criticism of Government measures and policy. Generally speaking, these journals are either sectarian, or the mouthpieces of various classes or cliques of the educated community. Few are of much importance, and many are little more than advertising sheets. The *Tribune* and the *Observer*, published in English at Lahore, are the leading Hindu and Muhammadan organs respectively.

Medical.

The Civil Medical department is controlled by an Inspector-General of Civil Hospitals. The department was organized in 1880, prior to which year hospitals were under the Inspector-General of Prisons. Each District is under the medical charge

of a Civil Surgeon, who is stationed at the District headquarters (Simla has two officers of this class); but in the summer months a Civil Surgeon is stationed also at Murree, and the Civil Surgeon of Gurdāspur District is transferred to Dalhousie. As a rule, the chief hospital of each District is at its head-quarters, and is in charge of a Civil Assistant Surgeon, who after a five years' course at the Lahore Medical College has qualified for the diploma of Licentiate of Medicine and Surgery of the Punjab University; the minor hospitals and dispensaries in the outlying towns of the District are in charge of Hospital Assistants who have qualified by a four years' course at the college. Their work is supervised by the Civil Surgeon, who is required to inspect each dispensary four times a year.

The progress made since 1881 may be gathered from the table attached to this article (p. 166). The number of hospitals and dispensaries has risen by 44 per cent., and in-patients in much the same ratio, while out-patients have more than doubled. The contribution from Government has slightly decreased; but the income from Local and municipal funds has more than doubled, and that from fees, endowments, and other sources has also increased very largely.

The only institution maintained by Government is the Mayo Hospital at Lahore, an integral part of the Medical College, to which it affords medical instruction. Before the establishment of this college the Subordinate medical service was recruited from the Calcutta College, whose candidates were mostly Bengalis. Partly to obtain recruits locally, and partly with the object of popularizing Western medicine throughout the Province, a medical school was established in 1860 at Lahore, and in 1870 its status was raised to that of a college. The buildings consist of one large block, containing three class-rooms, a dissecting room, a chemical laboratory, several museums, and a large central hall, to which have been added in recent years a large and well-equipped dissecting room with a lecture theatre capable of accommodating 400 students, and pathological and physiological teaching laboratories, with a post-mortem theatre and mortuary. The teaching staff now consists of 8 professors, 6 lecturers, a demonstrator of anatomy, and 3 class assistants. A hostel for female students was built in 1889 by the Punjab committee of the Countess of Dufferin's Fund, chiefly from a donation of Rs. 50,000 given by the Mahārājā of Kashmir. Arrangements have been made for a similar hostel for male students at a cost of over Rs. 2,00,000. The growth of the college is apparent from the fact that in

1903 it trained 234 students in the English class and 308 in the Hospital Assistant class, compared with 8 and 44 respectively in 1860.

## Lunatics.

In 1900 a central asylum for lunatics was constructed at Lahore at a cost of 2 lakhs. It is controlled by a commissioned medical officer, with a military Assistant Surgeon as deputy-superintendent. It has accommodation for 468 patients; and in 1903 a separate building, capable of accommodating 120 female lunatics, was erected at a cost of Rs. 74,000. The daily average number of inmates in 1904 was 554. The record of the alleged cause of insanity is usually drawn up by the police and has little scientific value. Of the cases treated in 1904 in which any cause is assigned, 16.59 per cent. were attributed to the excessive use of Indian hemp in one form or another, 8.09 to epilepsy, 0.71 to heat, and 7.09 to moral causes, such as grief, worry, and disappointment.

## Pasteur Institute and Research Institute.

At Kasauli, a Pasteur Institute was established in 1901 for the treatment of persons bitten by rabid animals, which now treats patients from all parts of India. In 1906 a central Research Institute was founded there, which will provide means for the scientific study of the etiology and nature of disease in India, besides the preparation of curative sera for the diseases of man, and the training of scientific workers. The institution is in charge of a Director, with a staff of assistants.

## Vaccination.

The practice of inoculation as a protection from small-pox has prevailed in the Punjab from time immemorial. The method adopted was to keep dry crusts from the pustules mixed with a few grains of rice in a box; when a mild form of the disease was desired, a few of the grains of rice were inserted into a wound near the base of the thumb, while a severe attack was procured by inserting a little of the powdered crusts. The practice was most prevalent among Muhammadans, and was performed by Saiyids and Mullās as a *quasi*-religious ceremony. The Hindus of the South-East Punjab did not protect themselves for fear of offending the goddess of small-pox, but elsewhere Rājputs and Nais (barbers) usually acted as inoculators among Hindus. The practice was largely prevalent in Rāwalpindi, Jhang, and Shāhpur Districts as late as 1887, and to a less extent in Karnāl, Hoshiārpur, Kāngra, Multān, and Dera Ghāzi Khān. With a few exceptions, the attempt to enlist the inoculating classes as vaccinators was not successful. Vaccination is now under the charge of the Sanitary Commissioner, and Civil Surgeons are primarily

responsible for vaccinations in their Districts. The staff consists of 5 divisional inspectors, 28 superintendents, and 260 vaccinators. The falling-off of vaccination in 1901 shown in the table attached to this article (p. 166) is chiefly due to plague. Vaccination is compulsory in twenty-three municipal towns.

The success of the system of selling quinine through the post office in Bengal led to its introduction into the Punjab late in 1894. First introduced experimentally in the Delhi Division, it was extended in 1899 to that of Lahore, and it is now proposed to extend it to all the Districts of the Province, although in 1901 the total sales only amounted to 293 parcels, each containing 102 five-grain packets of quinine. The small measure of success which the system has met with is not easily explained, though it may in part be accounted for by the reluctance of the literate classes, from which the post office officials are drawn, to act as drug-vendors. It is, however, apparent that the people are at present indifferent to the advantages of the system, and, as a rule, little aware of the value of quinine as a prophylactic. In Kāngra, however, in 1905 some 2,300 packets, each containing 102 powders of seven grains each, were distributed at a total cost of Rs. 3,669. Sale of quinine.

The chief defects of village sanitation are the impurity and contamination of drinking water, the accumulation of filth, the presence of manure-heaps near the houses, and the existence of ponds of stagnant water in or around the village site. It has been considered inadvisable to legislate for the compulsory sanitation of villages, but District boards are empowered to grant rewards in the form of a reduction of revenue to the villages most active in sanitary improvements. Village sanitation.

Surveys in the Punjab have been carried out by two distinct agencies, the local *patwāris* effecting the cadastral or field surveys, and the Survey of India compiling maps based on triangulation. When the revision of a settlement is undertaken, the maps, measurements, and records-of-rights of ownership and actual possession are thoroughly revised by the Settlement officer and a special staff of *tahsildārs*, *naib-tahsildārs*, and field *kānungos*. On the conclusion of the operations these records are transferred to the custody of the Deputy-Commissioner, who is henceforth responsible for their maintenance, and correction when necessary. Briefly, the system in force is this: the *patwāri* makes a field-to-field inspection at each harvest, noting all changes in rights, rents, and possession, and all amendments required in the field map. The changes thus noted are recorded, after attestation by a superior revenue Surveys.

officer, in a revised record-of-rights, which is prepared for each village every fourth year and called the *jamabandi*. The Deputy-Commissioner is assisted in this duty by a revenue assistant (Assistant or Extra Assistant Commissioner), the Director of Land Records acting as his expert adviser in all matters connected with it. The staff consists of a District *kānungo*, with a number of field *kānungos* and *patwāris* or village accountants. In 1904 there were 7,906 *patwāris* and 386 field *kānungos* in the Province. *Patwāris* used to be hereditary village officials, servants of the village community and members of the trading castes; but they are now enlisted without regard to hereditary claims, and more than a third in 1903 were of agricultural castes. Two-thirds have passed the middle-school examination. Candidates go through a practical course in field surveying and land record work in the District *patwāri* school. After passing the examination, they may be appointed on salaries usually rising to Rs. 14 a month. The post is non-pensionable, but a *patwāri* may on retirement receive a gratuity not exceeding Rs. 150. *Patwāris* also receive a share of the fees levied for mutation entries in the record-of-rights. The cadastral survey is made entirely by the *patwāris*, and usually during a resettlement of the land revenue. The system used is a scientific one, known as the square system, and its results are remarkably accurate. It consists in laying out the entire village area into squares, which are also shown on the map. The fields are then plotted in, being co-ordinated to the sides of the squares, and the village maps thus show the boundaries of every field. They are tested by comparison with the survey maps.

In the Chenāb and Jhelum Colonies, in which large areas of Government waste have been brought under cultivation, the square system has been extended to the formation of all fields into squares, equal to  $\frac{1}{25}$ th of a survey square, i.e. to 1 acre 18 poles. This system of square fields greatly facilitates irrigation and revenue management, and is a safeguard against boundary disputes. It is being gradually extended in some localities to old proprietary lands.

The maps of the Survey of India are based on triangulation carried out between 1850 and 1860. Kashmīr and the North-Western Himālayas were topographically surveyed between 1848 and 1865, and Jhelum and Rāwalpindi Districts (including the recently constituted District of Attock) between 1851 and 1859. These surveys, though excellent, are now out of date in the matter of roads, &c., and do not show village boundaries.