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THE BLIND

SCHOOL BOARD FOR LONDON, 1876

REPRINT OF THE

REPORT OF CONFERENCE

ON THE

INSTRUCTION OF BLIND CHILDREN

HELD JULY 21st, 1876.

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LONDON

[*To be considered at the School Management Committee's Meeting on Friday next.*]

School Board for London.

REPORT OF CONFERENCE ON THE INSTRUCTION OF BLIND CHILDREN.

The School Management Committee, on the 18th July, issued the following Circular to the Members of the Board and to various gentlemen specially interested in the education of blind children :—

'DEAR SIR (OR MADAM),—The School Management Committee have had under their consideration the different methods adopted for the instruction of the Blind, and with a view of ascertaining the results of the various systems now in use, they have resolved to convene a Conference of gentlemen interested in the subject in the Board Room on Friday next, the 21st instant (July 21st, 1876), at one o'clock. The Committee will be glad if you can make it convenient to attend on that occasion.

'Faithfully yours,

'(Signed) G. H. CROAD, *Clerk to the Board.*'

The Conference was attended by the following gentlemen :— Dr. Armitage, British and Foreign Blind Association; Dr. Moon, Inventor of Moon's Type for the Blind, Brighton; S. S. Forster, Esq., Principal of the College for Blind Sons of Gentlemen, Worcester; J. L. Shadwell, Esq., British and Foreign Blind Association; R. C. Moon, Esq., Oculist, Brighton; — Marston, Esq., Undergraduate, London University, and of the College for Blind Sons of Gentlemen, Worcester; G. Martin Tait, Esq., Secretary, Home Teaching Society for the Blind, 34 New Bridge Street, E.C.; F. J. Campbell, Esq., Principal, Royal Normal College for the Blind, Upper Norwood; W. Harris, Esq., Workshops for the Blind, Leicester; James Sander, Esq., Secretary, London Society for Teaching the Blind; Mr. Mead, Teacher, Indigent Blind Visiting Society; Mr. Allen, Teacher, School for the Blind, Upper Avenue Road,

N.W.; Messrs. Allen and Bush, Teachers, Home Visiting Society; Mr. Price; and Mr. Finchard, Instructor of Blind Children to the School Board for London.

The following Members of the Board were also present:—Rev. John Rodgers, M.A., Chairman of the School Management Committee; James Allanson Picton, Esq., M.A.; Professor Gladstone, F.R.S.; and Rev. Benjamin Waugh, F.G.S., Chairman of the Sub-Committee on Store and Books. Mr. Waugh occupied the Chair.

The Chairman, in opening the Conference, stated that it was called to ascertain the results of the various systems now in use for the instruction of the Blind. These facts were desired in order to enable the Board to determine the best course to adopt with those Blind children whom it was the duty of the Board to educate. The Board was endeavouring to provide a School place and School apparatus for every Blind child, to provide it in the ordinary School, but what was more to the point in this Conference, to make this provision in the ordinary class, so that, as far as possible, the Blind child may take its place side by side with its seeing brother and sister, read the same books, and be instructed by the same Teacher. He would not dwell upon the many advantages which would follow to this unfortunate part of the juvenile population if this endeavour should succeed. A serious difficulty in the way was the use of arbitrary and differing alphabets for Blind readers. Could this difficulty be removed, or could it be overcome? and if it could, would any counterbalancing disadvantages arise? Three gentlemen had been specially invited to the Conference as representing the three principal types in use for the Blind—viz., Dr. Armitage, the 'Braille' type; Dr. Moon, 'Moon's' type; and Mr. Forster, the 'Roman' type. He would call upon these gentlemen in the order in which their names happened to appear on his list. Dr. Armitage, of the British and Foreign Blind Association, was then called upon to speak.

Dr. Armitage stated, as his opinion, that all would be agreed that in many instances the instruction of Blind children in ordinary public Schools was not only possible, but desirable. Isolated cases of Blind children instructed in ordinary Schools had occurred from time to time, but the instruction of Blind children in public Schools had only become systematised within the last ten years. Under the direction of Mr. Barnhill, of

Glasgow (who was the principal originator of this work in Scotland), during the past few years about fifty children had been educated in the public Schools of Glasgow, and the results had been extremely satisfactory. In this work he very early met with the difficulty which children had in preparing their home lessons, and also in getting assistance from Teachers when using books in an 'arbitrary type,' such as 'Moon's,' which was used by the Home Teaching Society. These difficulties, and also favouring circumstances, induced him to adopt books of the Roman type, these being on 'Alston's' system, which consists of Roman Capitals. This type had since continued to be used for reading, and the 'Braille' type had likewise been used for the purpose of writing. This was the experience of Scotland. If the Board decided to be guided by it, they would adopt some kind of Roman type for reading, and the 'Braille' characters for writing. Another course, however, was open, as would be stated presently. The main thing which he understood the Board aimed at was to place the Blind children in such a position that they would benefit by the ordinary instruction of the School, and to use such a type that the books would not be of an inconvenient size. This object might be met, as he had said, by Roman type, but the principal objection to all kinds of Roman type is that it is difficult to feel. The experience in America, where the type used consists of the small letters of the Roman alphabet, was that one-third learned to read fluently, one-third learned to read by spelling their words slowly, and one-third failed altogether. He admitted, however, that the failures arose largely from imperfection in embossing. By using a bolder type the number of failures would be diminished.

Dr. Armitage gave it as his opinion that the Roman type was the most difficult of any, and he suggested as a preferable alternative that Elementary Schools should adopt the system largely introduced by the British and Foreign Association, of books printed in the 'Braille' character, with the Roman words interlined. The 'Braille' type is the only one to speak of that can be written by the Blind, and writing, he considered, was almost more necessary for the Blind than for the seeing. Whatever system is adopted for reading, the 'Braille' must therefore be adopted for writing. It would, however, simplify matters if only one type were used, which could be done by adopting the 'Braille' interlined, as he had suggested.

Mr. Tait, Secretary of the Home Teaching Society of the Blind (Dr. Moon not having yet arrived), was next called upon. He stated that he was, he thought, in some degree responsible for the movement of the Board for the instruction of the Blind. Their present plan was, he believed, to use Moon's type for reading, and 'Braille' for writing.

He could not pass unchallenged the statement of Dr. Armitage, that the 'Braille' was the only dotted type (for writing) in use, as there was also the American dotted type, which was very largely used. He considered, too, that the use of the Roman type, at least, as used at St. George's Institution, had proved to be a failure, as it was found that hardly any of the children educated there, when they grew up to manhood, continued to read it. He then requested permission for a boy, aged seven, whom he had brought to the Conference, to be allowed to read a portion from a book which he had not previously read, this boy having been trained for about a year. Mr. Tait also challenged, publicly, any one to produce a child taught on any other system, of the same age, and the same length of learning, who could read so correctly and fluently as this boy, and he also extended this challenge to sighted children. He had been taught on Moon's system.

The Chairman then gave permission for the boy (Charles Broan) to read, who was first asked his age, which he said was seven; he was also asked how long he had been at School, which he stated had been two years. He then read a portion from the book produced by Mr. Tait, which consisted of the parable commencing 'And He spake a parable unto them to this end, that men ought always to pray,' &c.

It had been found, said Mr. Tait, by the visitors of the Home Teaching Society that not a single working man who had been taught the Roman type could read it after his hands had been hardened by work. He said the Roman type was not so difficult for children, and even for men who, from their occupation in life, were able to preserve a highly sensitive touch; but for children who were to grow up as working men, it was utterly unsuitable, they would not be able to read it.

The Rev. John Rodgers asked whether it was the shape of the Roman type that made it so difficult to read.

Mr. Tait replied that it was owing to its being so confusing, and the description of the Blind with regard to it being, that it was 'like a nutmeg grater,' and added, that this remark

applied to all varieties of Roman type. He pointed out the peculiarity of Moon's type to be that it retained, as far as possible, the leading characteristics of the Roman Letter, and that, instead of 26 characters having to be learned, as in the Roman alphabet, only six were required, these being placed in different positions to form the remaining letters of the alphabet. He considered that Moon's type was the most simple, most easily taught and learnt, and the only one of permanent value to the working man's child. Illustrating the difficulty of the Braille system, he stated that Mr. Allen, a Teacher of the Home Visiting Society, who was a very intelligent man, and acquainted with various systems, could write in the Braille character, but could not read it.

Mr. Forster, Principal of the College for Blind Sons of Gentlemen, Worcester, next addressed the Conference. He said he would confine himself to facts with regard to the use of the Roman type. It had obviously this advantage, that it could be read by ordinary School Teachers, which was a point before us. But, besides this, there had been considerable experience in its use in common Schools, such as the School Board had to consider. The Roman type was not only read in Glasgow, but also in America. A large number of books were still being printed in both places. At his own Institution, at Worcester, not only large, but also small Roman types were used, and not one boy who came there failed to learn either one or the other. There was no difficulty in a child learning the Roman type who commenced at the age of seven, the age at which the Board would probably have had the child some time under its care, and at the age of twelve it would be able to read exceedingly well. The education of the Blind was commenced at Worcester in 1868. The stereotyping of their books was not all that could be desired; but the Society was somewhat poor, and had not been able to renew the plates as they had wished and still hoped to do, and this accidental circumstance rendered the feeling of the letters more difficult than it ought to be and might be. It was, however, a positive truth that, disadvantages notwithstanding, the Roman type could be read. Some of the pupils of the Worcester Institution could read so well that they were able to stand up in Church and read the lessons for the day, which, he considered, was all that could be desired. This was done from their own type. Mr. Forster stated that Dr. Armitage did

not mention the ages of those who failed to learn the Roman type in America. In nearly all Institutions for the Blind in America, the age at which pupils were admitted was eleven and upwards; and whatever conclusion might be drawn from their case would not apply where, as in the case before us, education was to begin so early as five years of age, or perhaps before. In American Institutions pupils were even admitted at such ages as 24, 34, 40, &c.

In reply to the Chairman, Mr. Forster stated that in the Worcester Institution they had, in a sense, experience of all systems of type; but that, though all systems were taught, they were taught to almost every pupil, so that no comparisons could be made. The Roman type was the first a child learnt unless it knew another when admitted to the institution.

The Chairman inquired whether they had means of ascertaining if there were any differences in the ease with which pupils retained their ability to read different systems.

Mr. Forster replied that they had not.

The Chairman: It has been stated by Dr. Armitage that one-third of the Blind pupils of America (who are taught on the Roman system) had failed. In our own country, until recently, the statistics of ordinary Day Schools for the sighted presented, rather curiously, a somewhat similar result. But this was not usually regarded as an argument against Roman type. Could anyone say whether in America the general School statistics showed a similar proportion of failures?—None present were able to say.

Dr. Armitage observed on Mr. Forster's remarks on the point of the ages of the pupils in American Institutions, and its bearing on the number who failed to learn to read in them, that he was uncertain as to the particular ages, but the pupils were children, not adults. In reply to Mr. Tait, he stated that the Braille was the only dotted type used in Europe. It was also used in Boston (U.S.) and in Australia; and of the Institutions for the Blind in England, about one-half used the Braille type.

Dr. Moon, of Brighton, stated that, when his type was first introduced, although the Roman type had then been in use for a number of years, there were not more than 150 Blind working adults in this country who could read; now there were more than 5,000. When the Blind began to work, they began to loose their ability to read. Eighty or ninety in every hundred were

unable to read the Roman letter when they began to work as basket makers, &c. The Braille type was too small for working adults. He stated that his (Dr. Moon's) type was so simple, and so easily learnt, that it could be acquired by the Blind in a quarter of an hour, and almost any number of seeing persons could be taught together, and with equal rapidity.

Mr. Harris, of Leicester, stated that he was perfectly disinterested as far as all Institutions and Charities were concerned. He looked upon himself as a juryman on the question of the Education of the Blind, having had the evidence placed before him, and read every book on the subject. He considered the Board had to do with children, not with adults. (The Chairman interposed—The Board has to do with children as to learning, but with adults as to retaining.) Yes, the question ought to be fairly considered in that light, and not settled narrowly or hastily. The more Blind children had to do with sighted children the better. They ought to have books which would enable them to get assistance from home, and from their sighted companions. If they had books in the Roman type, the Blind children would also be able to teach their brothers and sisters who could see. He stated that he was not interested in any type, but he had a leaning to the Roman. It was the oldest, most well known, and the most permanent, that it would not change, and was likely to last as long as the world. New types became fashionable, and were liable to alteration. There were already two systems of Braille, and also abbreviations. A new type would come up and override everything for a time, as, for instance, Frere's system, for which large sums of money were contributed, and in which system many books were printed ; but at his death it was discontinued, and, he believed, no book had been printed in that type for some years. With the view of saving the Blind from the immense disadvantages of these varied and varying characters, he sincerely hoped that the ordinary and venerable English character might be adopted. He considered that whatever type children learnt first they would stick to. The Roman type had not flourished in this country, but he attributed this to want of funds to enable the production of sufficient literature in it. At first, the promoters of this type had sufficient money, but other types sprang up and this system became neglected. A larger, sharper Roman type was wanted, well printed, like Moon's, on good paper, like Moon's; skilful and trained

workmen were also wanted, and who should be kept continuously at the work. He attributed the success of Moon's type to the success of Moon's cause. It was essentially a religious one. It had aroused Christians to move in it, and God had blessed it. In estimating the value of the fact of the prevalence of Moon's books this must not be forgotten. Moon's type had also its advantages—it was similar to the Roman in having no abbreviations. A great number of books had been printed in Moon's type, but for the reason just named these were mostly religious; very few were in standard or general literature. His library of books being larger than any other, and because of the particular kind of books to be had in it, it had, naturally, the most patronage. Special teachers were required to teach Moon's type, which was a point in question, but to teach the Roman, this was unnecessary. Blind teachers were not always the best teachers of the Blind. If books in use in public Elementary Schools were provided for the Blind children in the raised Roman character, they could be taught, as the Board desired, along with the sighted children.

In using their influence for the adoption of the Roman, the Board would use it in the direction of one universal type, and in this they would be assisting the rich as well as the poor. Until one type could be adopted, part of the small library of literature for the Blind would always be practically in some other than the language with which they were familiar.

Mr. Mead, Teacher of the Indigent Blind Visiting Society, stated that he would contribute his varied experience to this very important question. He lost his sight at the age of 19. He first learnt Moon's system, which he did in one evening, without assistance. He afterwards joined the Home Teaching Society. He learnt a second system, 'Frere's Phonetic,' which he considered to be a failure. It was bad for spelling. He next learnt Lucas's. On first acquaintance he considered that system to be the best, but he found that it could only be used by a certain number of the 'clear-headed' Blind. He next learnt the dotted system of Braille. He thought Braille's dotted system to be superior to the American dotted system. At length he returned to Alston's, the Roman, system, for that was, of course, the system on which he read when he had his sight. That system he liked, but these books were badly produced. Children, having learnt in Roman, easily pass from it to Moon's system, but they would not wish to do so if they had plenty of good literature in Roman type. To turn for a

moment to writing, it was useless for Blind persons to send a letter in Braille to sighted persons, but it was not useless in Alston's type. Braille should be used for correspondence amongst the Blind themselves. He agreed in the opinion that the large use of Moon's type by the poor Blind was owing to the supply of literature carried to them in Moon's.

The Chairman asked whether it was Mr. Mead's opinion that the Blind could continue to use Alston's system if they were supplied with literature in it.

Mr. Mead replied yes, in many instances, but he considered Moon's type was the more easy for adults.

The Chairman: Do you think that arises in any degree to the peculiar sharpness with which Moon's letters are printed?

Mr. Mead: Partly.

Mr. Campbell, Principal, Normal College and Academy of Music, Norwood, stated that Blind children learned Roman type in 45 minutes, and that he himself had used it all his life. He knew, however, the Moon and Braille types in addition to the Roman, and he preferred Moon's. The standing which the Roman type had obtained in America he attributed not to its merits but to the energy and ability of Dr. Howe, its chief promoter. Dr. Howe, in America, crushed down everything else. Roman types, he believed, would now go down, as Dr. Howe was dead. In America they were now printing Moon's books very rapidly. We must have a dotted type, as Braille. Also, a line type for the adult Blind, and Moon's was the best. The Board ought to have the very best teacher that could be obtained.

The Chairman observed that he supposed Mr. Campbell's remark applied to special Blind teachers, and that the question just now was, whether the Board could altogether dispense with speciality in Blind instruction, and place Blind children under the ordinary Board School teachers.

Mr. Allen, Teacher, Home Teaching Society, stated that twenty years ago he became blind, that he bought a book and learnt Moon's system in twenty minutes. He considered Moon's system very easy, and to be easily taught. He had heard of many who had learnt Alston's system, but had not heard of any who could read it easily.

Mr. Allen, Teacher, Upper Avenue Road, considered Braille the best system, as it was adapted both to reading and writing.

Mr. Shadwell, British and Foreign Blind Association, had taught on the Moon, Frere, and Braille systems. The Asso-

ciation was formed to settle the question of the best type for the Blind. He said that, if we were to have one system only, Braille was the best. If two systems, Moon and Braille. Moon's, though easy, was not so comfortable ; it was very fatiguing, owing to the space to be travelled over by the finger in reading.

Mr. Tait asked whether the British and Foreign Blind Association was not founded to settle the best system for the Blind, and what had been its decision?

Mr. Shadwell replied that the Association had been founded for that purpose, and that it had fixed on Braille and Moon.

Mr. Marston, of Worcester College, Undergraduate of the Dublin University, stated that at Worcester College they read Moon's, Roman, and the Braille systems, but that Moon's system was not retained by many unless brought up solely in that system. He considered that, for quick reading, the smaller Roman type was the better. To those who could read it the smallest type was the best. Children could be taught any type if it was well printed and they had good teachers. Children, at five or six years of age, could read easily any type, even the small Roman type. To get the literature of the Blind into the settled characters of the country, would be an emancipation for the Blind. It was appalling, the needless exclusion of Blind children, alike at home and in school, from the occupation and pursuits of the sighted ; and this matter of literature, and especially of School literature, was amongst the causes. He mentioned that, so far as age was concerned, he had seen men of, say, from fifty to sixty, in Worcester, reading Roman type which had been learnt in the later years of their life. He thought the space required by the characters of Moon's system a serious objection. The Blind Bible in Roman type occupied eight volumes; in Moon's type, sixty-four volumes. That entire difference might not be owing to difference in type, but it was to a very large extent.

Mr. Moon, jun., stated that there was not more than one Blind person found in Paris who could read in the Braille type.

Mr. Finchard, the Board Instructor of the Blind, said on the age question and Roman type that he could read the American system slowly, but Moon's more quickly. Braille was necessary for writing. One child (a Board scholar) he had taught had written a book of fifty pages in three weeks.

Mr. Bush, Teacher, Home Visiting Society, lost his sight at the age of eight years. He read Frere's system for six or seven years. Learnt Moon's in half an hour. He was in St.

George's Institution, where several of the inmates read their books in Alston's type.

The Chairman then thanked those present for attending the Conference, and for the valuable information which they had communicated. He said the statements of facts and opinions which had been made were exactly what the Committee desired to obtain. The point before the Board was not simply how to educate the Blind children. It was narrower than that. It was how best to educate them in the ordinary School and in the ordinary class of the School. The Committee would meet and consider this question in the light of the valuable information now laid before them.

Mr. Tait proposed a vote of thanks to the Board for calling the Conference, and also to the Chairman of the Conference for presiding, which was seconded by Mr. Forster, and carried unanimously.

(Signed) BENJAMIN WAUGH, *Chairman.*

School Board for London.

School Management Department.

INSTRUCTION OF THE BLIND.

The following were the conclusions arrived at by the School Management Committee of the Board, after a careful consideration of the opinions expressed at the Conference held at the Board Offices, on July 21st, 1876, for the purpose of inquiring into the various systems employed in the instruction of the Blind in reading. The Conference was attended by representatives of the various systems, and by several members of the Board.

'(i.) That one uniform system for reading-books for the Blind is much to be desired.

'1. The effect of the present diversity is to divide into various conflicting channels that charity by which alone books for the Blind are produced, and thus seriously to limit the practical benefits of that charity to the Blind themselves.

2

EDUCATION OF THE BLIND.

BY

ROBERT HUGH BLAIR, M.A., F.R.A.S., &c.,

RECTOR OF ST. MARTIN'S, WORCESTER;

EXAMINER AND LATE PRINCIPAL OF THE COLLEGE FOR BLIND SONS OF GENTLEMEN, WORCESTER.

(Read at the Meeting of the National Association for the Promotion of Social Science, held at Birmingham, October, 1868.)

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EDUCATION OF THE BLIND.

THE first known endeavour to present the blind with readable characters belongs to the sixteenth century, when letters were graven in separate blocks of wood. In 1575, Rampazetto produced wooden letters in relief, not separate, but in a stereotyped form. Both of these were laid aside as too cumbrous and expensive, and, in 1640, Peter Moreau, of Paris, cast letters in lead; whilst, in 1783, M. Fournier cut punches and struck matrices, in which type were cast and printed from, at the expense of M. Rouillé de l'Etrang, Treasurer of the Philanthropic Society in Paris. The invention of printing in relief on paper cannot, however, be said to have taken place till M. Haüy established, in 1784, the first European Institution for the Blind, and set up a press for embossing. The characters he adopted were Italic, well separated, and of a size easily distinguished by touch. The first attempt to form an arbitrary character is due, I believe, to two blind men of Edinburgh, McBeath and Milne, who formed a string alphabet, the letters being represented by a succession of knots in combination. It seems probable that this strange endeavour was suggested by some report of the "Quipos," or knot records of Peru, in which the history of that country was preserved long before the discovery of America by the Spaniards. An account of these "knot records" was published in London in 1827, about which date the string alphabet was introduced. The next arbitrary type was that of a Mr. Hay, who in a very able work endeavoured to show the impracticability of letters with inclosed spaces, and consequently invented characters all open to the touch. This system formed the subject of a discussion by the Royal Society of Arts of Edinburgh, who had formerly considered an invention of Mr. Gall. Mr. Gall, improving upon his former invention, produced a system consisting of modified Roman characters, angularized, which he supported by such strong arguments in favour of the adoption of a type capable of common use, that this Society decided to offer a prize for the system the best suited to universal adoption. Sixteen competitors sent in specimens of type, which, in many cases, were accompanied by apologies of much ingenuity and philosophy. Mr. Taylor (whose paper on Colleges for the Blind you have just heard), at that time Honorary Superintendent of the since celebrated York Asylum and Honorary Fellow of the Royal Society, was chosen arbitrator of this difficult question. The investigation, involving immense labour and patient plodding through long explanations and arguments, occupied some months. At last the Society published Mr. Taylor's Report, which decided in favour of

Mr. Fry's Roman Capitals, devoid of seriffs, and opened in some cases to the touch, since known by the name of Alston's. Of the sixteen specimens sent in four survive, if we may count Gall's in the number—three slightly modified Roman, and one arbitrary. The Roman are Fry's, Gall's, and Howe's of Boston; the arbitrary, Lucas's. In 1835, Dr. Howe of Boston published a system of semi-angular lower-case Roman, called in German the "Halbeckige," small, sharp, and beautiful in form and appearance. About the same time the Gospel of St. Mark was published in Philadelphia, printed on both sides of the leaf, in a type between written and Italic characters. At this point we mark a new phase in printing for the blind. The director of the New York School, and M. Barbier of Paris, both conceived the idea that the blind ought to read a phonetic system. Two phonetic systems, therefore, were added to the list, neither worth describing, but of which the French one seemed the least bad and most ingenious. Mr. Frere, of England, is the father of the only phonetic system now living in this country. Mr. Lucas's system, which has already been alluded to, represented another variety of printing in relief, viz., a *stenographic* one. The Abbé Carton, of Bruges, subsequently added to the semi-arbitrary characters a dotted type, fifteen of the letters being modified Roman, eleven arbitrary. This system now prevails in Belgium. A blind teacher of the Institution of Paris, Louis Braille, so early as the year 1836, had invented a system of characters in dots, entirely arbitrary, which by degrees thrust out the Roman or Italic characters from France, and is now in universal use in that country. In Germany, a style of embossing, called the "Lapidar Druckschrift," is all but general. It is a dotted Roman, easily distinguishable by touch, and plain to ordinary readers. There is but one more system to be mentioned, and that belongs to England. This is, I believe, the latest effort to enable the blind to read with ease. I refer to the partially arbitrary characters of Mr. Moon, of Brighton, a blind gentleman, who sent forth an invention which is a great favourite with many, and the introduction of which over the whole world is, I believe, the one aspiration of Mr. Moon and his faction.

From this rapid sketch it will be already inferred by you that the actual state of blind typography is this: the blind of England possess four systems, viz., Lucas's, Frere's, Moon's, and the Roman. France has one system, that of M. Braille. Belgium also one, that of the Abbé Carton. That of France is purely arbitrary, of Belgium partially arbitrary. The States of North America have two Roman systems, Dr. Howe's and the Philadelphian. Germany has, almost entirely, the "Lapidar Druckschrift" of Stuttgardt, or dotted Roman capitals. Austria has a very small lower-case Roman, with capitals. Russia has, I believe, some systems of Roman. Italy and Spain, Roman. In a very few instances Moon's system has found favour abroad, but in the only cases which have been made known to me in reports from Germany, it has been expressly stated "for very hard hands, or old people."

Now in comparing the living systems it is necessary to enumerate but ten of all that have been tried. These are as follows :—

A. Of characters entirely distinguishable by common writers.

1. Dr. Howe's, of Boston, angularized lower-case, the size of each letter, which does not rise above or below the line, being 3-16ths of an inch exactly.

2. That of Fry, commonly called Alston's, plain Roman capitals, size as used at St. George's Fields' School, 3-16ths of an inch. A smaller is also sometimes used.

3. Higher and lower-case Roman, as used in the celebrated Blind Institute of Vienna, under the direction of the learned M. Pablazek, and as used in the College for Blind Youths of Rank at Worcester. The size, 3-16ths and 5-32nds of an inch.

4. Higher and lower-case slightly modified Italics, similar to that used by M. Haüy, of Paris, l'Institut des Aveugles, and at present used in the school at Milan, ascribed to Dr. Lachmann, but really due in a form nearly identical to M. Haüy. Both of these in size are 1-8th of an inch.

B. Those which are partly arbitrary, partly Roman.

1. Gall's, of Edinburgh, the characters of which are generally recognisable to common readers, the form being angularized Roman, some higher, some lower-case. Four letters of the whole are incognisable to an ordinary person. The size is 3-16ths of an inch full.

2. Mr. Moon's. The characters are described by M. Pablazek as "Das runenschriftartige, grosstentheils aus den elementaren Strichen der romischen Majuskeln gebildete System von Moon zu Brighton." Twelve letters of the whole are modified Roman, easily read by ordinary persons, fourteen arbitrary. The size of the characters is fully 1-4th of an inch.

3. The "Punktschrift" of the Abbé Carton, of Bruges. Each letter is composed of raised dots, and sixteen characters of the whole are modified Roman, easily distinguishable by ordinary readers; the remaining ten are difficult to make out. The size is 3-16ths of an inch.

C. Systems purely arbitrary, containing no known elements for common readers.

1. The Stenographic of Lucas. The elements from which the whole alphabet is composed are but three in number—a curve, circle, and straight line. The spelling adopted in this system is almost as arbitrary as the forms of the letters, and numerous contractions are made use of. Size, 1-4th of an inch.

2. The Phonetic of Mr. Frere. The elements of this system are also three—the curve, circle, and straight line. The spelling is, as the name indicates, according to sound.

3. The Punktschrift of M. Braille, of Paris. The one element in this system is the raised dot.

Now I have been compelled to name all these systems, because each one is in use ; yet, by way of simplification, I will reject from our consideration those systems which have the fewest friends, as

being by almost general consent out of competition—viz., Gall's, Lachmann's, and Frere's; although I must say that I consider Gall's and Lachmann's are far superior to some of their more successful rivals.

Two ways of weighing the question at issue between the systems are at once suggested, viz., on the broad basis of a universal and well-known *versus* an arbitrary and unknown; and then on the relative merits of individual forms of type.

First, then, is any one of the seven remaining systems excluded from competition by the complexity of its form or size? The answer to this is prompt. There can be no weaker nor more false argument than to assert that this or that system is the only one the blind can read with ease. Any of the systems can, with almost an equal amount of practice, be read with fluency and comfort. If a proof is asked of this, I give the very palpable one, that each system has its ardent advocates, who are prepared to furnish evidence, and abundant evidence, of the legibility of their favourite system. The powers of the blind are sadly underrated and belied by those who would have us believe that any one of the seven systems received is beyond their tactile comprehension. Allow me to quote, relative to this matter, a few words by a Mr. Lothian, given in Mr. Taylor's report, before alluded to:—"Touch having become, even in very early life, to a great extent, a neglected sense, it is impossible for those who enjoy the sense of sight, all whose ideas of reading are connected with a visible language, to imagine to what extent of excellence a tangible one may be carried. Now it is well known that the extinguishing of one sense leads to the great improvement of the others. It does so just because it makes necessary their greater cultivation. The touch, which to us conveys a vague impression of feeling towards the termination of the fingers, and is too general, therefore, to suggest the figure of the object touched, is felt by the blind on the precise parts of the finger affected by the different parts of the object. The relation of the different minute parts of the finger to one another comes, from practice, to be accurately known to the blind, and the simultaneous affection of different points, therefore, immediately suggests the relation of those points, and consequently of the touching points of the object to one another—in other words, conveys at once intelligence both of the magnitude and figure of that object." This is philosophically stated, and is beyond all dispute, and it may, in accordance with these statements, supported by the fact already alluded to, of the evidence of many witnesses, be assumed as certain that any of the systems contended for come quite, and easily, within the touch of the blind in general. We are at liberty, then, to compare the systems in their relative forms. To those who contend for an arbitrary system, I would recommend Braille's, of Paris. The dotted characters are easy to decipher, and the formation of them is simple, and capable of very rapid acquisition; and this great and decided advantage is embraced, that the blind can write it for themselves and read their own writing. One other purely arbitrary system

is open, Frere's being by almost common consent abandoned, though at least equal to its stenographic cousin; I allude to that of Mr. Lucas. This system is fostered by an admiring committee, but what in the system commands their admiration I cannot tell. A few questions suggest themselves respecting it:—(A.) This system consists of exceeding few elements, and (B.) it is stenographic. Are these advantages of sufficient weight to win for it universal approval? or are they advantages at all? or are they positive faults? I maintain the latter. The fewness of the elements may be an advantage to the acquiring, but must be a disadvantage to the remembrance, of the system. The Abbé Carton praises, in some slight degree, this system for the very thing for which I think it ought to be condemned. It seems beyond dispute that the simpler the form of each letter in itself the better, but each letter must have a purely distinctive outline. A very simple alphabet might be formed by twenty-six diameters of circles placed at different angles; but who could master it, or rather remember it? There would be so little for the mind to grasp in such an alphabet, that it would again and again elude it altogether. On the other hand, adopt twenty-six totally distinct symbols, and you would have the one, tactile facility being supposed, the most perfect. To take two other alphabets to elucidate this position. The Roman character is as distinct as any can well be, and where it fails it fails through the violation of the principle I have stated. In embossing, with a metal point, backwards for my blind pupils, I have discovered where the few difficulties in mastering the Roman type may lie. The small letters p, q, and g, b and d, always puzzled me, because of their likeness in form, or, in other words, the identity of their elements. Take, also, the Hebrew characters, and examine where the main difficulty is in mastering them. It will be found in those letters that approach each other in form, viz., ה, ח, and ת, כ, and ג, ד and ר. These instances are enough to found a law upon, that facility of discrimination and of retention in memory are in the inverse ratio of the fewness of the elements of a system. The elements of Lucas, I have shown, are three. But what shall we say of the stenographic recommendation? If the blind are to be condemned to numerous complications of contractions and to *barbarous violations of orthography*, I for one, pity their lot exceedingly. A very large page is devoted in the Key to T. M. Lucas's stenographic characters, to an unfolding of the mysteries of this system. Honestly I say it, I am led to admire the patience and power of blind people, who can learn and, we are told, with ease, what sighted people would consider a very hard task indeed. If the blind can learn, as they do, to read Lucas, and that with facility, the argument is for ever and hopelessly cut away from those who object to the Roman type that it has insuperable difficulties. Contrary to an opinion I publicly expressed some time ago, I must say that this seems to me the very worst of tactile systems.

We come, then, to two mixed systems—those of Mr. Moon and the Abbé Carton of Bruges. Let us take Mr. Moon's first. Where Mr. Moon keeps to the outline of the Roman form he does well. The

A is all that is required of the Roman higher case, and the b of the lower. The C is perfect. D would be not a whit less legible if completed, and made like the Roman capital, and it would possess the privilege of being recognised. Why the E should be like large Roman F, and the F like the small Roman f, or the G like Moon's F turned the wrong way, I cannot tell. H in Roman is a good letter for recognition, but Mr. Moon prefers a small o for it. I and J are good because simplified Roman. K would have been no worse for being all there, not a whit less legible, and its old friends would have known it. L is a respectable simplified Roman. M might find apologists, though none to recognise it. N and O are Roman. P, Q, R, S, T, are exceedingly simple, and, therefore, apt to be lost to the memory in their similitude. U, V are opened Roman. W had better never been altered, no much simpler letter can be safely put in its place. X is mere perversity, and so is Y; whilst Z, being Roman, finishes with a good grace. On the whole Mr. Moon has not, certainly, compensated by the increased simplicity of his alphabet for the loss of general recognition. Had he, however, contented himself with simplifying instead of destroying those characters in which he now totally departs from the Roman, retaining the general outline of form, even composing an alphabet, plain, rude, and large, after the fashion of those which in his system are cognisable by the world at large, he would have done a good work for the aged and horny-handed blind. Since no one contends for the Abbé Carton's system in England, I will not say more of it than that it errs exactly in the direction in which, I conceive, Mr. Moon's errs. The "Punktschrift" affords facilities of touch, and the blind are able to emboss this system, as also M. Braille's, but I cannot see the necessity for departing from the Roman form in this. The Belgian blind, however, do correspond with their friends by means of a square Roman lower-case type.

In coming to the Roman, it will have been foreseen that I am wholly in favour of that respectable and universally-used system of blind typography. I have already shown that this system was the first to suggest itself to those who sought to give the blind a literature, and that it holds its own in the world. In America, in Austria, Prussia, the Southern States of Germany, in Italy and Spain, this system is adhered to. Mr. Moon endeavoured to transport his system and plant it in Germany; but, except in a very few cases, he failed. In Berlin a committee took his system under their consideration, and after a patient hearing of the evidence on both sides of the question, came to the decision that they ought to decline Mr. Moon's system and retain that which they had hitherto used, the Roman, issued by the Stuttgardt Society. No investigation could have been conducted with greater impartiality. Those who are interested in the merits of the case would do well to read through the report of this investigation, entitled, "Bericht über Moon's Blindenschrift, von Dr. G. Michaelis," published at Berlin.

Now an examination of the Roman type will convince an impartial judge that there is nothing in the form of the letters themselves to

render them difficult to blind readers, if slightly modified. Each letter is a separate and distinct character, with such a combination of elements that, once acquired, the mind will easily retain it. Fry suggested and Alston adopted capitals entirely, and the great majority of German institutions have chosen and kept to those composed of dotted instead of plain lines. When Mr. Taylor was called upon to decide between the various systems sent to him he selected Fry's as the best; but after a private and most philosophical discussion with the Abbé Carton, who was sent over in the year 1835 by the Belgian Government to visit the English Asylums, these two learned men decided in favour of the higher and lower case, as in ordinary printing. The Abbé pointed out that a word in capitals alone presented to the touch a parallelogram, but that by the introduction of small letters several distinctive marks were introduced that at once suggested the general form of a word, and aided an immediate apprehension of it. But several letters could be, it was agreed, improved by a slight modification. By such modifications, serving, for instance, to distinguish c from e and o, with similar alterations in other cases, all difficulties of the lower-case would be removed. And so it proved, for a triumphant answer is found, to all who urge that the Roman character is useless for blind readers, in the fact that the very small type of Vienna and Dr. Howe's small semi-angular is read without any hindrance, and that by far the greatest amount of blind literature that exists is in Roman character. This completely destroys the sweeping objection that the partisans of Moon's and Lucas's systems so constantly urge. But if we take into account the size of these two systems, it will easily be seen how it is that aged and hard-fingered persons so frequently prefer them to other systems. I have measured with great care the sizes of the various systems, and the result arrived at is, that whereas the Roman systems used, vary from 1-8th of an inch, and under, to 3-16ths of an inch, Moon's and Lucas's measure fully 1-4th of an inch. If, then, we were to print in Roman character 1-4th of an inch in size, we should have books that would be read with as much ease as either of these. I have endeavoured to ascertain the "minimum tactile" in Roman lower-case that a blind person of long education and good touch can apprehend, and have proved before witnesses that down to 1-16th of an inch, *i.e.*, down to the size of common large type in a seeing person's prayer book, letters, well raised, can be deciphered: at 3-32nds, this character can be made out without much difficulty; at 1-8th, with comfort and ease; at 3-16ths, with very great readiness. Moon's and Lucas's type, then, let it be remembered, is four times the size of that which it is possible to decipher in Roman, and above the largest capitals used anywhere. If, then, books were printed in Roman higher and lower case from 1-8th to 1-4th of an inch, every possible class of blind reader would be suited. This being so, of course the question of bulk is on our side, or rather is entirely in our own hands. But what of speed? If a reader can go on with comfort and fluency, this is all that is necessary. Blind men have, generally, very few books to read, and much

time at their disposal. The question of speed, then, is not of paramount importance. In a report I received from Bristol, the director, Mr. Madday, says respecting speed, that he considers it a question of quite secondary consequence; and M. Bizburck, of Belgium, the successor to the Abbé Carton, in another report, says, "I am of opinion that the Latin proverb comes to the point here, '*Sat cito si sat bene*,' and '*festina lente*.'" But whatever be the merits of different systems, regarding speed one thing is certain, that the qualifying element is more in the reader than the character read, and that no estimate can ever be arrived at of sufficient definiteness to lead to the certain superiority of any one system in this respect over others. If we seek to test the matter, we find such vast differences of talent, that the subjective quite overrule the objective qualities. In proof of this allow me to furnish the following evidence. I sent, lately, to all the English, and to the principal French, German, and American institutions for the blind, a printed form containing the following questions, to elicit statistics which I can find furnished in no English, French, or German works.

1. What system of reading is used in your institution? 2. Are the pupils supplied with any raised book on leaving you? 3. In about what time is the system you use acquired by an average pupil? 4. In how many minutes and seconds can your best reader read the 17th of St. John twice over? The replies so far received entirely set aside any expectation of justly comparing systems in points where subjective qualities are mainly concerned. With respect to the usual time of acquiring a system, I have received the following answers: Lucas—α. Three months, β. Cannot answer the question because of the varying powers of the pupils, γ. Six or eight weeks (in this case a note is added, saying that Lucas is about to be abandoned in favour of Moon, owing to the inconveniences arising from contractions and arbitrary spelling), δ. Cannot say, ε. Three months. Respecting Frere's, two months. Respecting Moon's, α. six weeks, β. eight months, γ. three months, δ. eight weeks or less, ε. three or four years, ζ. twelve months, η. cannot decide, θ. four to six months. Respecting Fry's or Alston's Roman, α. six weeks, β. four or five years, γ. one month, δ. no time given, ε. two or three months, ζ. cannot say. Respecting the Stuttgardt Druckschrift, also Roman capitals, α. six weeks, β. two years, γ. two months, δ. three months, ε. six months, ζ. six months, η. two to four months, θ. four weeks, ι. three months, κ. six to eight weeks, λ. four to five months. If any one can find a rule out of this, he must be ingenious indeed. Assuredly no system can stake its merits upon such a question. The same is true of the speed of deciphering. The rates given vary in each system; for instance, 5′30″ to 23′ in the Stuttgardt; from 7′ to 16′2″ in Alston's Roman; from 5′50″ to 10′ in Lucas's; from 10′ to 26′ in Moon's. On the whole, however, I am disposed to ascribe to Lucas the first place in this, and to Moon the last, as the averages are, for twice reading the chapter named, Moon 16·8, Stuttgardt 13·8, Alston's, or rather Fry's, 12·6′, Lucas, 7·75′. But it must be borne in mind that Howe's

of Boston was read twice through by a pupil of mine in 7·16′, which is below Lucas's average.

However, it will readily be granted that the question of speed of reading and acquisition depends rather upon the reader than the system, and that, after all, it is a question of quite secondary importance beside other questions, and the conclusion, to my mind, is simple. The Roman type is capable of being read with as great facility as any arbitrary system of equal size. It is already in use in by far the greater part of the world. There is a very considerable literature existing in this character. The cheapest raised works out are in Roman. It admits of being taught in any school, or in any home. It precludes the necessity of special teachers, and the vast majority of blind are in isolated localities, far removed from the blessings of teachers and institutions. It inflicts no damage upon common scholarship. It admits every inhabitant of the blind man's home to the knowledge it conveys. In a word, it is a bond of communication and a key of knowledge wherever it is admitted. It cannot be difficult, therefore, to conclude that, *on all grounds taken together*, the Roman type is the one, and the only one eligible, for universal use, although on some particular ground, some other system may have an advantage.

It is on the strength of these considerations that a society has been founded under the presidency of the Lord Bishop of Worcester and the patronage of the Lord Chancellor, Lord Lyttelton, and other distinguished men, to furnish embossed books in the Roman type to the blind, at a price within the reach of the poor.

When this work is accomplished, then the blessings it contemplates will be realized. In the meantime, let us be earnest in our search after truth, rather than the means of victory. At present the blind are the unfortunate bone of a very unseemly contention. Ultimately we may trust to see them the objects of Godlike emulations, and reaping the blessings of real light.

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HINTS

FOR

Blind Home Students,

BY

ROBERT HUGH BLAIR, M.A., F.R.A.S., &c.,

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EXAMINER AND LATE PRINCIPAL OF THE COLLEGE FOR BLIND SONS OF GENTLEMEN, WORCESTER.

A Paper in "The Venture" (a Quarterly Magazine by the Pupils of the College for Blind Sons of Gentlemen, Worcester), of Oct. 1869.

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1877.

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THE VENTURE.

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HINTS FOR HOME STUDENTS.

A few words at the opening of this paper respecting the reading of Roman type may be found of use. The only objection that is ever brought forward against this form of type is, that it is too intricate for the finger to decipher. But if the type be fairly spaced, of the same size as that used by Mr. Moon, or Lucas, in their characters, and well opened to the touch, this objection falls to the ground. The form of type adopted at Worcester is of this description. It is so cut that very old and hard-handed men learn to read it without any very great difficulty. At the same time, whilst it is of paramount importance to preserve the common form in type, it is not at all necessary for the blind reader to pass the finger over every part of a letter. A little attention to this reduces the labour of reading immensely. It can easily be shown, that a little observation will reduce a properly-formed Roman type to the greatest simplicity for the touch.

The type that is decidedly the most easy to acquire of the Roman, is what we call the higher and lower case, where capitals and small letters are used as in books for the sighted. Fry's type, which consists entirely of capitals, does not present such decided marks of difference to help on reading as the higher and lower case. Here I may remark that it is not fair to speak of Alston's type, for Alston was but the adopter and patron of that form which Dr. Fry suggested.

In learning to read, then, in higher and lower case, take the alphabet, and, running the finger over the letters, set aside in your mind first all that rise *above* the line in a plain stroke, and make their acquaintance so as to know them at a glance. These will clear out of the way five letters, viz., b, d, h, k, and l. Of these, two are round at the bottom, two terminate in two points, and one is a plain stroke.

Examine these in this manner again and again, and in a page of raised print pick out all the letters of this class till you make no mistake.

Two remain which rise above the line, f and t, but these each have a cross. If, then, you come upon a letter of this kind, you will remember it can be but f or t, and if it be rounded at the top it is f, if at the bottom, t. Now find out in a printed page all the f's and t's.

Next, take all the letters that fall *below* the line, which are five, viz., g, j, p, q, and y. Now, how easy are these to decipher! You know that if a letter fall below the line at all, it must be one of these five. If, then, it present below the line a round bulb, you have g, if a straight stroke, either p or q, and the slightest touch of the upper part will tell which; if below the line you feel a crook, you have a j or y, and you can decide which of the two by the dot or the two points above.

There now remain all the letters that do not rise above, or fall below, the line, and in acquiring them you have but to acquire a very easy system of points, for all the endings of curved or straight lines feel to the finger like points. Six letters are round at the bottom, and we will take them first, viz., a, e, c, o, s, and u. We will at once pick out o, it is quite by itself and cannot be mistaken. It has no opening. Next take u, which presents at once two dots at the top. After this examine a and s together. The former is known by the dot and the space to the left, the latter by a dot and space at the top on the right hand, and at the bottom to the left. There remain e and c, which both present to the touch two dots to the right, but the c, as raised, is much more open than the e. In conclusion, i is known at once by the dot—it is needful to feel no more of it; m, by three dots below; w, by three above; n, by two dots below; v, by two above; r, by the arm to the right; x, by four dots, and z, by its spaces.

From what I have said, it will be perfectly easy for the learner of raised type to classify the letters, and to acquire the art of reading without laboriously going over all the intricacies of each. A little careful attention to the capitals will also make known their salient points by which they will be discerned at once.

I presume that by this time my readers have made some progress in the use of the calculating-board described in our July number. If so, there will be no difficulty in proceeding with the examples given in common arithmetics and Algebras. At the same time remarks upon things of interest, that present themselves to one's mind, may be of service to thoughtful students. The first thing that has to be overcome by the arithmetician is notation, or the method of expressing numbers by marks. It is of the utmost consequence to have, at the outset, a sound knowledge of this. It is not enough to be able to put down a few numbers, but the whole reason and method of the thing must be mastered by those who hope to become honest mathematicians. The smallest whole number is of course 1, and this is the measure of all other numbers. If you talk of 6 or 100, you mean so many *ones*. And if you talk of a half, or a sixth, you mean so many parts of *one*. The idea of *one*, then, is expressed by a straight perpendicular line, for the sighted, and for you, on your board, by that position of the

peg shewn in the July number of the VENTURE. Now it might have been possible to have a different-shaped figure for each number as far as one liked to go: *e.g.* for 19 or 207 (put these numbers down on the board), instead of having in one case two and in the other three figures, one separate symbol might have been chosen in each case. But then numbers are infinite, and, therefore, such a system must have been always enlarging, and would be a tax upon the memory that it could not be equal to. Another plan, then, has been adopted, which is to have only a small number of figures or symbols to learn, and then to let these stand for different values, by putting them in different positions.

Now in the same way as the choice of these symbols has been quite arbitrary, or, in other words, a matter not of necessity but of convenience, so another step in numbers has been taken for convenience, viz., how many symbols should be chosen, which also decides what has to be the base of the system. I have said that any number means so many *ones*. That is the same as to say that 1 is the base of all numbers. But the way in which numbers are to be *put together* is the system of numbers, for the word system means the *standing together*. As numbers have one for their base, so systems have *a base* also. But there is this difference—the base of all numbers is necessarily 1: but the base of a system may be any number whatever. The number which has been chosen for the base of our system, then, is ten, and we proceed to act with it thus. Just for the sake of convenience put down a cipher, so as to form a starting point. Whatever number you put down in the first place to the left of it, means so many ones: *e.g.*, if you put down 7, it means 7 times 1. The highest value that can stand in this first place is 9. For all values between 9 and 100 you must use the first *two* places. Thus the number that is put in the second place to the left means so many times 10, to which you add the unit, or the figure in the first place. Let there be, we will say, 3 in the second place, and 5 in the first. This means 3 times 10, and 5, or 35. In the third place to the left, any number means so many times 10×10 or 100, or 10^2 (read 10 to the second power), to which is added the value of the first two. Put down 435. This means 4×10^2, and 35. In the fourth place to the left, any number means so many times $10 \times 10 \times 10$ or 1000, or 10^3 (read 10 to the third power), to which must be added all that precedes to the right. Put down 7435. This means, 7×10^3 and 435. Or if it be put down fully with the signs between $7 \times 10^3 + 4 \times 10^2 + 3 \times 10^1 + 5$. You see, therefore, that the movement of a figure one place farther to the left increases its value by a power of 10. A seven in the first place means 7×1, or as mathematicians call it, 7×10^0; in the second place, 7×10^1; in the third, 7×10^2; in the fourth, 7×10^3; in the fifth, 7×10^4, &c., &c. If there be no other wanted in the remaining places to the right of any figure, ciphers are put in

to show in what place the figure stands. Ten, then, is called the *base* of this system of notation, which in other words is called the decimal system. As an exercise in the meaning of any number, analyze the following:—27, 209, 1345, 97836, 765987.

In doing so, you can refer to the instructions for the board, p. 44, in the July number, and in putting down the power of *ten*, put a one, two, or three, or, as the case may be, just over the 0 to the right hand.

I have spoken of the *power* of a number. A clear notion of a *power* is most necessary. If we speak of 2 simply, or of 3 simply, we have 2 or 3 in their first power. But if we take 2×2 or 3×3, we have 2 or 3 in their second power. If $2 \times 2 \times 2$, or $3 \times 3 \times 3$, we have 2 or 3 in their third power, and so in all cases. Thus $2^2 = 2 \times 2 = 4$. $3^3 = 3 \times 3 \times 3 = 27$. It will be useful to learn by heart the powers of each of the units in turn up to the third or fourth. The small figure over, that shows the power, is called the *index*.

It will be as well in learning notation to practice putting down numbers at once both in integers and decimal fractions, for this will increase the interest much. I have shewn that, putting down a cipher as a starting point, by moving on to the left you increase by a power of 10 for each move. Now by proceeding from the starting point to the right, for each move you diminish by a power of 10. If you place a 2 in the first place to the right of the point, which we call the decimal point, it does not mean 2 times one, but a tenth part of 2. If in the second place to the right, the space being filled up with a cipher, it means 2 divided by the second power of 10, or 100, and so forth. This whole system should be taken in at once, and it will be a wonderful help ever after in the understanding of numbers. In accordance with this, such a quantity as 34798·361 would mean $3 \times 10^4 + 4 \times 10^3 + 7 \times 10^2 + 9 \times 10^1 + 8 \times 10^0 + 3 \times 10^{-1} + 6 \times 10^{-2} + 1 \times 10^{-3}$. In this notation it is plain how 10 is the base. But this is not of necessity, but convenience. Also two things occur which I have not explained, viz., the meaning of 10^0 and 10^{-1}, &c. These points shall be taken up next number. In the mean time, those students who are so young as not to be prepared for all that has been here written may carefully exercise in the simple putting down of numbers in right order. But all who are more advanced should make up their minds to master the whole method and reason of it, and should analyze and illustrate on the board for the sake of becoming familiar with both theory and practice.

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Exhibition of the Works of Industry of all Nations, 1851.

THE BLIND.

EXTRACTS

FROM

THE REPORTS OF THE JURIES.

WRITING AND READING APPARATUS AND BOOKS FOR THE BLIND.

LONDON:

Printed for the Royal Commission,

BY

WILLIAM CLOWES & SONS, STAMFORD STREET AND CHARING CROSS.

MDCCCLII.

EPRINT, 1889.

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WRITING AND READING APPARATUS AND BOOKS FOR THE BLIND.

Instruments for the Use of the Blind.*

Hughes (No. 401, p. 452) has exhibited a portable typograph or writing machine for the blind.

This is a beautiful mechanical contrivance (by no means difficult in use) by which a blind person is enabled to print legibly, with ease and rapidity. It is also applicable to printing uniform labels for museums, &c. (for description see 'Illustrated Catalogue'). The following is the manner of using it. The paper intended to be written upon is placed within a portfolio, one side of which is made of semi-carbonised paper, which, being durable and inexpensive, serves for ink. Having done this with the first finger of the right hand, any required letter, figure, or point of the index circle is brought to the right side of the lever, the thumb being inserted in the end of which, presses it downwards. This pressure will give the impression of a corresponding type letter acting upon the back of the transfer paper. The next operation is to lift the lever to its utmost height, which motion makes the space required for the next letter, and so on to the end of a word. A repetition of the movement will also make the space between the words.

Having finished a line of writing, the index circle is pushed back to the left side of its frame, and the thumb-screw turned for the desired distance between the lines; one whole turn of this screw giving four lines to the inch.

The typograph is about the size of a quarto book, and does not occupy a surface of more than 12 inches square. Its inventor has done good service, having the merit of exhibiting the best machine for the same purpose, it being the most simple in its operations of any in the Exhibition. The prize medal was awarded to Mr. Hughes.

Tollputt (No. 382, p. 451) exhibits a machine for facilitating the writing of the blind.

Foucault (France, No. 220A, p. 1187) has exhibited a printing machine for the blind. It consists of a fan composed of 26 rods, terminated at the upper extremity with the letters of the alphabet arranged successively, together with other rods terminated with the various ciphers and symbols required in printing; the lower extremity of these rods is furnished with a corresponding letter, &c., to the one above, but in smaller type. On pressing the larger character at the upper extremity, the smaller letter beneath is proportionably depressed, which causes it to leave its printed impression on a paper previously prepared. By a little contrivance the paper is made to move onwards, in proportion to the successive pressures from above. The exhibitor of this machine, himself blind, has the merit of being its inventor, and he was awarded the prize medal.

Thompson (United States, No. 26, p. 1434) has exhibited an invention for teaching the blind to draw and write. This device is simple, and intended to afford a means to the blind of acquiring knowledge of various kinds.

The writing tablet is covered with white leather, a material well suited to the purpose intended, as it yields to the pressure of the style without retaining the impression.

The style may be made of any hard material capable of receiving and retaining a rounded smooth point. The paper should be of a strong and rather firm texture, but at no visit of the Jury was any explanation given, and they are unable to speak further of this invention.

Gall (No. 687A, p. 471) has exhibited a triangular alphabet for the blind. This is an improvement on the Parisian, Austrian, and other circular alphabets, and it is probable that adult blind persons may by its means be easily taught to read. A volume containing the Epistle to the Ephesians, in the same characters, was exhibited, and Gall's apparatus for the writing of the blind, by means of which they can correspond with each other by post, as described in the 'Illustrated Catalogue.'

Marchesi (Austria, No. 139, p. 1049) exhibits a circular printing machine, by which the blind can print readily with three different kinds of type. On examination by the Jury it elicited much commendation, and a prize medal was awarded to M. Marchesi.

* 'Reports of the Juries,' p. 311.

Printing for the Blind.*

The Jury have noticed with pleasure the large number of exhibitors, from England, France, the Zollverein, and the United States, of inventions and devices for the instruction of the blind. It has been estimated that in the European countries one person out of every 1200 or 1400 of the entire population is blind, and in America one in every 2000. The great and increasing attention that is paid to the intellectual and moral instruction of this unfortunate class, is one of the distinctive features of the progress of our age. A few years ago, printing for the blind was considered only a curious or doubtful experiment, but it is now established beyond all question that books are true sources of profit and pleasure to them. Whilst embossed books have recently very rapidly increased, it is delightful to notice that the blind readers have multiplied far more rapidly. These circumstances have induced the Jury to attempt a brief historical sketch of the origin and progress of printing for the blind, together with the present state of the art.

The invention of printing for the blind marks a new era in the history of literature. The whole credit of this invention, so simple, yet so marvellous in its results, belongs to France. It was M. Valentine Haüy, who, in 1784, at Paris, produced the first book printed with letters in relief, and soon after proved to the world that children might easily be taught to read with their fingers. It has been said by his biographer, that he took his idea of embossed typography from seeing that Mademoiselle Parodis, a blind pianist of Vienna, who visited Paris that year, distinguished the keys of her instrument by the sense of touch, and also readily comprehended the maps in relief, which a short time before had been invented by M. Weisembourg of Mannheim. After employing letters of different forms and sizes, and experimenting with the blind as to the precise shape of the letter that could be the most readily distinguished by the touch, he at length fixed upon a character differing very slightly from the ordinary Roman letter, or perhaps a little approaching *italics*. There was the usual mixture of the upper and lower case, the capitals taking more of the *script* form than the small letters. He submitted his first efforts and experiments to the Academy of Sciences of Paris. A committee was appointed to examine them, consisting of the Duc de la Rochefoucauld, M. Desmarets, M. Demours, and M. Vicq-d'Azir, and their favourable report on the 18th of February, 1785, rendered his success a triumph. Great

* 'Reports of the Juries,' pp. 413–423.

éclat attended the public announcement of this invention. A new Institution was established, called the Institution Royale des Jeunes Aveugles, and M. Haüy was placed at the head of it. Among the books which he embossed were a grammar, a catechism, and small portions of the Church Service, and also several pieces of music. The printing of the music was inferior. The abbreviations which he introduced into his grammar, it has been said, did not afford sufficient advantages to counterbalance their inconvenience. His principal work is entitled 'Exposé de différends moyens vérifiés par l'expérience pour les mettre en état de lire à l'aide du tact, d'imprimer des livres dans lesquels ils puissent prendre des connaissances de langues, d'histoire, de géographie, de musique, etc.; d'exécuter différends travaux relatifs aux métiers. Imprimé par les Enfants Aveugles.' Paris, 1786, 4to. This celebrated essay was translated into English by Dr. Blacklock, the blind poet, and in 1793 was published in London with his poems, in quarto. On the 26th of December, 1786, twenty-four of M. Haüy's pupils exhibited their attainments in reading, writing, arithmetic, music, and geography, before the King and the royal family, at Versailles, who were delighted with the wonderful results. For a while all went on prosperously, but M. Haüy's friends soon began to give him credit for zeal, rather than discretion in the management of his Institution, and consequently as the novelty wore away, their admiration cooled, the funds fell off, and the Institution languished until it was put upon a Government foundation. The blind really received but little advantage from an invention that at first promised so much. The fault, however, seems to have been not so much in the plan as in the execution of it. The books were bulky and expensive, and the letters, though beautiful to the eye, and clearly embossed, wanted that sharpness and permanence so essential to perfect tangibility; besides that, though the letters filled three spaces, they were too small to be well adapted to the sense of touch. Large editions of the few books printed were published, the idea having taken a strong hold of the public mind, so that though the evil was soon perceived, it was not easy to abandon the defective alphabet and assume a better, for that step involved the sacrifice of all the previous labour. Hence this noble invention, except, perhaps within the walls of the Institution, soon sank into oblivion, and very little more was heard of it until 1814, when Haüy, having fallen into disrepute, was pensioned off on 2000 francs a year, and Dr. Guillié, an active and enterprising gentleman, was made "Directeur-Général" in his place. Dr. Guillié soon revived the printing, and having considerably modified the letters, commenced the publication of a series of elementary and other works. [For list see Table I., p. 4 of this pamphlet.]

The mechanical execution of these volumes was exceedingly heavy. Most of them were ponderous folios, and very expensive, still they formed for many years almost the only literature of the blind, not alone in France, but in other countries. We should not omit particularly to mention the following book which has come under our notice:—'Notice Historique sur l'Instruction des Jeunes Aveugles. Par M. Guillié, Directeur-Général de l'Institution Royale des Jeunes Aveugles de Paris. Paris, imprimé par les Jeunes Aveugles,' 1819, 4to, 52 pages, with 17 lines to a page. Two leaves are pasted together, so that it is read as if embossed on both sides of a sheet. This is the second edition, the first having been embossed in 1817, the third in 1820, and a fourth edition enlarged in 1821. On page 52 is a curious specimen of printing in relief, in colour, so as to render the letters more easily read by the eye. This book was a valuable contribution to the library of the blind, but still retains nearly all the objections that were made to Haüy's first books; it can only be read by those possessing a very delicate touch. It is replete with information respecting the means then employed for the instruction of the blind in Paris; it proves, however, that the art of embossed typography had made but very little progress. It is singular that in this book no mention is made of the author's predecessor, Haüy, to whom, we should not forget, the idea of finger-reading is due.

Between the years 1821 and 1840, very little printing was done by this Institution, except religious books, and music after the system of notation by letters and ciphers. [For list see Table II., p. 4 of this pamphlet.]

'L'Institut des Jeunes Aveugles de Paris,' since its foundation in 1784, has at times been in a deplorable condition, but about the year 1840, it underwent a thorough reorganisation, and is now, under the able management of M. Dufau, justly entitled to the front rank of institutions of this class in Europe, from its usefulness no less than its age. A radical reform in the printing department has been made; M. Dufau has devised a system of types consisting of capitals and lower-case Roman letters, and has greatly improved the character of the embossing. The French books are now well embossed, sharp, clear, and durable. They have also been so much reduced in bulk, that they are offered at a moderate price. M. Dufau has proposed to print a 'standard library' for the blind, to consist of 10 vols. in quarto, for elementary instruction, and 10 vols. for higher instruction. The first series is nearly completed. [For list see Table III., p. 4 of this pamphlet.]

The second series of this library, not yet printed, it is to be hoped will soon follow. For the above lists, and other interesting information respectiug the Paris typography for the blind, the Jury is much indebted to a valuable pamphlet published by M. J. Gnadet, entitled 'L'Institut des Jeunes Aveugles de Paris, son Histoire et ses Procédés d'Enseignement,' Paris, 1850, 8vo, pp. 115.

At Vienna an institution for the blind was established in 1804, but the Jury is not aware of any printing having been executed in Austria before the year 1830 or 1831. About this date the intelligent publishers Trensinsky, of Vienna, embossed sheets with the Lord's Prayer in various laugnages, in Roman letters, and afterwards printed works for elementary instruction. The subject has been recently taken up by the Imperial Printing-office, and several volumes have been published, but the Jury are unable to give a bibliographical description of them.

In 1806, M. Haüy was invited to establish institutions for the blind at Berlin and St. Petersburg. His system of instruction was adopted in each of these institutions, and the books used were for a considerable time supplied from the press of Paris. Both of these institutions in a pecuniary point of view were unsuccessful to M. Haüy, and in 1808 he returned to Paris, and for a while resided in quiet with his brother, the celebrated Abbé Haüy.

The Jury have not been able to trace the progress of the printing for the blind at Berlin or St. Petersburg, but they learn that the amount of matter embossed in Germany until very recently did not exceed half of the New Testament.

It was in Great Britain and in the United States that the first improvements were made in embossed typography; and only within the last fifteen years that the blind generally have derived any considerable advantages from books. Before 1826, when Mr. James Gall, of Edinburgh, first began to turn his attention to the intellectual and moral education of the blind, it is believed that not a single blind person in any public institution of this country or America could read by means of embossed characters. To Mr. Gall is due the credit of reviving this art. With the most commendable zeal, patience, and perseverance, he canvassed the form of every letter, until at length he adopted his angular alphabet. He seems, from his own 'Historical Sketch of the Origin and Progress of the Literature of the Blind,' Edinburgh, 1834, 8vo, pp. 388, to have experimented long and patiently with a great variety of arbitrary and Roman alphabets, with a view of finding one sufficiently simple and tangible for finger-reading. On the 28th of September, 1827, he published 'A First Book for teaching the Art of Reading to the Blind; with a short statement of the principles of the art of printing as here applied to the sense of touch. Edinburgh, published by James Gall.'

TABLE I.

Title.	Number of Vols.	Size.	Date of Publication.	Number of Pages.	Number of Square Centimètres in a Page.	Price.
						francs.
Une Grammaire Anglaise	1	folio	1817	..	840	Published at 50 francs a volume, but since sold for waste paper.
Morceaux extraits d'Auteurs Anglais	1	„	1818	96	„	
Une Grammaire Latine abrégée de celle de Lhomond	2	„	1818	171	„	
Une Grammaire Italienne	2	„	1818	240	„	
Morceaux extraits d'Auteurs Italiens	1	„	1819	..	„	
Une Grammaire Grecque	2	„	1819	244	„	
Extraits d'Auteurs Grecs	1	„	1819	120	„	
Une Grammaire Espagnole	2	„	1819	237	„	
Une Géographie	2	„	1819	220	„	
Les Choix de Lectures pieuses	1	„	1819	120	„	
Les Eléments de Lecture	1	„	1820	88	„	
Un Catéchisme	1	„	1820	79	„	
Choix de Morceaux empruntés aux Prosateurs Latins	2	„	1820	240	„	
Extraits des Poëtes, Phèdre, Horace et Virgile	1	„	1820	100	„	
Les Offices du Matin et du Soir	2	4to	1820	232	„	

TABLE II.

Epîtres et Evangiles des Dimanches et Fêtes	2	folio	1823–8	..	..	..
Prières du Matin et du Soir	1	4to	1825	..	..	..
Annuaire de l'Organiste, par G. Gauthier	2	folio	1828	..	..	..
Office Noté des Jeudi, Vendredi, et Samedi Saints	1	4to	1829	..	..	..
Procédés pour écrire au Moyen des Points, par L. Braille	1	„	1829 & 1837	..	..	..
Manière de mélanger les Jeux de l'Orgue, par Marius Gruêt	1	„	1830	..	..	..
Traité de la Fugue, par Fétis	1	„	1830	..	..	..
Office Noté	1	„	1830	..	..	..
Eléments d'Arithmétique extraits de Reynaud	3	folio	1830 et suiv.	..	..	..
Nouvelle Méthode pour représenter la Musique au moyen de Lettres, de Chiffres, &c., par M. Moulin	1	4to	1831	..	..	..
Traité d'Harmonie, par Catel	1	folio	1833	..	..	..
Figures de la Géométrie et de la Trigonométrie de Legendre	1	4to	1833	..	..	..
Figures de la Statistique de Poinsot	1	„	1833	..	..	..
Choix d'Anecdotes (Système d'écriture en Points)	1	„	1834	..	..	..
Grammaire Française de Noël et Chapsal	1	folio	1834	..	..	..
Méthode de Lecture	1	„	1836	..	..	..
Doctrine Chrétienne de Lhomond	5	„	1837 et suiv.	..	..	..
Histoire Sainte	1	„	1838	..	..	..
Principes élémentaires d'Harmonie à deux parties, par Gautier	1	4to	1838	..	..	..
Petit Mémento d'Arithmétique, par L. Braille	1	„	1838	..	..	..
Recueil de Cantiques pour Trois Voix, par Gautier	3	„	1838	..	..	..
Cours pour apprendre à accorder les Pianos, par Moulin	1	folio	1839	..	..	..
Principes de Musique, par Collat	1	„	1839	..	..	..
Principes d'Harmonie à plus de deux parties, par G. Gautier	1	„	1839	..	..	..
Etudes pour Piano, par Cramer	1	4to	1839	..	..	..
Examen de Conscience	1	„	1840	..	..	..

TABLE III.

						francs.
1. Grammaire Française, par MM. Noël et Chapsal, simplifiée à notre usage	1	4to	1846	144	476	5
2. Complément du Cours de Grammaire	1	„	Not out	..	476	5
3. Traité d'Arithmétique Elémentaire, par M. Dufour	1	„	1845	146	476	5
4. Géographie élémentaire, par M. Poulain de Bossay	1	„	..	114	476	5
5. Histoire Sainte*	1	„	Not out	..	476	5
6. Histoire Ancienne*	1	„	1847	159	476	5
7. Histoire Romaine*	1	„	Not out	..	476	5
8. Histoire de France*	1	„	1845	146	476	5
9. Histoire Naturelle, extraite de divers Auteurs	1	„	1847	108	476	5
10. Géométrie élémentaire	1	„	Not out	..	476	5

* These four histories were composed by M. Guadet upon a new plan, and are peculiarly adapted to the use of beginners.

This is believed to be the first book printed for the blind in the English language. It is a small oblong octavo volume, of nine pages, price sixpence, with four preliminary leaves in which the author sets forth his "principles." The embossing is in high relief, and though it presents rather a rude appearance from the fact of its having been printed from wooden types, yet it soon rendered the practicability of reading by the blind a matter of experience in Great Britain. Mr. Gall then issued sheets printed by metallic type, which were easily read by the pupils in the asylum at Edinburgh. Encouraged by his success, in March 1828 he issued his prospectus for the publication, by subscription, of the 'Gospel by St. John,' but it was not until about the middle of 1829 that he perfected his alphabet to his own satisfaction. He tried three different founts of type:—first, the *double english* size; second, the *double pica;* and third, the *great primer;* and, after printing and cancelling sheets in each of these three founts, he at length, in January 1832, finished the printing of his great work. The blind must ever feel indebted to Mr. Gall for the zeal and honest endeavour which he displayed in accomplishing what he thought would most benefit this unfortunate class. Notwithstanding the last sheet of his work was printed in January, 1832, yet it was not till October, 1834, that he was enabled to publish it. It is entitled, 'The Gospel by St. John, for the Blind: with an Introduction, containing some Historical Notices regarding the Origin of a tangible Literature for their Use. By James Gall. Edinburgh: James Gall, 24, Niddry Street. 1834. In 4to.' The Introduction, in common type, comprises 18 pages. The text, in embossed characters, consists of 141 pages, with 27 lines on a page of 70 square inches. The leaves are not pasted together. The subscription price of the volume was one guinea, but it was subsequently sold for 6s. Gall was very sanguine of the entire success of his noble enterprise, and, probably, had he chosen a less angular character, and one a little more resembling our common alphabet, as he has since done, he would soon have seen his books used in every institution in the country. His alphabet was the chief objection raised to his system. His printing was clear, sharp, and permanent, and his books in every respect were a great improvement on Haüy's and Guillié's. He published five or six other little elementary books in 1834, at the time he issued his chief work; but his system seems not to have come into extensive use. It is to Mr. Gall, perhaps, more than to any other man, that the interest in the education of the blind was awakened throughout Great Britain and America. Nor has he allowed his exertions to flag. In 1837, he published 'The Epistle of Paul the Apostle to the Ephesians, printed for the Blind, on the largest type.' The shape of the characters is similar to that upon which the Gospel of St. John was printed, but instead of being smooth the letters are fretted or serrated. It is a small octavo volume of 72 pages, 17 lines to a pages; 250 copies were printed at the price of 1*s.* 6*d.* It is printed in the lower-case letters without capitals. The Epistle to the Philippians was also printed, in octavo, price 1*s.* 6*d.* The following year he again modified and improved his alphabet by bringing it back to a still greater resemblance to the common alphabet, but unfortunately he yielded to the suggestion of the Society of Arts of Edinburgh by introducing the use of capital letters at the beginning of sentences and proper names. His next book was 'The Gospel according to St. Luke, printed on the common alphabet, for the use of the Blind, and capable of being read by any blind person, 1838. Printed for the British and Foreign Bible Society, London. Printed by James Gall, 22, Niddry Street, Edinburgh.' This is a well-printed volume of 158 pages, 28 lines on a page of 70 square inches; price 5*s.* The same year the Acts of the Apostles were printed in the same serrated letter in 150 pages, price 5*s.* Besides these books Mr. Gall printed a series of tracts for the blind for the London Tract Society, in 1837, price 6*d.* each. It is a matter of surprise that these excellent and well-printed books of Mr. Gall are not more generally used. With the exception of the school at Abbey Hill, near Edinburgh, it is believed they are adopted by no public Institution in Great Britain. It is still a question if the roughness of the serrated character possesses any advantage over the smooth, sharp embossing. Old and used books are frequently preferred by the blind to new and fresh ones.

While Mr. Gall was thus engaged at Edinburgh, the Rev. Mr. Taylor, of York, displayed an intelligent and active interest in the education of the blind. In 1828, he published the 'Diagrams of Euclid's Elements of Geometry in embossed or tangible form,' in 8vo. This was done on Bristol board, but was found too expensive. His mode of embossing, we believe, was forcing the paper, by means of heavy pressure, into the deep cut lines of a copper plate. It was not successful. He published also a map of England and Wales. In 1836, he printed in raised characters 'Selections of Psalm Tunes and Chants' in oblong 4to. Also a short history of Elijah the Prophet, and of Naaman the Syrian; and the History of Joseph.

The efforts of Mr. Alexander Hay, in the cause of embossed typography, deserve mention, although an entire failure. He devised an alphabet of 26 arbitrary characters, which by certain combinations could represent the abbreviations and double letters; so that in all, he had 58 characters. He procured types and other printing apparatus, and in 1828 or 1829, issued a prospectus for publishing the Gospel of St. Matthew, at 7*s.* 6*d.* The book was never published.

The public interest in the blind became so great, that in 1832 the Society of Arts of Edinburgh offered a gold medal, of the value of 20*l.*, "for the best communication on a method of printing for the blind," and the result was that between the 9th of January, 1832, and the 25th of February, 1835, no less than nineteen different alphabets were submitted, of which sixteen were in a purely arbitrary character. The grand problem was to produce an alphabet that would unite cheapness and legibility.

While the puzzling question of an alphabet best adapted both to the fingers of the blind and the eyes of their friends, was under warm discussion on this side the Atlantic, Dr. Howe was developing his system at Boston, in the United States. In 1833, the Perkins Institute for the Blind was established at Boston, and Dr. S. G. Howe, a gentleman distinguished through a long series of years for his philanthropic labours, was placed at its head. As Gall had done, Dr. Howe took Haüy's invention as the basis of his system, and soon made those improvements and modifications which have rendered the Boston press so famous. He adopted the common Roman letter of the lower case. His first aim was to compress the letter into a comparatively compact and cheap form. This he accomplished by cutting off all the flourishes and points about the letters, and reducing them to the minimum size and elevation which could be distinguished by the generality of the blind. He so managed the letters that they occupied but a little more than one space and a half instead of three. A few of the circular letters were modified into angular shapes, yet preserving the original forms sufficiently to be easily read by all. So great was this reduction, that the entire New Testament, which, according to Haüy's type, would have filled nine volumes, and cost 20*l.*, could be printed in two volumes for 16*s.* Early in the summer of 1834 he published the Acts of the Apostles. Indeed, such rapid progress did he make in his enterprise, that by the end of 1835 he printed in relief, the whole of the New Testament for the first time in any language, in four handsome small quarto volumes, comprising 624 pages, for four dollars. These were published altogether in 1836. The alphabet thus contrived by Dr. Howe in 1833, it appears, has never since been changed. It was immediately adopted, and subsequently became extensively and almost exclusively used by the seven principal public institutions throughout the country. It is now the only system taught or tolerated in the United States, and deserves only to be better known in Great Britain and elsewhere to be appreciated. In America, seventeen of the States have made provision for the education of their blind, and as universal education is the policy of the country as well as its proudest

boast, these books for the blind soon became in great demand. Dr. Howe some time since proposed a library for the blind, and with a view of increasing the number of books as rapidly as possible, arrangements have been made between the several institutions and presses to exchange books with each other, and not to print any work already belonging to the library of the blind. This harmony of action, together with the uniformity of the typography, presents so many obvious advantages, that the Jury cannot but wish a similar system were pursued by the Institutions of Great Britain and the continent of Europe. We subjoin a list of the books printed at the press of the Perkins Institution in Boston [Table IV.].

From this list it appears that, exclusive of the three volumes not fully described, 7903 pages, containing on an average 77 square inches, have been printed at this press, or more than twelve times the quantity of matter contained in the New Testament. Almost all the books are stereotyped, and small editions are struck off as they are required. They are sold at the actual cost, the cost of the larger works being averaged on an edition of 250 copies. The above prices include the binding; 50 per cent. discount is made for books sold in sheets. The books are embossed in the Institution under the superintendence of Dr. Howe himself, by means of a powerful press, built for the purpose. The sale of books in 1851 amounted to 427 dollars. This, however, is exclusive of the Scriptures. The American Bible Society, which now

TABLE IV.

Titles.	Number of Vols.	Size.	Date of Publication.	Number of Pages.	Number of Square Inches in a Page.	Prices.			
						dolls.	£	s.	d.
The Bible, containing the Old Testament	6	4to	1842	1849	117	16·00	3	6	1
The New Testament (small)	4	„	1836	624	84	4·00	0	16	6
The New Testament (large)	2	„	1842	430	117	4·00	0	16	6
(The several books sold separately at corresponding prices.)									
The Acts of the Apostles	1	„	1834	..	84	..		..	
Lardner's Universal History	3	„	1837	437	88	9·00	1	17	2
Howe's Geography	1	„	1836	174	88	3·00	0	12	6
Howe's General Atlas	1	folio	..	..	..	3·00	0	12	6
Howe's Atlas of the United States	1	„	..	..	..	2·00	0	8	4
Howe's Atlas of the Islands	1	4to	1838	44	80	2·50	0	10	4
English Reader, First Part	1	„	1838	146	75	3·00	0	12	6
English Reader, Second Part	1	„	1839	139	75	3·00	0	12	6
Dairyman's Daughter	1	„	1835	162	50	1·00	0	4	2
The Harvey Boys	1	„	1837	77	85	1·00	0	4	2
The Spelling-book	1	„	1835	80	51	1·00	0	4	2
Bunyan's Pilgrim's Progress	1	„	1836	184	84	2·50	0	10	4
Baxter's Call	1	„	1836	139	76	1·50	0	6	3
Murray's English Grammar	1	„	1835	112	51	1·00	0	4	2
Howe's Blind Child's First Book	1	„	..	32	30	1·00	0	4	2
Howe's Blind Child's Second Book	1	„	1846	45	30	·75	0	3	1
Sixpenny Glass of Wine	1	„	..	26	41	·50	0	2	1
Life of Melancthon	1	„	1837	50	32	1·00	0	4	2
Book of Sacred Hymns	1	„	..	..	..	1·00	0	4	2
Howe's Blind Child's Manual	1	„	1840	65	35	·75	0	3	1
Coustitution of the United States	1	„	..	25	75	·75	0	3	1
Book of Diagrams	1	„	1836	58	48	·75	0	3	1
Viri Romæ	1	„	1839	52	75	2·00	0	8	4
Peirce's Geometry, with Diagrams	1	„	1840	85	75	2·00	0	8	4
Political Class Book	1	„	1841	112	75	2·00	0	8	4
First Tables of Logarithms	1	„	1841	75	88	1·00	0	4	2
Second Tables of Logarithms	1	„	1841	133	80	2·00	0	8	4
Principles of Arithmetic	1	„	1840	49	75	1·00	0	4	2
Astronomical Dictionary	1	„	1841	49	63	1·50	0	6	3
Smellie's Philosophy of Natural History	1	„	1845	189	75	3·00	0	12	6
Olmsted's Rudiments of Natural Philosophy ..	1	„	1845	122	80	3·00	0	12	6
Cyclopædia	6	„	1845–9	1,388	114	18·00	3	14	4
The Book of Common Prayer	1	„	1845	240	114	1·00	0	4	2
Guide to Devotion	1	„	1846	141	114	1·00	0	4	2
Book of Psalms	1	„	1837	146	88	1·00	0	4	2
Book of Proverbs	1	„	1842	38	117	·50	0	2	1
Psalms in Verse	1	„	1835	97	73	1·00	0	4	2
Psalms and Hymns	1	„	1848	189	120	2·00	0	8	4

uses the stereotype plates of the Bible described above, distributed last year 149 volumes of the Bible. In short, the Boston books possess a neatness, clearness, sharpness, and durability of impression peculiar to themselves. The seventh volume of the Cyclopædia is already printed, and the Jury learn with pleasure that the printing of the remaining volumes will be resumed and probably be finished in twenty volumes very soon. Want of funds is the temporary and only obstacle.

About the time that the Perkins Institution was established at Boston, another was set up in Philadelphia. A meeting of benevolent persons was called on the 21st of January, 1833, when arrangements were made to open a school for the instruction of the blind, and Mr. J. R. Friedlander was placed at its head. This school became the Philadelphia Institution for the Blind by Act of Incorporation, 27th January, 1834. The blind owe much to Mr. Friedlander for the Philadelphia contributions to their literature. On the 21st of November, 1833, he held his first public examination, and astonished the

public by the progress of his pupils in reading, writing, geography, music, &c. The pupils read fluently from tangible letters executed by themselves with *pin-types*. These were small pieces of wood about two inches long, having a letter cut in relief on one end, and the same letter formed at the other by steel points. Maps of the world and of the United States were also exhibited, made by perforating the outline from behind. The result of this exhibition was highly satisfactory. In his address, Mr. Friedlander set forth the great advantages that would accrue to the blind by a general system of instruction. He repeated the usual unanswerable arguments against the adoption of *arbitrary* characters, and stenographic or phonetic systems, and strongly recommended the use of our own alphabet. He followed generally Haüy's plan of instruction. Early in 1833, Jacob Snider, a young gentleman, native of Philadelphia, applied his mind to the contrivance of a method of printing in relief. The alphabet at first adopted a mixture of the upper and lower case italics, and the relief was produced by heavy pressure on thick paper between two sheets of copper having the letters deeply cut. The embossing was thus on both sides. His first attempt, after printing a few elementary sheets, was on the Gospel of St. Mark, which he completed by the end of 1833, in a large quarto volume, and published early in January 1834. An account of his first American book for the blind, may be found in Poulson's American Daily Advertiser of the 10th of January, 1834. The four Gospels were soon after printed in Roman capitals; but being found too bulky, and otherwise objectionable, they were abandoned, and a smaller, more compact, and sharper type, in the Roman capitals, was adopted. For the list of books printed at the Philadelphia press, see Table annexed [Table V.].

It appears that the Boston and Philadelphia Institu-

TABLE V.

Titles.	Size.	Number of Vols.	Date of Publication.	Number of Pages.	Number of Square Inches in a Page.
St. Matthew's Gospel	4to	1	1834	..	60
St. Mark's Gospel	"	1	1833	160	60
St. Luke's Gospel	"	1	1835	..	60
St. John's Gospel	"	1	1835	..	60
Select Library	folio	5	1839	500	..
Ruth and Esther	"	1	1838	50	..
Student's Magazine (published monthly)	"	6	1838–43	..	140
Proverbs	"	1	1839	96	..
Spelling-Book	"	1	..	86	..
Church Music	"	3	1840	300	..
Psalms and Hymns	"	1	1840	68	..
Early Days of Washington, and Declaration of Independence	..	1	1834	71	..
Die Oster Eier (in German)	"	1	..	84	..
Auswahl (in German)	"	1	..	44	..
French Verbs	"	1	1839	25	..
Dictionary of Musical Terms	"	1	..	..	..

tions were founded almost simultaneously, and that their presses and system of typography were established without being apprised of the efforts of each other. Time, however, has at length remedied this diversity. The typography of the Philadelphia books is exceedingly well executed, and compares most favourably with the best of the Glasgow books, but the press has ceased to work, and printing in capital letters will not probably be resumed. From the preference which the present distinguished and intelligent Director of the Philadelphia Institution, Mr. William Chapin, late Superintendent of the Ohio Institution, is known to entertain for the Boston system of typography we may reasonably hope that when printing shall be resumed there, it will be with Howe's alphabet. It is the opinion, however, of Mr. Chapin that all the American Institutions should unite, not only in the use of the same alphabet, but that they should all contribute to support one press. It may be remarked here that the pupils in all the American Institutions read fluently in both the upper and lower-case letters, but it is presumed that Philadelphia and Glasgow books will soon be entirely abandoned there; and as the Boston books can now be obtained in London at a price cheaper than any of the five different systems of books printed in Great Britain, it is to be hoped that they will come into general use here. If it be thought that the letters are too small for adults to read with ease, books may be printed with larger types, and even then be less bulky and expensive than any of the systems in arbitrary characters now in use.

In the year 1848 or 1849 the Virginia Institution set up a press, and has printed several elementary and school books. The Boston type is adopted, with the exception that capitals are used at the beginning of sentences and proper names. This alteration, in the opinion of the Jury, is not an improvement, as the blind are thus compelled to learn two alphabets instead of one. The Virginia books are well embossed, and it is hoped that in future books capitals will be omitted.

To the American Bible Society at New York much praise is due for their commendable efforts in the circulation of the Scriptures among the blind. The stereotype plates of the Bible in six volumes, executed at the Boston press, under the superintendence of Dr. Howe, now belong to this Society. They have printed a second edition from the same plates, and annually distribute gratuitously from 100 to 300 volumes.

It had ceased to be a matter of surprise in the United States that the blind could read, before the public attention was loudly called to the subject in Great Britain, for we see that in 1836, there were two active printing establishments for the blind in the United States; by one, the whole of the New Testament had been published in a cheap form, in the common lower-case letters, and by the other the four Gospels in Roman capitals. Let us now return to the Society of Arts of Edinburgh, and their Prize Medal, to which we have already referred. It was not until the 31st of May, 1837, that the Society's Medal was awarded. In 1836, when the 19 different alphabets were before the Committee of the Society, circulars were drawn up and distributed, with specimens of the several alphabets, to the various institutions for the blind in England and Scotland, and every means employed to arrive at a correct result. The opinions of

Mr. Taylor, of York, and Mr. Alston, of Glasgow, seem to have been those which the Society chiefly followed. They were in favour of the common Roman capital letter, merely deprived of the serifs, or small strokes at their extremities, and accordingly the prize was awarded to Dr. Fry, of London; and on the 31st of May, 1837, a Medal was granted to him for the *invention* of an alphabet which appears to have been in use since 1833 in Philadelphia.

On receiving the Society's circular in 1836, submitting the forms of all the competing alphabets to him, Mr. Alston was struck with the simplicity of Fry's, and immediately conceived the idea of making such alterations as he thought necessary, and putting it to the test. The changes made were simply to reduce the size of the letters, and render the faces thinner. On the 26th of October, 1836, he exhibited his first specimen of printing in relief in the Roman capital letter at a public examination of the blind. It was Fry's alphabet slightly changed to improve the sharpness of the embossing. He then made a successful appeal for a printing fund. After great exertions and most commendable perseverance he procured a printing-press, with two founts of type, and the other necessary printing apparatus. In January 1837 he issued a few elementary works. By March 1838 he had made such progress, that the whole of the New Testament was printed in four super-royal 4to volumes. The type is great primer, and there are in the four volumes 623 leaves of 42 lines to a page. In December 1840, Mr. Alston completed the printing of the Old Testament in 15 super-royal quarto volumes, in double pica type. Of nine of the volumes he printed 200, and of the remaining six, 250 copies. There are in all these 15 volumes, 2535 pages, with 37 lines on a page. Mr. Alston was justly proud of his great work, the entire Bible containing the Old and New Testaments in 19 volumes. In his 'Statements of the Education, Employments, and Internal Arrangements adopted at the Asylum for the Blind, Glasgow, with a short account of its Founder, &c.,' 10th Ed., 1846, 8vo, p. 80, he says,

TABLE VI.

Titles.	Number of Vols.	Size.	Date of Publication	Number of Pages.	Number of Square Inches in a Page.	Price. £	s.	d.
The Bible: the Old Testament complete	15	4to	1839–40	2,535	90	7	10	0
„ the New Testament complete (or separately)	4	„	1838	623	90	2	0	0
1. Genesis	1	„	1840	159	90	0	10	0
2. Exodus and Leviticus	1	„	1840	229	90	0	13	0
3. Numbers	1	„	1840	137	90	0	9	0
4. Deuteronomy	1	„	1840	115	90	0	7	6
5. Joshua, Judges, and Ruth	1	„	1840	165	90	0	10	0
6. Samuel	1	„	1840	178	90	0	11	0
7. Kings	1	„	1840	186	90	0	11	0
8. Chronicles	1	„	1840	190	90	0	11	0
9. Ezra, Nehemiah, and Job	1	„	1840	159	88	0	9	0
10. Psalms	1	„	1840	217	82	0	13	0
11. Proverbs, Ecclesiastes, Song of Solomon, and Esther	1	„	1840	127	88	0	8	6
12. Isaiah	1	„	1840	152	90	0	10	0
13. Jeremiah and Lamentations	1	„	1839	188	90	0	11	0
14. Ezekiel	1	„	1839	160	90	0	10	0
15. Daniel to the end	1	„	1840	173	90	0	11	0
St. Matthew	1	„	1839	79	90	0	5	6
St. Mark	1	„	1837	50	90	0	4	0
St. Luke	1	„	1838	84	90	0	5	6
St. John	1	„	1838	62	90	0	4	6
Acts of the Apostles	1	„	1843	80	90	0	5	6
Galatians, Ephesians, Philippians, and Colossians (editions in large type)	1	„	1845	53	90	0	4	0
Epistle to the Romans	1	„	1842	42	90	0	4	0
Church of England Catechism	1	ob. 8vo	n. d.	16	40	0	1	0
Church of Scotland Shorter Catechism	1	4to	1839	32	55	0	2	6
Selections from Eminent Authors	1	ob. 8vo	1839	23	38	0	1	6
Selections of Sacred Poetry, with Tunes	1	„	n. d.	22	40	0	2	0
Map of England and Wales	sheet	folio	n. d.	..	285	0	2	0
Specimens of type:—Ruth and James	1	4to	1837	19	80	0	2	6
First and Second Book of Lessons	1	..	n. d.	30	42	0	1	6
A Selection of Æsop's Fables, with Woodcuts	1	ob. 8vo	1838	28	40	0	2	0
Psalms and Paraphrases (Scotch version)	2	4to	1838	342	63	0	16	0
Lessons on Religion and Prayer	1	ob. 8vo	1843	26	44	0	1	6
Psalms and Hymns (version of Tate and Brady)	1	folio	1841	207	104	0	12	0
Morning and Evening Services (Liturgy)	1	4to	1839	34	68	0	2	6
Epitomised History of the Bible (Second Edition)	1	„	n. d.	37	44	0	2	0
Musical Catechism, with Tunes	1	„	1838	38	40	0	3	6
English Grammar	1	ob. 4to	1838	72	67	0	5	0
Todd's Lectures	3	ob. 8vo	1841	185	53	0	7	6
Description of London, by Chambers	1	„	1841	75	48	0	3	0
Meditations on the Sacrament, and Prayers	1	4to	1843	42	90	0	4	0
Scottish Songs	1	ob. 8vo	1844	25	70	0	3	0
Introduction to Astronomy	1	„	1841	32	52	0	3	6
Alphabet, on Card	—	„	n. d.	1	33	0	0	2
Outlines of Natural History (Quadrupeds)	1	„	1842	15	38	0	1	0

"this is the first Bible ever printed for the blind"; but in this he was evidently in error, as we have shown that the greater part of it had long before been printed in Boston. We allude to these facts merely because it seems a matter of much regret that Mr. Alston should have devoted so much enterprise and money in producing the Scriptures when he might have ascertained that they had already been printed, and could have been bought at less money than it would cost him to print them. The main difference between the Glasgow and the Boston alphabets, is that one is in the upper and the other is in the lower case, which difference is certainly not of sufficient consequence to demand two editions. Had he expended the same energy and money in producing other valuable books, and exchanged them with the Boston and Philadelphia Institutions, as he was urged to do, the three Institutions would have greatly benefited by the large outlay, and the blind of both countries would have had a great increase to their library. On the 18th of January, 1838, the officers of the Philadelphia Institution wrote to Mr. Alston, informing him that they possessed a printing press, and "understanding that you adopt the same character, it appears to our Board of Management, that both Institutions would gain by an interchange of volumes." Mr. Alston at once acceded to this proposition, and immediately shipped 150 volumes, being 10 full sets of the New Testament, and 50 single copies of the Gospels, besides multiplication tables and other works. [For a complete list of the books issued from the Glasgow press since its first establishment see Table VI.]

Since the death of Mr. Alston, on the 20th of August, 1846, the Glasgow press has almost ceased to work. A few of the volumes have been reprinted. It is at present engaged in reprinting the Gospel of St. John and the Acts of the Apostles. Since 1837 it has been almost the only press that has supplied England, Ireland, and Scotland with embossed books in Roman type. These books are typographically well executed, and the Jury think that Mr. Alston and the Glasgow press are deserving of great

TABLE VII.

Titles.	Number of Vols.	Size.	Date of Publication.	Number of Pages.	Number of Square Inches in a Page.	Price to Subscribers £. s. d.	Price to Non-Subscribers £. s. d.
THE BIBLE AS FAR AS PRINTED	14	4to	1842–50	..	70	4 7 0	5 14 4
The New Testament complete	9	„	1839–51	..	70	1 10 6	2 0 0
(May be had separately.)							
Genesis, Part I.	1	„	1843	113	70	0 4 0	0 5 4
Genesis, Part II., and Exodus, Part I.	1	„	1843	112	70	0 4 0	0 5 4
Exodus, Part II.	1	„	1843	110	70	0 4 0	0 5 4
Numbers, Part I.	1	„	1849	139	70	0 4 6	0 5 6
Numbers, Part II., and Deuteronomy, Part I.	1	„	1849	117	70	0 4 0	0 5 4
Deuteronomy, Part II., and Joshua, Part I.	1	„	1850	123	70	0 5 0	0 6 0
Psalms, Part I.	1	„	1842	95	70	0 3 6	0 4 8
Psalms, Part II.	1	„	..	..	70	0 4 0	0 5 4
Proverbs, Ecclesiastes, and Song of Solomon	1	„	1849	111	70	0 4 6	0 5 6
Isaiah, Part I.	1	„	1844	98	70	0 3 6	0 4 8
Isaiah, Part II., and Hosea	1	„	1844	98	70	0 3 6	0 4 8
Jeremiah, Part I.	1	„	1847	104	70	0 4 0	0 5 4
Jeremiah, Part II.	1	„	1848	109	70	0 4 0	0 5 4
Joel to Malachi	1	„	1846	119	70	0 4 0	0 5 4
Matthew, New Edition	1	„	1846	108	70	0 4 0	0 5 4
Mark	1	„	..	71	70	0 3 0	0 4 0
Luke, New Edition	1	„	1851	119	70	0 4 0	0 5 4
John, New Edition	1	„	1846	86	70	0 3 0	0 4 0
Acts, New Edition	1	„	1845	120	70	0 4 0	0 5 4
Romans	1	„	1841	41	70	0 2 0	0 2 8
Corinthians to Ephesians, inclusive	1	„	1844	100	70	0 3 6	0 4 8
Philippians to Hebrews, inclusive	1	„	1844	95	70	0 3 6	0 4 8
James to Revelation, inclusive	1	„	1844	101	70	0 3 6	0 4 8
Liturgy, Select Portions	1	„	1849	111	70	0 4 6	0 5 6
Prayer-book Psalms, Part I.	1	„	1849	104	70	0 4 0	0 5 4
Prayer-book Psalms, Part II.	1	„	1849	95	70	0 4 0	0 5 4
Prayers and Hymns	1	„	1842	109	70	0 4 0	0 5 4
Hymn-book, embossed by the Blind Pupils	1	8vo	1845	72	70	0 2 0	0 2 8
Scripture Lessons	1	..	..	..	..	0 0 6	0 0 8
First-Class Book	1	..	..	..	..	0 0 6	0 0 8
Second-Class Book	1	..	..	..	..	0 0 6	0 0 8
Tin-foil Alphabet	..	..	..	..	..	0 0 6	0 0 8
Card Alphabet	..	..	..	..	..	0 0 2	0 0 3
Ciphering Board and Type	..	..	..	..	..	0 17 6	1 0 0
Raised Maps of Europe, Asia, Africa, America, (North and South), each	..	..	..	..	..	0 15 0	0 17 6
An Apparatus for embossing in Lucas's System, adapted by Mr. Wood, the Master	..	..	..	..	..	0 15 0	0 17 6
The Figures of the First Book of Euclid's Elements of Geometry, on Five Boards, by Mr. Wood, each	..	..	..	..	..	0 10 6	0 12 0
A Chess-Board, adapted to the use of the Blind, by Mr. Wood	..	..	..	..	..	0 9 0	0 11 0
The Book of the Prophet Ezekiel, and a New Edition of the Psalms (Bible version) are in course of preparation	..	..	..	..	..	..	..

praise. The objections, however, to the small Roman capitals, in which most of the books are printed, are such that it is to be hoped that ere long this press will follow the example of that at Philadelphia, and adopt Howe's typography.

It has generally been supposed that the Glasgow press was the only one in Great Britain that printed anything of consequence in the common letter. But we cannot omit to mention a valuable work that has come under our notice; it is a 'Magazine for the Blind.' London: Simpkin, Marshall, & Co., Stationers' Hall Court; price 6s.; in twelve monthly parts. 1839–40. After two volumes were printed the first Magazine for the Blind in this country was discontinued. It is in quarto form, and has 23 lines on a full page. The type is the ordinary mixture of the upper and lower case of Roman letter, and the work is beautifully printed. The first volume contains 78 pages, and the second 73. It is to be regretted that so valuable a contribution to the literature of the blind should not have found better support. It consists of miscellaneous information, with fragments of authors, poetry, anecdotes, woodcuts, &c.

In 1806 an Institution for the Blind was established at Stockholm, and it is with pleasure that we learn that Mr. Watts, of Crown Court, London, has, at the expense of the British and Foreign Bible Society, printed in relief, with the ordinary Roman type, in capitals and lower-case, the Gospel according to St. Luke in Swedish for this Institution. The volume was printed in 1848, and is a beautiful specimen of embossed typography. It is in quarto, consisting of 132 pages, 27 lines on a page of 70 square inches. Price, as sold by the Bible Society at cost, 6s.; 500 copies were printed.

In France, Belgium, Prussia, Austria, Switzerland, Sweden, and the United States, the Roman lower-case alphabet is used. In most, if not all, of these countries, the Institutions for the Blind are supported and partially controlled by Government, and perhaps this is the reason why in all of them nearly the same system of typography prevails.

In Great Britain, however, the case is different. There are now five entirely different systems of typography in use here, and vigorously pressed upon the benevolent public. The unfortunate blind are thus deprived of the advantages they might have if harmony of action and uniformity of typography were adopted. This diversity of opinion is causing great injustice to them, and the Jury cannot but urge upon the parties concerned the speedy adoption of some one system throughout the country. Our opinion is decidedly in favour of Howe's American typography. Perfection is not claimed for this system, but it seems to us that there are fewer objections to it than to any of the others, and it may be the more easily improved; but any one of the five principal systems now used in England is far better than so many. The present state of printing in the Roman character in Great Britain is, as we have seen already, that every press has been stopped, while the books in arbitrary characters seem to be increasing and gaining public favour. The principal of these is one known as Lucas's. It was devised by T. M. Lucas, of Bristol, about the year 1835. It consists of arbitrary characters, and is said to be founded on Byron's system of stenography. It is simple, speedily learned, and easily read by the touch, and is generally acknowledged to be of all the arbitrary systems the best. The printing in this system began at Bristol, and the following are the works published there:—

1. The Gospel according to St. John, edited by T. M. Lucas, inventor of the system for teaching the blind to read by embossed stenographic character; July 1837; Bristol; in 4to, 66 pages, and 27 lines to a page. Two pages are pasted together.

2. The Acts of the Apostles (according to the authorised version), in T. M. Lucas's embossed stenographic character; 1838. Published under the direction of the Bristol Society for Embossing and Circulating the Authorised Version of the Bible for the use of the Blind; Bristol; in 4to, 118 pages, 27 lines on a page.

This second publication of Mr. Lucas was announced as containing some improvements, as widening the spaces and lessening the abbreviations.

3. The Gospel according to St. Matthew (according to the authorised version), in T. M. Lucas's embossed stenographic character; 1839. Published, &c.; Bristol; 4to, 116 pages. In this third publica-

TABLE VIII.

Titles.	Number of Vols.	Size.	Date of Publication.	Number of Pages.	Number of Square Inches in a Page.	Price. £	s.	d.
THE NEW TESTAMENT complete	8	ob. 4to	1839–51	723	110	2	10	0
THE OLD TESTAMENT as far as printed	7	"	..	811	110	2	0	0
(Each Volume sold separately.)								
Matthew	1	"	..	83	110	0	6	0
Mark	1	"	..	72	110	0	5	6
Luke	1	"	..	88	110	0	7	0
St. John	1	"	..	96	110	0	5	6
Acts	1	"	..	110	110	0	7	0
Romans to Corinthians	1	"	..	89	110	0	6	0
Galatians to Philemon	1	"	..	74	110	0	5	6
Hebrews to Revelation	1	"	..	111	110	0	7	0
Genesis	1	"	..	132	110	0	8	0
Exodus	1	"	1843	112	110	0	7	0
Joshua	1	"	1852	65	110	0	3	6
Judges	1	"	1852	65	110	0	3	6
Proverbs and Ecclesiastes	1	"	..	76	110	0	5	0
Isaiah	1	"	1843	128	110	0	7	6
Daniel, Esther, and Ruth	1	"	..	69	110	0	5	6
Psalms (Prayer Book Version)	2	"	..	164	110	0	12	0
Grammar	1	"	..	13	110	0	1	0
Morning and Evening Prayer	1	"	..	33	70	0	2	0
Hymns from Cowper and Newton	1	"	..	40	70	0	2	0
Five Addresses to those who wish to go to Heaven	1	"	..	21	110	0	1	6

tion is announced the firm conviction that this system will prevail over any other plan, on account of its tangibility.

4. The Gospel according to St. Mark, &c. Bristol, 1840; 4to, 71 pages.

The above, with the exception of a few small elementary works, are, we believe, all that appeared at Bristol. In the year 1839 a Society was formed called "The London Society for teaching the Blind to Read." They adopted Lucas's system, and have been gradually improving it. The following year the types and printing apparatus were transferred from Bristol to London, and in 1841 the Society issued the Epistle to the Romans. Since then their press has not been idle, as the list in Table VII. will show. The printing is now done by the blind at the Institution in the Avenue Road, Regent's Park.

In May 1838 the "London and Blackheath Association for embossing the Scriptures in various languages, and for teaching the Blind to read on the Phonetic System," was established. Its object is to stereotype the Holy Scriptures in James Hartley Frere's phonetic characters. About the year 1839 Mr. Frere devised a cheap plan for embossing or stereotyping. It consists simply of small wires, drawn with angles laid down upon tin plates. The wires are bent and cut by means of ingenious spindles to form the characters, which are similar to those of Gurney's system of shorthand. The wires are attached to the plate by heating it sufficiently to melt the coating of tin, into which the wire sinks, and is fast when cold. The common printing press is used in embossing. Mr. Frere's books are read from left to right and back, after the manner of the ancient Greek boustrophedon writing. Mr. Frere's books are well embossed, and from his plates the books can be printed as they are wanted. The objections to phonetic alphabets are obvious. Mr. Frere, however, does not claim to supersede the common spelling, or the common printing, or common embossing, but to form an easy introduction to them [For a complete list of Mr. Frere's books see Table VIII.]

More recently still another system has been devised by Mr. W. Moon, Master of the Brighton Blind Asylum. The characters are arbitrary, though Mr. Moon defines them as the "Common Alphabet Simplified." He claims also a new mode of stereotyping, by which the characters are rendered sharp and prominent. The lines are read forwards and back like Frere's plan, and it is even more bulky and expensive than his. The new mode of stereotyping is believed to be quite the same as Frere's, by means of wires laid on tin plates. We subjoin a list of Mr. Moon's publications [Table IX.]

The different sizes of the print are distinguished thus:

1. Lines very wide apart, for beginners.
2. „ wide.
3. „ nearer.
4. „ flatter as well as nearer.

TABLE IX.

Size of Print.	Titles.	Number of Vols.	Size.	Date of Publication.	Number of Pages.	Number of Square Inches in a Page.	Price. £.	s.	d.
..	THE NEW TESTAMENT complete .. .. (Volumes sold separately.)	9	ob. 4to	1848–51	..	110	..		
2	Psalms	1	„	1851	..	110	1	1	0
3	St. Matthew's Gospel	1	„	1849	..	110	0	12	0
3	St. Mark's Gospel	1	„	1849	..	110	0	7	0
2	St. Luke's Gospel	1	„	..	..	110	0	13	0
2	St. John's Gospel	1	„	1848	..	110	0	8	0
3	The Acts of the Apostles	1	„	1849	..	110	0	13	0
2	Romans and Corinthians	1	„	1850	..	110	0	12	0
4	Galatians to Philemon	1	„	1849	..	110	0	7	0
2	Epistle to the Hebrews—James, Peter, John and Jude	1	„	1850	..	110	0	10	6
3	Revelation	1	„	1851	..	110	0	7	0
2	1st, 2nd, and 3rd Epistles of St. John	1	ob. 8vo	1851	..	50	0	4	0
1	St. John's Gospel, Chapters XIV. and XV., each ..	2	„	1850	20+18	50	0 each	1	6
1	Epistle to the Hebrews, Chapter XII.	1	„	1851	15	50	0	1	6
1	Isaiah LIII. and Psalms XXIII. and CXXV.	1	„	1851	..	50	0	1	6
1	First Lesson Book, containing Freeman's Card and Scripture Texts	1	„	1850	19	50	0	1	6
1	Morning and Evening Devotions	1	„	1847–50	..	50	0	6	0
4	The Last Days of Polycarp	1	„	1847	10	50	0	1	0
4	The Last Days of Cranmer	1	„	1847	..	50	0	1	6
1	The Cataract of Niagara	1	ob. 8vo	1849	13	50	0	1	2
4	A Remarkable Tiger Hunt	1	„	1847	..	50	0	1	6
4	The Seaman's Leap for Life	1	„	1847	..	50	0	1	0
4	The Sagacity of a Lioness	1	„	1847	7	50	0	1	0
4	Anecdotes of Two Dogs	1	„	..	8	50	0	1	0
1	The Lord's Prayer in English	sheet	..	..	..	..	0	0	4
1	The Lord's Prayer in the Irish, French, Spanish, German, Italian, and Chinese Languages, each	sheets	..	1849	..	..	0	0	6
..	Animals, various, each	sheet	..	1851	..	..	0	0	6
..	Mathematical Diagrams from Euclid	1	..	1851	..	..	1	1	0
..	Patterns for Knitting	1	..	1851	..	..	0	3	0
..	Hymns arranged for four voices	1	..	1851	..	..	0	10	6
..	Hymn Tunes, arranged for the Pianoforte	1	..	1851	..	..	0	10	6
..	Maps—Africa, North America, South America, Ireland, Palestine, Jerusalem, and British Isles, each	sheets	..	1849	..	..	0	1	0
..	Hymn for the Blind	1	ob. 8vo	1851	6	50	0	1	0
..	English Dictionary (begun 1850)	1	ob. 4to	1850	..	..	..		

If now the New Testament, printed in all the six systems used in the English language, be taken as a standard of comparison, the following table will show the results:

TABLE X.

Systems.	Number of Vols.	Size.	Number of Pages.	Number of Lines in a Page.	Number of Square Inches in a Page.	Price. £	s.	d.
The New Testament:—								
Howe's	2	4to	430	..	117	0	16	0
Alston's	4	„	623	42	90	2	0	0
Gall's	8	„	..	28	70	2	0	0
Lucas's	9	„	841	27	70	2	0	0
Frere's	8	ob. 4to	723	..	110	2	10	0
Moon's	9	„	..	25	110	4	10	0

By a comparison of all these lists it will be found that Howe's books are not only much less in bulk than any of the others, but are also much cheaper.

APPARATUS AND BOOKS FOR THE BLIND.*

England.—Mr. E. A. HUGHES (20, p. 537), of Mount Row, Westminster Road, exhibited a machine for enabling persons born blind to write, in raised characters, without using types; a machine to write with a pen or pencil in skeleton Roman capitals; a machine to cast accounts and make general arithmetical calculations by tangible characters; a machine to copy and compose music on paper, &c. Mr. WEDGWOOD, of Lombard Street, exhibited an improved noctograph, useful to persons who have become blind *after having learnt to write.*

THE SOCIETY FOR TEACHING THE BLIND TO READ (198, pp. 550, 551), Avenue Road, Regent's Park, exhibited embossed books for the blind; ciphering boards for the blind; maps for the blind; geometrical boards for the blind; apparatus invented by Mr. W. Wood for enabling the blind to emboss Lucas's characters, and thus to communicate with each other; a specimen of music, by Mr. Wood, for the blind, in raised characters; and chessboards for the blind. The system adopted is Lucas's, which has already been fully described, and has the objection of being in arbitrary characters: this also applies to the machine. This is a well-established Institution, and great pains were taken during the whole of the Exhibition by the master, Mr. Wood, to demonstrate the successful operation of the various plans he has adopted to educate blind persons.

Mr. JAMES GALL, Myrtle Bank, Edinburgh (171, p. 548), exhibited Gall's triangular alphabet for the blind, which, by its similarity to the Roman alphabet, is said to be easily read by eye and touch without previous instruction. A volume, containing the Epistle to the Ephesians, printed with this alphabet, and Gall's apparatus for writing by and to the blind. The apparatus consists of a stuffed frame, on which paper is placed; of a cover with bars to guide the lines, which are written from the bottom upwards; and of small stamps, with the letters formed of common pins, which are pricked through the paper and read on the opposite side.

THE EDINBURGH SCHOOL FOR THE BLIND, Abbey Hill, Edinburgh (170, p. 548), exhibited Dr. Foulis' tangible ink for the blind. This ink contains a large quantity of solid matter, which is deposited on the paper, so as to present a raised surface to the finger. Dr. Foulis' manuscript music notation for the blind. Mr. Gall's typhlograph for the blind. Mr. Gall's system of arithmetic for the blind, accomplished by common pins stuck into a pincushion, and Mr. Gall's types for correspondence, by which blind persons can correspond with one another, or jot down memoranda for private use. Dr. Foulis' tangible ink appears to present some advantages, and will probably become a useful adjunct to the numerous means devised for the instruction of the blind, and for enabling them to read and write. The letters on the specimens exhibited were sufficiently raised to be quite perceptible to the touch.

* 'Reports of the Juries,' p. 422.

APPARATUS, &c., FOR THE BLIND—UNITED STATES.

Mr. C. STARR, of New York (89, p. 1438), exhibited books for the blind. Two Bibles, embossed with Dr. Howe's characters. Two leaves are pasted together, and a stout strip of paper stuck between and around these leaves, so as to form a rim to prevent the characters from being flattened on shutting and opening the book. This plan has also the same advantage as if each leaf were printed on both sides. The types are rather small, but the whole work is one of merit.

Dr. S. G. HOWE, Boston (439, p. 1463), exhibited books for the blind. His system has been fully described, and to it the Jury give the preference above all others.

Mr. DODGE, Superintendent of the American Department, exhibited Xenophon and Virgil; characters on Dr. Fry's plan, known as the Glasgow type, all in Roman capitals. This is the system adopted at the Manchester School for the Blind. It has been in use for about fifteen years.

THE INSTITUTE FOR THE BLIND, Staunton, Virginia, exhibited specimens of books and types for the blind. The characters are capitals and lower-case; the printing is sharp and good.

APPARATUS, &c., FOR THE BLIND—FRANCE.

M. MARCELLIN LEGRAND, Paris (584, p. 1206), exhibited type-plates to print in relief for the blind. The characters are rather too small, and possess the disadvantage of having both capitals and small letters.

APPARATUS, &c., FOR THE BLIND—AUSTRIA.

G. B. MARCHESI, of Lodi (139, p. 1014), exhibited a writing machine for the blind, producing the characters in black or in relief. The letters are formed with pin points, and they are sufficiently tangible; but having capitals and small letters, this plan offers the disadvantage that two alphabets have to be learnt.

APPARATUS, &c., FOR THE BLIND—BAVARIA.

MM. FEHR and EISENRING, Augsburg (2 Zollv. 54, p. 1100), exhibited metal plates, with letters and characters in relief. The letters are too broad, and are not well adapted for the blind.

The Jury beg to suggest that a uniform system should be adopted, and that in future all books printed for the blind should be printed in the same character. Dr. Howe's plan appears simple, easy, and fit for general adoption.

LONDON: PRINTED BY WILLIAM CLOWES AND SONS, LIMITED, STAMFORD STREET AND CHARING CROSS.

REPRINT, 1889.

THE BLIND.

FROM

The English Cyclopædia.

CONDUCTED BY

CHARLES KNIGHT.

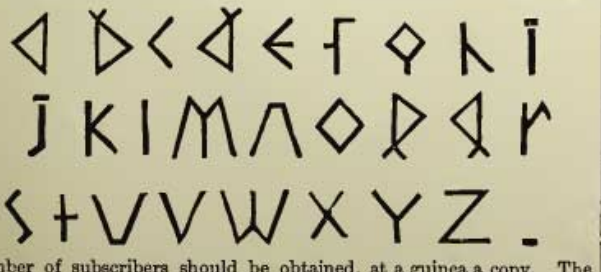
1859.

young, which however are undoubtedly deposited on the plants by the parent insect.

BLIND, ALPHABETS FOR THE. The early instructors of the blind felt the irksomeness of oral instruction, and the dependent condition of their pupils. Without being aware what results might follow they early made the first step towards tangible printing, by the invention of letters in relief, by which the alphabet might be taught—letters put together to form words, and these arranged in sentences. In the first attempt thus made, the letters chosen were those of the Illyrian or Sclavonian alphabet modified. [ALPHABET]. This alphabet was doubtless preferred on account of the square form of the letters, which it was thought would make them more obvious to the touch than ours. ('Essai sur l'Instruction des Aveugles,' &c., par le Docteur Guillié, p. 134, 2nde edition.) The principle of square or angular letters was afterwards abandoned, as "not offering greater advantages than common characters." Moveable letters were next invented, which were placed on small tablets of wood, and were made to slide in grooves, on a similar plan to some of the toys which are used for the purpose of inducing children to learn their letters, spelling, &c. It was with similar letters that Usher, archbishop of Armagh, was taught by his two aunts who were both blind; but this process was found defective for teaching blind persons. Moveable leaden characters were afterwards cast for the use of the blind, by Pierre Moreau, a notary of Paris; but the work was attended with difficulties and expenses which he was not prepared to encounter. Large pin-cushions were also brought into use for the blind, on which the characters were figured with 'inverted needles.' The relief caused by the heads of pins would have been more eligible. Various other attempts were made in wood and metal till the time of Haüy, who invented the art of printing in relief for the blind, and thus devised a plan by which the blind man might acquire knowledge, and derive amusement during his solitary hours independent of a teacher or an attendant. The invention of printing in relief is said to have arisen from the sight and feeling of a proof of common printing fresh from the press.

Previous to the time of M. Haüy no success had been obtained in the art of printing for the blind, though it had been attempted in a variety of ways, and by different persons. Letters were engraved in wood, not cut in relief, but in the ordinary manner of wood-cutting. The configurations of the letters were found to be difficult to trace, possessing none of the advantages which letters in relief afford. Haüy's was a bolder invention than any other offered to the public. Not only has it never been superseded, but from it have arisen all the modern efforts to teach the blind reading by means of relief characters.

Various attempts were made in our own country to produce tangible alphabets, and embossed books for the blind. An impetus was given to them in 1832, in consequence of the Society of Arts in Scotland offering their gold medal, value twenty sovereigns, for the best alphabet and method of printing for the use of the blind. Twenty-one alphabets were submitted to the committee appointed on this occasion, fourteen for competition and seven for non-competition. Of all these, *four* only, with or without modification, have survived, while two additional systems have come into use. All these will be presently examined. The character which the French schools had adopted was an upright script, widened, as was falsely thought, to render it more obvious to the touch. Two alphabets were also employed, one of capitals and another of small letters. To these two errors in the outset may be attributed the failure of the attempts in France to make the blind readers, and to furnish them with books. The wide and complicated forms of script letters detained the finger in tracing their shape. The acquisition of fifty-two letters instead of a single alphabet doubled the amount of time required to become familiar with them, to say nothing of the complicated mental operations to be at the same time carried on by the readers. For two or three years previous to the wise and liberal offer of the Edinburgh Society of Arts, James Gall of Edinburgh was the sole labourer in the cause of printing for the blind. He adopted a modification of the Roman alphabet, in which he excluded curves and circles, and substituted straight lines and angles. He also abolished the capital letters, and thus reduced the number of characters to be acquired to twenty-six. He succeeded in producing beautiful and enduring workmanship on good paper. He printed several preparatory books which the blind read with ease; and he offered to print the whole of the Gospel of St. John as soon as a sufficient

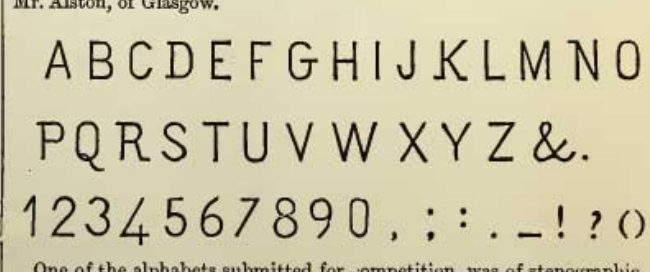


number of subscribers should be obtained, at a guinea a copy. The immense cost of a single gospel acted as a great discouragement to his plans, and before he could remedy it other labourers were in the field,

and his market was in the possession of other producers. Great merit is however due to Gall, and he must be looked upon as the forerunner of that success which has followed the labours of others. He had removed some difficulties. The works of the French were bulky and expensive; by Gall's angular alphabet much economy in space was gained, and experience proved that it possessed merits of tangibility not to be found in the French alphabets.

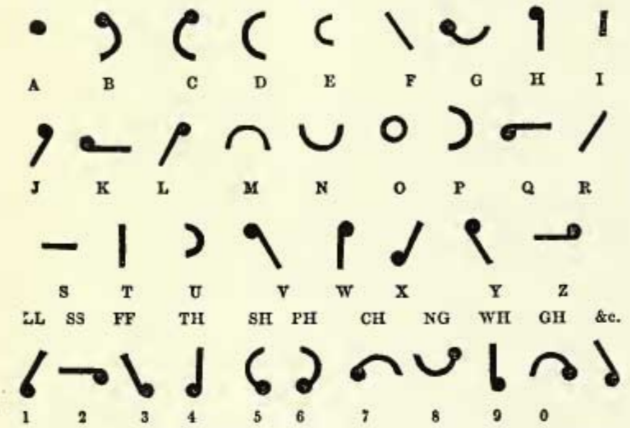
The character which found the greatest favour with the committee appointed to award the gold medal of the society, was the Roman letter of Dr. Fry, to which the prize was finally awarded. But the committee, before deciding, called in the aid of several experienced men to assist them in coming to a right judgment; among others, the Rev. W. Taylor, a gentleman who had been practically engaged in inventions for, and in the instruction of the blind for many years. He was an honorary member of their society, and at the time when his opinion was sought, he was at the head of the recently established School for the Blind at York. Better aid the society could not have procured. To him all the alphabets and communications were submitted, and upon them be made a very copious and able report. Mr. Taylor sets out with saying there does not appear to him "*sufficient* reason for departing from the *common Roman letter*." He then mentions a few modifications which he would introduce in Dr. Fry's sans-serif Roman capital, and speaks decidedly against any merely arbitrary character. It is unnecessary to go into Mr. Taylor's report in all its details. The practical part of the subject was taken up by the late Mr. Alston, then the Treasurer of the Asylum for the Blind in Glasgow; he found the letters of Dr. Fry too broad in the relief, and increased their tangibility by having them made sharper; some other slight alterations were also introduced by his skill and experience. The encouraging approval of his efforts by many of the schools for the blind, together with the pecuniary aid they and the various Bible Societies afforded by the purchase of his books, enabled him to print the entire Scriptures in the course of a few years, as well as some elementary books, and others of more general interest. The Society of Arts for Scotland did not leave his efforts unrewarded, but gratified him and encouraged him to persevere by presenting him with the silver medal of the society in 1838, for his Fables with wood-cut illustrations, printed in relief, and subsequently with three honorary medals for his continued exertions on behalf of the blind.

The decision of the committee of the Society of Arts in 1837, is worthy of being recorded. For five years the subject had been under consideration, and the aid of the most intelligent and practical teachers in the kingdom had been obtained. It appeared to that committee: "1. That although an arbitrary character might possess in itself superior advantages in simplicity and tangibility, yet there would be great, and in many cases insuperable obstacles to the blind generally acquiring a knowledge of any character not familiar to those possessed of sight, and consequently, such an alphabet would not be generally adopted throughout Europe and America. 2. That the same objection applies, although perhaps in a less degree, to Mr. Gall's angular modification of the Roman alphabet; and while the want of capitals and the difficulty of tracing the lines are said to be also serious objections to the use of his character, it does not in other respects seem to offer sufficient reasons for its adoption in preference to the Roman alphabet slightly modified. 3. That, from being almost universally known both in Europe and America, and taking all other circumstances into consideration, the common Roman capital alphabet, as represented by the late Dr. Fry, * * * seems not only the best adapted for teaching the blind to read, but also as a medium of written correspondence. Hence, there is every reason to believe, that it would be sooner brought into general use than any of the other characters in competition—that books printed with it would be more in demand—and, consequently, that their expense would be greatly diminished." The committee guard themselves against the one or two inherent defects in Dr. Fry's alphabet by further stating, that in proposing his communication as best entitled to the society's premium, they "do not wish it to be understood that they consider his modification of the Roman alphabet as *now* in every respect the best adapted for teaching the blind, but only that it was superior to any of the others given in to the society for competition, and remitted to the committee for consideration." and they then allude to the improvements on it since proposed and partly carried into effect by the Rev. Mr. Taylor, Mr. Anderson, of York, and Mr. Alston, of Glasgow.



One of the alphabets submitted for competition, was of stenographic characters, the invention of Mr. T. M. Lucas, of Bristol. As this alphabet has many adherents it claims respectful notice, premising that

it was in use some years before the Society of Arts arrived at its decision, and that its claims were very ably advocated by the late Rev. Dr. Carpenter, LL.D., of Bristol, whose letter addressed to the society, contains many valuable suggestions on printing for the blind. Mr. Lucas has himself stated that the 'Penny Cyclopædia' contained a fair exposition of his principles, which we are glad to reproduce:—"The characters are employed for reading, writing, arithmetic, and music; and they are so simple, that to any book for the blind, not more than half the number of types are required that are necessary to print the same for those who are blessed with sight. Should the event prove as successful as is intimated in the above announcement, and so great a barrier to the improvement of the blind be removed, it will be desirable that the different institutions should unite their exertions, and set apart a common fund to supply their pupils, as well as other blind persons, with so powerful an auxiliary to their progress in knowledge. The alphabet is composed of thirteen simple characters, and thirteen formed from the roots of these with a crotchet-head to each. There are ten double letters from the same roots, distinguished also by the crochet-head: these also represent the nine figures and the cypher, whether used as numerals or ordinals. In all thirty-six characters are employed. The advantages attending the use of stenographic characters seem to be in the saving of types, paper, and labour, thus materially diminishing the cost of books for the blind. The disadvantages attending the system we are speaking of appear to consist chiefly in the confusion which the learner must feel in having but one character employed in several offices, as in the double letters, numerals, and ordinals, and in the necessity that every person should be a stenographist who communicates with the blind by writing. These difficulties are not very great for persons to overcome who have never been accustomed to a written language.



"The manner in which the characters of Mr. Lucas are employed may be seen in the following commencement of St. John's Gospel, only that we give the extract in Roman letters instead of using the stenographic characters.

t gospl b st jon, chap: 1.

in t bgini ws t wrd a t w ws w g, a t w ws g. t sam ws n t bgini w g. l thins wr mad b hm, a wo hm ws nt athin mad tht ws mad. in hm ws lif a t l ws t lit f mn.

"It will be observed that the repetition of numerous letters is avoided; particles are represented in most instances by their initial letter, and when a word, having been once mentioned, recurs immediately, or frequently, it is represented by its initial letter also."

An undoubted defect in Lucas's system is the confusion which must arise from having double letters and figures, whether cardinal or ordinal, represented by the same stenographic signs; thus the signs for th, ch, and ll also represent 471. The contractions are very numerous, many words are expressed by a single character, and other words are contracted by the omission both of vowels and consonants. The value of full spelling is great, especially to the young blind; those who have already learned to read while possessing sight, would, in time, get over the difficulties the system presents.

The next system which came into use in point of time was Frere's, also stenographic, founded on Gurney's shorthand, as Lucas's was on Byrom's. This system is phonetic, and is formed on the "combination of elementary sounds." It professes to be composed of twenty-nine signs, to be extremely simple, and to have only four descriptions of signs, which represent thirty-two different sounds. Its distinctive principle, compared with Lucas's, is the phonetic one, the powers or vocal sounds of the letters rather than their name-sounds being taught, 'each word being embossed according to its actual pronunciation, the names of the characters combined, or sounded together, give the word." The 'Memoria Technica' which accompanies the lessons is most burdensome, and the twelve rules in verse for supplying the omitted vowels could never be regarded by blind or other readers who had to commit them to memory, in any light but as a distasteful task. We learn, however, that their employment is *optional*, though the system would be incomplete without them! The twelfth of these rules is:—

"Whene'er the proper rule don't yield you satisfaction,
On trial you will find the word is a contraction."

"A fair knowledge of the system may be acquired *by those who have sight* in three or four hours." Two things are noteworthy in this agreeable announcement. 1. That a system of stenographic reading can be acquired in three or four hours. 2. That stenographic systems require ordinary readers to learn them before they can assist their blind brethren in the acquisition of the art of reading.

The last system to be described is Moon's; although it is not stenographic in one sense, its characters have sufficiently the appearance of stenography to be taken as such; and again, although it claims to be the common alphabet simplified, it is certainly arbitrary enough for a first observer to recognise no similarity between it and the forms to which he has been accustomed. Mr. Moon, like Mr. Frere, is himself a blind man, and he has laboured hard to establish a system which he believes is destined to supersede all others. If all that he says in its favour could be taken for granted, no further question could arise as to the best alphabet for the blind. The judgment and experience of those who have means and opportunities for deciding, at least equal to Mr. Moon's, but whose zeal, enthusiasm, and interest are not fettered by partial views, do not bear out his statements.

"Moon's system is adapted to the cottage, *because anybody can teach it.*" This statement is more than questionable. Anybody of moderate intelligence can doubtless acquire it if they can already read. The same may be said of Alston's books, and herein consists their superiority—anyone who can read may at once be a teacher of reading to the blind. "It is adapted to the dull finger of the labourer, because it is *very plain to the touch.*" This is no exclusive advantage in Moon's letters. "It is suited to the aged, the sick, and the ignorant, because it is so *easy to be understood.*" This is a benefit compared with Lucas's and Frere's, but in this respect Alston's is certainly more deserving of praise. "The words are spelt at full length," and "full spelling is essential to accuracy." Granted, so are Alston's, which system does not employ even the few contractions Moon introduces; in this respect Moon's books are superior to Frere's or Lucas's, but inferior to Alston's. Moon's alphabet consists of "the *common letters simplified*, and therefore is easily learnt and taught by all who know their a b c." But, Alston's consists of the common letters themselves. We have doubts about the easy recognition of the transformed letters though none as to the increased tactile power of the new forms in comparison with the certainly more intricate forms of the ordinary alphabet. "Six of the Roman letters are retained *unaltered;* twelve others have parts left out so as to be left open to the touch, and yet be easily remembered as half of a well-known letter." Of these twelve none would be recognised from any similarity they bear to the letter they represent; they must therefore be regarded as arbitrary characters. "Five or six new and very simple forms complete the alphabet." These are arbitrary; so that this system of the "common letters simplified" is in fact composed of six of the Roman letters unaltered and eighteen arbitrary characters. Most certainly Moon's alphabet does not possess the superiorities over others to which it lays claim. That it is a *good* arbitrary character for the blind no one who has paid the least attention to the subject can deny. The question, however, has yet to be settled whether an arbitrary or an alphabetical character is the best for the blind. And on this point evidence must be adduced.

We find the schools for the blind in London, Glasgow, Newcastle, Manchester, and York, use the books in Alston's Roman characters; those of Bristol and Belfast also use these books, and in addition some printed at Bristol with lower-case letters as well as capitals. (Several of the parties competent to form a judgment on the matter, advocate the use of capitals.) We find Lucas's stenographic system in use at Bath, where the defective orthography is considered objectionable for young readers; the Roman alphabet has also been used in some cases; while for adults generally Moon's system is considered the best. At the Nottingham school, Lucas's system is generally adopted, some of the pupils also read Moon's books, and also those in the Roman characters. The schoolmaster, who is blind, reads on six systems, but gives a decided preference to Lucas's. The pupils read quite as rapidly as is necessary, and as correctly as others of the same age with sight. The superintendent of this school says "Lucas's books are

less bulky than those in the Roman type and consequently cheaper." The statement received from Birmingham is similar to the above, "All the pupils read on Lucas's system, it is much liked by them, and preferred to any other; the value of a full orthography is understood, but the bulk and expense are considered objectionable. The Roman type is not generally considered readable." (Whether Alston's or the American Roman type is here referred to is not stated.) The Exeter school furnishes the following information. "Lucas's books are used here, and with but one or two exceptions, all have been able to read the scriptures. Our pupils have tried several systems. All of which they could learn, but they find Lucas's the easier to read." "The London Society for teaching the blind to read," situated in Avenue Road, Regent's Park, has become the head-quarters of Lucas's system. This society has published the whole of the Bible, which is sold in separate books or portions, the Liturgy, and several elementary works. The system has been revised and improved under the superintendence of the Rev. J. W. Gowring. Mr. Moon's printing establishment is at Brighton, but it has agencies at work in London, Birmingham, Edinburgh, and many other places for the introduction of the books. Moon's system has been well-received by the blind and extensively adopted; it is used in the schools of Brighton and Edinburgh. The testimony of Thomas Campbell in the name of the inmates of the asylum in the latter-mentioned city, speaks of Moon's books as superior to all others; his letter traces the efforts made in that asylum with respect to Gall's, Alston's, the American, and Lucas's systems, and his conclusions are entitled to consideration, for they are the results of experience strongly supported by facts which are adduced. He emphatically states "that Mr. Moon's system is not only the best ever devised, but that it is the only one capable of imparting lasting benefits to the working blind." In the various publications advocating the use of this system great stress is laid on its adaptability for the aged, the nervous, and the working blind—those generally in whom the sense of feeling is less than ordinarily acute. It is clear that as a system it can afford to stand on its own merits, and that its adherents need not depreciate other plans while they support its peculiar claims to public favour. This observation is made with reference to the disparaging remarks on other systems in Moon's 'Blind Readers and their Books.' Frere's publications are used in the Liverpool asylum; a society was also established at Blackheath some years ago for teaching the blind to read on Frere's system.

The price of these comparatively expensive books is a consideration which must not be lost sight of in any estimate of their respective claims on public notice. In another part of this article it is stated that a guinea was the sum proposed by Gall for a copy of the gospel of St. John; this, however, was the fancy price of an article new in itself, and for which there was no known market. All this is changed, as will be seen by a comparison of the prices annexed. The Gospel of St. John is now charged 4*s.* in Lucas's stenographic character; 4*s.* 6*d.* in Alston's Roman capitals: 8*s.* in Moon's arbitrary character. The book of Genesis is 8*s.* in Lucas's; 10*s.* in Alston's; 21*s.* in Moon's. The New Testament is charged 1*l.* 16*s.* in Lucas's; 2*l.* in Alston's; 4*l.* 17*s.* in Moon's. The Old Testament, 8*l.* 1*s.* 4*d.* in Lucas's; 7*l.* 15*s.* in Alston's; and 11*l.* 11*s.* in Moon's, without the books of Leviticus, Numbers, and 2 Chronicles; the addition of these will make the cost not less than 13*l.* 10*s.* This discrepancy in price is very great, and it is clear that Mr. Moon must reduce his prices to obtain that favour which he doubtless desires. How strange it is, however, that Alston's Old Testament in Roman capitals, without signs or contractions, can be had for less money than Lucas's with the aid of stenography and its very numerous contractions! Does stenography actually increase the bulk and expense of the books for the blind? The American books are much lower in price than any of the above; the letters are capitals and lower case, but so small that, in this country, they are considered unreadable by the blind. We have four systems in England, the Scriptures in each, besides many other books. And another character is projected. Mr. Littledale, himself blind, and the present superintendent of the school at York, proposes to bring out a "selected alphabet," made up of capitals and lower case letters, readable by any seeing instructor of a blind child; his strong impression being that the Roman character ought not to be set aside for one less universally known, and that no stenographic, or otherwise arbitrary alphabet, will meet the requirements of both children and adults for reading, writing, and accounts.

The writer of this article is not connected with any school for the blind; he does not wish to appear as a partisan of any system of typography for them, he has endeavoured to set forth the excellences and the defects of existing systems of printing, and to show the results as given by their respective advocates, while his wish is to see the superiority of a single system established, in order that the united efforts of all who are now engaged on methods so diverse may be combined for the production of good and cheap books for the blind. Enormous expenses have been incurred, chiefly by the benevolent public, in the purchase of the numerous founts of type, and in the establishment of several printing offices, where one would have sufficed if unanimity had prevailed. Each system has its adherents, but little good has been accomplished compared with such results as would have arisen from unity of purpose and willing co-operation. There cannot be a remunerating sale for the books produced on all the different systems. Zeal and benevolence may commence a good work of this nature, but it can only become an enduring benefit on the commercial principle. When this principle cannot be applied, zeal and benevolence will fail in providing heart-work and funds which must be so largely wasted. It may be a hard thing for men to sacrifice wishes long indulged and to forget objects for which they have lived and striven, but if the interests of the community, or of a class, require it, men of ardent and kindly feeling will not be backward in making such sacrifices. A conference should be held, partly composed of intelligent blind men, to ascertain whether it is possible to unite all parties in the prosecution of one system of printing, or whether all should persevere in a course which divides the friends of the blind and injures their cause. There are men living who have devoted years to the consideration of the question, and who would be glad to consider it by the lights of science and experience.

BLIND, CENSUS OF THE. In Great Britain and the islands of the British seas (exclusive of Ireland), there were 21,487 totally blind persons at the time of the last census—11,273 males and 10,214 females. Previous to 1851, no account had been taken of the number of the blind in Great Britain and Ireland, so that there are no means of ascertaining whether their number is increasing or decreasing relatively to the population. The numbers above given furnish a proportion of 1 in 975 in Great Britain, 1 in 979 in England and Wales, 1 in 960 in Scotland, and 1 in 837 in the Channel Islands and the Isle of Man. These proportions vary in different parts of the kingdom: in London the proportion is 1 in 1025, and it is nearly the same in the north midland, the south midland, the northern (including Yorkshire), and the south-eastern divisions of the kingdom; the west midland division presents us with 1 in 906; the eastern, 1 in 888; Wales, 1 in 847; and the south-western, 1 in 758: while the north-western district shows only 1 in 1167; the southern counties of Scotland, 1 in 1065; and the northern counties, 1 in 823.

On comparing these results with those obtained in other countries, we find that in the flat champaigns of Belgium, Hanover, portions of Saxony, Prussia, and some other German states, and the plains of Lombardy and Denmark, the proportion is 1 in 950; in the more elevated portions of Saxony, Prussia, Wurtemburg, Nassau, the duchies of Altenburg and Hesse, and also part of Brunswick, 1 in 1340; in Alpine regions, and countries elevated from 2000 to 8000 feet above the sea-level, as in some of the Swiss cantons, Sardinia, &c., 1 in 1500; while in Norway, according to the returns made in 1845, the proportion was 1 in 482. Thus the level portions of Europe present nearly the same results as Britain, while there are certain discrepancies in the above numbers which cannot at present be accounted for.

It has been thought that blindness has been increased by many of the employments followed in populous manufacturing towns; but it is clear, from the census returns, that a much larger proportion of blind persons is found in agricultural than in manufacturing and mining counties. For example, in Wilts, Dorset, Devon, Cornwall, and Somerset (south-western division), the average is 1 in 758; in Essex, Suffolk, and Norfolk, 1 in 888; and in the northern counties of Scotland, which include the Highlands, 1 in 823; while the highest proportion, namely, 1 in 665, is observed in Herefordshire. Contrasting these averages with the following manufacturing or mining counties, no unfavourable inference can be drawn as to the physical effects of manufactures on the sense of sight: in the West Riding of Yorkshire the blind are 1 in 1231; in Cheshire and Lancashire, 1 in 1167; in Durham, 1 in 1163; in Staffordshire, 1 in 1082. It should be remembered, that the asylums and schools which have been established for the reception and instruction of those deprived of sight are located in the principal cities and towns. Where, however, the towns are large, the number of inmates of these establishments only slightly affect the proportion which the blind bear to the general population. In London the proportion is 1 in 1025; in Manchester, 1 in 1107; in Liverpool, 1 in 999; in Birmingham, 1 in 1181. Conclusions unfavourable to the rural districts should not however be deduced from a mere comparison of the proportion of the blind to the population of all ages. Blindness is a common infirmity of old age; and an examination of the ages of the blind shows that nearly one-half of the persons deprived of sight are above 60 years of age. It follows, therefore, that in those localities in which the largest numbers of old men and women are living, the largest proportion of the blind will be found. In the great seats of manufacturing industry the population generally is much younger than in most of the agricultural counties where persons in large numbers, and especially females, are living, in circumstances favourable to longevity, at very advanced ages. Thus, in counties presenting the highest and lowest proportions of blind persons, the influence of age is sufficiently apparent. The proportion of population in Herefordshire aged 60 years and upwards is 10 per cent., while the proportion of blind of the same age is 61 per cent.. In Wilts, Dorset, Devon, Cornwall, and Somerset, the proportion aged 60 years and upwards on the whole population is 9 per cent.; on the blind it is 53 per cent. In Essex, Suffolk, and Norfolk, only 8 per cent of the whole population attain 60 years and upwards, while of the blind in the same locality, 50 per cent. attain this age. In the northern counties of Scotland, 9 per cent. of the population reach the advanced age specified; while of the blind, 54 per cent. attain the age of 60 and upwards. These four geographical divisions are those in which the highest proportion of blind persons

is found. The four divisions in which the lowest proportions prevail present a very striking contrast with the above. In the West Riding of Yorkshire, the proportion per cent. of the population aged 60 years and upwards is only 6, while the proportion of the blind of the same age is 43 per cent. In Cheshire and Lancashire, the proportion on the whole population is 5, that of the blind 31 per cent. In Durham, the proportion on the population is 6 per cent.; on the blind, 52. In Staffordshire, the proportion of the population is 6 per cent., and of the blind 42.

In the early ages of life the numbers of the blind are not large. Of the 21,487 blind persons in Great Britain, only 2929, or less than 14 per cent., are under 20 years of age,—a circumstance tending to show that cases of blindness at birth are not common. Between 20 and 60 years of age there are 8456 persons, or about 39 per cent. of the whole number; while 10,102 persons, or 47 per cent., are at the advanced ages above 60. These facts point to the conclusion that blindness, in many cases, may have arisen as a natural infirmity attendant upon old age, and also show the great longevity of the blind, notwithstanding the accidents to which they are liable.

It is clearly shown in one of the tables comprised in the Registrar-General's returns, that this affliction is not confined chiefly to particular classes and trades, but exists amongst all ranks and in a great variety of employments. None of the great branches of manufacturing industry seem to be peculiarly liable to it; indeed, the small numbers returned against cotton, linen, silk, woollen cloth, iron, and earthenware, are remarkable when the immense amount of labour employed in these manufactures is considered. Factory workers are however mostly young persons, and none would be employed in the midst of machinery with any defect of vision. Amongst the items which present the largest numbers in the classification of employments, are (in Great Britain): agricultural labourers, 907; labourers not otherwise described, 512; Chelsea pensioners and soldiers, 586; Greenwich pensioners, 70; farmers, 505; domestic servants (chiefly females), 438; weavers, 295; coal-miners, 195; copper- and lead-miners, 68; stone and limestone quarriers, 51. Of the class described as "annuitants," and "living on alms," there are 1062; and 2833 blind paupers are returned in workhouses without any statement as to previous occupation. Of the blind following employments presumed to have been acquired after loss of sight, there are: musicians and teachers of music, 535; mat- sacking- and net-makers, 127, and knitters, 92. With respect to 2853 males and 5960 females, no returns as to their actual or previous pursuits are made.

Of the persons returned as blind in Great Britain, 11,273 are males and 10,214 females. Accidents and diseases resulting in loss of sight are more likely to arise in the employments followed by males than in those of females. The proportions in England and Wales are 113 males to 100 females; in Scotland the difference is slighter,—a result probably traceable to the preponderance of aged women in that country.

The Census Report of the Commissioners on 'The Status of Disease' in Ireland is one of the most valuable documents ever published in this kingdom on the amount and distribution of disease. The inquiry was conducted with much intelligence, and with such precautions as are not usually manifested in matters of this nature. As a *first* contribution on the permanent maladies to which the inhabitants of a country are liable, its importance can scarcely be over estimated, while it has opened a field for investigation which will hereafter prove a source of lasting benefit to science, and which cannot fail to be a means of directing attention to the afflicted classes whose position it exhibits.

According to the returns made to the Census Commission Office, there were 7587 persons (3588 males and 3999 females) totally deprived of sight resident in Ireland on the 30th March, 1851. Of this number, 1672 were in the civic and 4920 in the rural districts, the former localities including the different asylums and public institutions for the blind; and 995 persons (373 males and 622 females) were in the various workhouses and auxiliary workhouses at the time specified.

Without an accurate medical examination and special inquiry into the circumstances of each case, it would not be possible to define or tabulate the diseases or accidents which produced the large amount of blindness ascertained. How many were born blind there are no means of knowing: congenital cataract, the most frequent cause of blindness from birth, is not very common; loss of sight from purulent ophthalmia and ulceration of cornea is the most common; and in some districts, particularly in the west of Ireland, internal inflammations of the eyes of a rheumatic character prevail to a great extent, and are a frequent cause of blindness.

The limited space we can devote to this subject prevents us from giving the important Tables included in the Report, from which we have drawn the above facts and observations. To that Report all who are interested in the state of the blind in Ireland may be referred. We give the heads of these Tables.

Table I. shows the number of blind in the civic and rural districts and the workhouses, together with the proportion of males to females, and proportion to the population in the several provinces, counties, cities, and towns in Ireland.

Table II. shows by ages and sexes the number and previous or present occupations of the blind.

Table III. shows by ages and sexes the state of education and marriage among the blind in workhouses and in the civic and rural districts.

Table IV. shows the number, distribution, means of support, date of erection, and other circumstances relating to the various asylums for the blind in Ireland.

Table V. (taken from the reports of St. Mark's Ophthalmic Hospital, Dublin, from 1844 to 1852) shows the varieties of diseases and accidents of the eye in 11,233 instances, together with the colour of the eye in 7354 cases.

(Compiled and extracted from the *Official Returns of the Census of Great Britain in* 1851, published under the authority of the Registrar-General; and from *The Census of Ireland for* 1851,—*Report on the Status of Disease.*)

BLIND, EDUCATION OF THE. Blindness perhaps meets with more general sympathy than any other calamity. Our most beautiful and correct perceptions are derived through the medium of sight; the want therefore of such a medium is an evil for which no other possession can compensate. Hence it is that we at first consider the blind as an unfortunate race, whose conceptions must not only be confined to that narrow sphere in which they live and move, but, as far as a knowledge of external objects is concerned, must be limited to that imperfect acquaintance which is obtained by the sense of feeling. Looking however further into the subject, we find that the sense of hearing is constantly communicating knowledge to a blind person which helps him to analyse and compare; from which he draws inferences, and arrives at conclusions more or less correct; that constant experience enables him to modify any false impressions which he may have received; that association, memory, and other powers of the mind are active; that the senses of smell and taste are continually contributing some small additions to his stores of knowledge; and that, by these united means, he may become well-informed on subjects of ordinary discourse, though labouring under a disadvantage at first appearance insurmountable. The self-education of a child born blind commences as soon as that of one who sees; and if parents in such cases would give themselves trouble in its instruction, instead of looking upon their case as one of despair, they would be amply rewarded by the improvement, surpassing all expectation, which their child would make. They would find little difficulty in communicating to him the names, shapes, and many other particulars of objects; and indeed language, with the exception of some classes of words denoting colour, or other qualities which can only be known by means of sight, might be as perfectly conveyed to him as to the child possessing all its senses. They would find that they could give correct ideas of numbers to a large amount by means of tangible objects, and of still larger numbers by analogy; that they could also give ideas of time, space, distance; so as to impress him with correct notions of the earth, its size, inhabitants, productions, climates; the occupations, the pleasures, and the pains of mankind. All this is knowledge of a useful and pleasing kind, and many parents would become highly interested in such a work; they would soon find that they might proceed still farther, and enable their blind child either to attain a certain degree of perfection in some mechanical art, or, by educating his higher faculties, train him to occupy a more intellectual and important station.

The parent who reasons and acts thus upon his child's calamity, will be supported and animated by the knowledge that he is supplying by his own attention the defect of nature, and that he is educating his child to fulfil important duties with the same pleasure to himself that others have who possess a more perfect organisation, and that he is providing a most efficient check to listlessness and mental torpor.

The ear has been happily called "the vestibule of the soul," and the annals of the blind who have become illustrious confirm the remark, for they show that few intellectual studies are inaccessible to them. It has even been said, and has received a kind of universal assent among those who have associated much with them, that in certain branches of study they have a facility which others rarely possess. The blind appear to have immense advantages over the deaf; their intercourse with the outward world, by means of speech, is more direct, and consequently more rapid, and their knowledge of passing events is equal to that of mankind generally. The deaf and dumb *see* indeed all that passes within their immediate sphere; but owing to the circuitous mode of communication which they have to adopt, they can know little beyond it, and enter very partially into the spirit of passing events. In addition to this, finding that they do not always understand perfectly, nor guess rightly, their temper becomes impatient, and their countenance acquires an anxious or irritable expression, which is sometimes mistaken for cleverness. We know of no deaf persons who have attained to any great degree of eminence, even under circumstances favourable to the development of their powers; but with regard to the blind, they have enriched the arts, the sciences, and literature by their successful pursuits, and not unfrequently under circumstances of extraordinary difficulty. Viewing both these classes of men as devoid of education, dependent upon themselves for support, and for the enjoyment of life, the blind are *physically* greater objects of compassion than the deaf, because, without peculiar modes of education suited to their privation, they cannot obtain a livelihood; but so far as happiness is dependent upon knowledge, and from this source some of the purest enjoyments arise, they are nearly on a level with ordinary men. Through the ear they can acquire knowledge of the highest order, and cannot

remain long in any company of their fellow-men without becoming in some degree wiser. The case of the deaf is the reverse of this; they are not *physically* so dependent as the blind: having the advantage of sight, they may apply themselves to and acquire the simpler imitative arts, and thus earn a subsistence, but *mentally* they are little above brutes; they can know nothing of the things around them, they feel themselves depressed and degraded among men; the language, the customs, the enjoyments of society, where these rise higher than what seems to exist among the more perfect animals, are to them unknown, and by them unregarded; and it requires only a small amount of reflection to perceive that an uneducated deaf person is not morally responsible for his conduct.

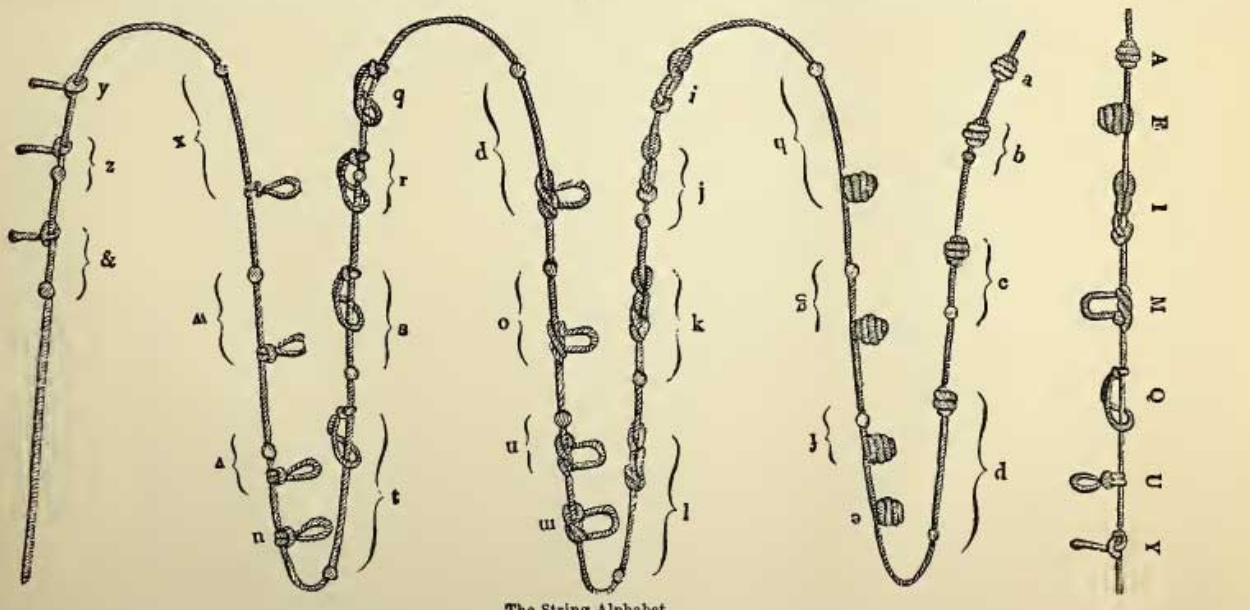
These remarks, and the comparison with which we have opened this subject, are not designed to show that the blind are less in need of education than the deaf and dumb; we are advocates for education in its fullest extent among all classes, but more particularly among persons who labour under impediments so distressing as those we have mentioned. Our advice would be to educate such persons as highly as possible, to improve especially those faculties which they appear to possess in a superior degree to mankind generally; but not to waste time and labour in endeavouring to instruct them in arts in which they can never attain to an equality with persons who possess the full enjoyment of their senses.

In this and in other countries, some attention has been paid to alleviate the sufferings and diminish the ignorance of the blind; the hand of kindness has been extended to lead them into society, and the voice of sympathy has been heard by them in the midst of their darkness. Asylums in several parts of Great Britain have rescued a few from a life of listlessness and anxious care, who have been instructed in various arts with the view of wholly or partially relieving them from dependence on their friends, their parishes, or the temporary bounty of the benevolent. To all who are entrusted with the charge of the pauper blind, and especially to boards of guardians, the words of Dr. Lettsom, the benevolent advocate of the charities for the indigent blind, may be addressed: "He who enables a blind person, without any excess of labour, to earn his own livelihood, does him more real service than if he had pensioned him for life."

It is invariably found that persons who are deficient in one sense exercise those that are left to them more constantly, and for this reason more accurately; for the senses are improved or educated by exercise. The exquisite fineness of touch and smell in the blind, the quickness in the eye of the deaf, the accuracy with which a seaman discovers a distant vessel long before it is discernible to the unaccustomed eye of a landsman, and the acuteness of sight, hearing, and smelling, in many savage tribes, are all to be referred to the same cause, namely, the constant exercise of those organs. Those persons who are deprived of one or other of their senses will, to a great degree, supply the deficiency by the aid of those which they still retain. Hearing and touch are especially cultivated by the blind; by the first they recognise speech, and the endless variations and modifications of sound; by the second they become acquainted with the external form of objects. The chief art of the instructor of the blind therefore consists in supplying through an indirect medium those ideas of which his pupil cannot obtain a conception through the ordinary channels; and in doing this he will act wisely to ascertain what ideas on kindred subjects his pupil possesses, whether such are true or false, and by what process he became possessed of them; to become, in fact, the pupil of his pupil; to draw forth the stock of knowledge already attained, in order to form a ground-work on which to proceed with his future instructions.

The mode which would probably first occur to a teacher in the intellectual education of the blind would be lessons delivered orally, illustrated by such analogies as would enable them to follow their teacher, taken, if necessary, from objects appealing to their senses. At first they would advance by slow degrees in comparison with pupils who see, but this very slowness would be accompanied by a sureness which would amply repay the pains taken to make the lessons understood. It is a fault in ordinary schools that the first steps are taken too rapidly, and one advance too quickly follows upon a former. Such schools might derive a useful lesson from the methods used in the instruction of those who are deprived of one or other of their senses. From oral instruction, the transition to a palpable language is natural. Accordingly, we find that the invention of *characters in relief* was among the earliest measures taken for instructing the blind. [BLIND, ALPHABETS FOR THE.]

An ingenious *string alphabet* was contrived a few years ago, by David Macbeath, a blind teacher in the Edinburgh School, in conjunction with Robert Milne, one of his blind companions. The following is their description of this invention: "The string alphabet is formed by so knotting a cord, that the protuberances made upon it may be qualified, by their shape, size, and situation, for signifying the elements of language. The letters of this alphabet are distributed into seven classes, which are distinguished by certain knots or other marks; each class comprehends four letters, except the last, which comprehends but two. The first, or A class, is distinguished by a large round knot; the second, or E class, by a knot projecting from the line; the third, or I class, by the series of links vulgarly called 'the drummer's plait;' the fourth, or M class, by a simple noose; the fifth, or Q class, by a noose with a line drawn through it; the sixth or U class, by a noose with a net-knot cast on it; and the seventh or Y class, by a twisted noose. The first letter of each class is denoted by the simple characteristic of its respective class; the second, by the characteristic and a common knot close to it; the third, by the characteristic and a common knot half an inch from it; and the fourth, by the characteristic and a common knot an inch from it. Thus, A is simply a large round knot; B is a large round knot with a common knot close to it; C is a large round knot with a common knot half an inch from it; and D is a large round knot with a common knot an inch from it, and so on." The alphabet above described is found by experience to answer completely the purpose for which it was invented. In the Glasgow Asylum, the greater part of the Gospel according to St. Mark, the 119th Psalm, and other passages of Scripture and history have been



The String Alphabet.

executed in this alphabet. The knotted string is wound round a vertical frame, which revolves, and passes from the reader as he proceeds.

This alphabet reminds us of the *Quipos*, or knot-records of Peru, in which the history of their country was recorded long before the discovery of America by the Spaniards. Their *quipos* were formed of the intestines of animals, and there is a similar diversity in their symbols with that in the string-alphabet of which we are speaking. An account of these quipos was published in London in 1827. They were purchased by Alexander Strong for ten pounds, from a person who bought them at Buenos Ayres.

In further explanation of the string-alphabet the inventors say, "It

must readily occur to every one that the employment of an alphabet composed in the manner which has been explained, will ever be necessarily tedious; but it should be borne in mind that there is no supposable system of tangible figures significant of thought, that is not more or less liable to the same objection. The inventors are aware that among the different methods by which people at a distance might be enabled to hold mutual intercourse through the medium of a language addressed to the touch, there are some that would doubtless be more expeditious than theirs; but they flatter themselves that, when all the advantages and disadvantages of each particular method are duly considered, the plan which they have been led to adopt will appear, upon the whole, decidedly the best. There can scarcely be any system of tangible signs, which it would be less difficult either to learn or to remember; since a person of ordinary intellect may easily acquire a thorough knowledge of the string-alphabet in an hour and retain it for ever. Yet the inventors can assure their readers that it is impossible for the pen or the press to convey ideas with greater precision. Besides the highly important properties of simplicity and accuracy which their scheme unites, and in which it has not been surpassed, it possesses various minor, nor yet inconsiderable advantages, in which it is presumed it cannot be equalled by anything of its kind. For example, its tactile representations of articulate sounds are easily portable—the materials of which they are constructed may always be procured at a trifling expense—and the apparatus necessary for their construction is extremely simple. In addition to the letters of the alphabet, there have been contrived arithmetical figures, which it is hoped will be of great utility, as the remembrance of numbers is often found peculiarly difficult. Palpable commas, semicolons, &c. have likewise been provided to be used, when judged requisite. The inventors have only to add, that sensible of the happy results of the invention to themselves, and commiserating the fate of their fellow-prisoners of darkness, they most earnestly recommend to all intrusted with the education of persons deprived of sight carefully to instruct them in the principles of orthography, as the blind being in general unable to spell is the chief obstacle to their deriving, from the new mode of signifying thought, the much-wanted benefit which it is designed to extend to their melancholy circumstances."

We entirely agree in the views here taken of the string-alphabet; as an auxiliary to the blind in the acquirement and application of language, and in the absence of a tangible writing on paper, we think no invention is superior to it, and we should be glad to have seen it in more common use among the blind in our recent inquiries at various institutions. The advice to instruct the blind carefully in spelling is important; for if this acquirement be not made, they cannot communicate by language with their fellow men otherwise than orally. To those blind persons who have lived together in institutions, and formed friendships which they wish to continue when separated by distance, the string-alphabet offers a mode of correspondence as perfect as our pen, one too which may be intrusted to ordinary persons to convey without any probability of the communication being deciphered.

David Macbeath, one of the inventors, was connected with the Edinburgh Asylum, as pupil and teacher, for twenty-five years. His inventions for teaching were numerous, and applicable to instruction in music, arithmetic, and mathematics. His string-alphabet was fully described in the 'Edinburgh Philosophical Journal,' some years ago. He conducted the public examinations of the Edinburgh pupils, where he never failed to excite the interest and attention of those present towards the objects of their solicitude.

In the infancy of the art of teaching the blind, *raised music* was invented, in order that they might be enabled to acquire their lessons independent of a master. This invention is at present little used, for the constant practice of those who pursue this branch of study is a continual exercise of the memory, and they are able to learn very long pieces by the ear alone. The reason assigned by Dr. Guillié for the disuse of embossed music is very satisfactory, "the scholar could not read with his fingers and perform at the same time." Thorough bass is however as readily studied by the blind as by the seeing, by means of "Tansure's Musical Board," described in his 'Musical Grammar.' This board is three feet long, about eight or nine inches wide, and has two staves, with ledger lines, above, between, and below. These are raised upon the surface of the board about one-sixteenth of an inch; the top of the stave lines being flat, while that of the ledger lines is round. It is pierced all over with little holes, so as to receive the pins, which represent the notes. We may here mention the invention of Don Jaime Isern, the object of which is to enable a blind composer to transfer his thoughts to paper in the usual musical notation, without the necessity of employing an amanuensis. For this invention the large silver medal of the London Society for the Encouragement of Arts, Manufactures, and Commerce was given to Don J. Isern in 1827. There is a full description of it, with illustrative engravings, in vol. xlv. of the 'Society's Transactions.' In the same volume there is an interesting communication on the subject of types for the blind, by Mr. G. Gibson of Birmingham. This communication is connected with various inventions which we have had the pleasure of inspecting, and of which we shall give a short account, referring our readers who desire to be made perfectly acquainted with the invention to the work above mentioned. Mr. Gibson's aim has been to supply the blind with a mode of writing and keeping their own accounts. "A cube of wood, or of any other convenient material, the size of which will depend on the delicacy of touch in each blind person, is to have raised on one side of it a letter, or figure, or stop, in the manner of a printer's type. On the opposite or lower side of the cube is a representation of the same character as is on the upper side, but formed of needle-points inserted into the wood. If therefore a piece of paper be laid on a cushion, or surface of felt, and the type be pressed down, the points will enter the paper, and form on the under surface of it a raised or embossed representation, by the projection of the burs where the points have penetrated, and this embossed character may be distinguished, and consequently read by the touch." In its outward appearance, the whole apparatus of Mr Gibson forms a small piece of cabinet furniture. When the top is thrown open an even surface of cushion presents itself. Upon this there is a flat piece of mahogany about an inch broad, which can be moved from one notch to another, to any part of the desk. This is for the letters to lie against, like the composing-stick of a printer. The letters he uses are a composition of tin and lead; the upper surface is elevated so that he can distinguish the letter, and the under surface has inserted in it needle-points of the shape of the letter on the upper surface. In writing the Lord's Prayer, after the paper is placed, he takes O out of its division, and puts it at the beginning of the line, then U, then R, gently pressing each letter down, as he puts it next the preceding one. At the end of a word he inserts a small mahogany space, and proceeds till his performance is complete; whether it be a copy of anything which he wishes to make, or an original piece of composition. It will be observed that, by putting two or more pieces of paper underneath his pointed types, copies will be multiplied. The letters are in small divisions, which occupy side-drawers in his printing cabinet. The use of this machine implies more knowledge than the uneducated blind possess, as they must know how to spell. However, it is a part of its object to teach spelling. For this communication to the London Society for the Encouragement of Arts, &c., Mr. Gibson was presented with the gold Vulcan medal of the Society. Another of Mr. Gibson's inventions may be here noticed. It forms a drawer of the cabinet above-mentioned, and is intended for working the rules of arithmetic. This Mr. G. calls his slate. It is divided into rows by elevated slips of wood, along which the figures are to slide. Like the types they are formed of metal, but have no needle-points underneath. We have seen him perform examples in multiplication and other rules by this apparatus, which is simply and beautifully conceived. It is obvious that all the elementary operations in arithmetic may be performed by it, and that by the union of this and the writing apparatus, a blind person may write his own letters, and keep his own accounts. We have dwelt upon the subject of reading and writing for the blind, feeling that they are deserving of all the importance which can be attached to them. Lieutenant Holman, the blind traveller, used Wedgwood's apparatus for writing in the dark. A very ingenious instrument of this nature has been invented by the late Mr. Hughes, who was for many years the governor of the School for the Blind at Manchester. We return to the early methods pursued in this art.

Embossed maps and globes for teaching geography would naturally be suggested to those persons who were engaged in teaching reading to the blind by raised figures. M. Weissembourg, a blind man of Mannheim, appears to have been the first person who made relief-maps; up to which time the instruction given to the blind on geography was merely oral. Various methods for producing maps of this character are now employed.

Palpable methods have also been adopted for making the blind acquainted with different branches of astronomical knowledge, and, in addition to raised maps of the heavens, various ingenious instruments have been contrived to further their progress in the science of astronomy. The application of such apparatus to the purposes of teaching has been attended with encouraging success. We shall detail some of the methods pursued in teaching arithmetic when we speak of the Edinburgh Institution, where the well-known invention of Dr. Saunderson has been so much improved that, by its means, any operation may be readily performed. For a description of the original invention, which was the united work of Dr. Moyes and Dr. Saunderson, we refer to the article 'Blind' in Rees's 'Cyclopædia,' or in the 'Encyclopædia Britannica.' By the improvements which we shall describe, it will be seen how greatly the simplicity of the contrivance has been increased. Previous to these tangible methods of teaching arithmetic the blind were instructed on this subject orally, the process on their part being entirely mental. A publication of late years, which is intended exclusively for the blind, is of a higher character and aim than any that have preceded it, though not one which will generally be considered as equal to many of these mentioned, in point of utility. The work to which we allude is an elementary treatise on mathematics by the Rev. William Taylor of York, called 'The Diagrams of Euclid's Elements of Geometry, arranged according to Simpson's edition in an embossed or tangible form, for the use of blind persons who wish to enter upon the study of that noble science,' York, 1828. As a means of leading to the acquisition of a science for which some blind persons have shown a predilection, this beautifully executed work is of great value, and we hope that the blind generally who show a superior

aptitude for the exact sciences, even though instructed in a degree at the public expense, will have all the advantages which works like Mr Taylor's aided by good instructors can confer. It is stated that some of the pupils of the London School for the Indigent Blind worked a few problems for Mr. Taylor, their examiner, at their examination last Christmas.

Institutions of a philanthropic tendency have frequently originated with members, individual or collective, of learned societies; and such societies have lent their assistance and patronage to various efforts for advancing the condition of mankind, and removing the obstacles to improvement. The attempts of M. Haüy to systematise a plan for the education of the blind are the first which are deserving of especial notice. His methods were submitted to the Academy of Sciences of Paris, where they received all the encouragement he looked for. The commissioners chosen to report upon the means which he proposed to employ suggested to the Academy not only to bestow its approbation upon M. Haüy, but also to invite him to publish his methods, and to assure him of their readiness to receive from him an account of his future progress. It appears that many of the plans recommended by Haüy in his 'Essay on the Education of the Blind,' were not so much his own inventions as adaptations of the ingenious contrivances of individuals of different ages, and in different countries, who had preceded him in this benevolent work. The celebrity of certain blind individuals, partly the result perhaps of pains-taking teachers, and partly of their own highly gifted minds, had reached the ears of Haüy. By a happy exercise of benevolence and talent, aided by that enthusiasm without which the greatest labour is ineffectual, he formed the outline of a system of instruction, which required only time, and the modifications which discover themselves in every course of rational teaching, to be brought into successful operation. He wished to make the sense of touch do that for the blind which the Abbé de l'Epée had made the sense of sight do for the deaf and dumb. He wished to see the fingers of the blind employed in reading written language, and for this purpose he invented the noble art of printing in relief, which will hand down the name of Valentine Haüy with honour to posterity. Haüy offered to instruct gratuitously the blind children who were under the care of the Philanthropic Society. He commenced his instructions in 1784, and taught his pupils reading, writing, arithmetic, geography, composing types, and printing. In 1786 public exercises were performed by the pupils at Versailles, in the presence of the king; these exercises excited much astonishment, and there seemed to be little doubt of the stability and success of the undertaking. Large funds were subscribed, and the school was filled with pupils; but the commencement had been made on a scale too extensive for its regular maintenance, the warmth of popular feeling cooled, and as the institution was unsupported by government, Haüy never enjoyed the fruits for which he toiled. His school was not however suffered to fall entirely; it was taken up by the Constituent Assembly of the Revolution, and has since been supported at the expense of the government. The establishment of which we are speaking is the School for the Young Blind at Paris.

There are at Paris two celebrated institutions for the blind. The more ancient of these is the Hôpital Royale des Quinze Vingts, founded by St. Louis in 1260, for the reception of such of his soldiers as had lost their sight in the East. At its first establishment it consisted of *blind* and *seeing* persons, the latter being the conductors of the former. As its name indicates, it receives *fifteen score*, or three hundred blind persons. This noble asylum continues, as it was originally placed, under the government of the grand almoner of France. To obtain admission it is necessary that applicants be blind and indigent; they are admitted from all parts of the kingdom, are lodged in the hospital, and receive twenty-four sous (about a shilling) a day for their food and clothing. No instruction is afforded to the inmates of the Quinze Vingts; some of them, however, execute works, which, for their ingenuity, attract and deserve attention. The other Parisian establishment for the bliud is the Institution Royale des Jeunes Aveugles, of which Haüy was the founder. It contains about a hundred young persons of both sexes, who are maintained and educated at the expense of the state for eight years. Paying pupils are also admitted. During the last quarter of a century the education of the blind has made great advances, as will be seen when the present state of the various establishments is compared with their actual condition, as described in the article BLIND of the 'Penny Cyclopædia.' The writer of that essay lamented that there was so much that appeared to him censurable, and that called for animadversion in the modes of education pursued in some of the schools for the blind. The article was, however, transmitted to three of these schools previous to its publication, and it was allowed to be a correct statement of facts. A great change for the better has since taken place, not only in the schools referred to, but in others also; new asylums have been established, and the attention of many experienced men has been directed to various branches of education, and especially to the provision of books in raised type, of which an account is given in the article BLIND, ALPHABETS FOR THE.

The first British Asylum for the Blind was established at Liverpool, in the year 1791. This institution has hitherto been liberally supported. During the year 1858, its expenditure was 3000*l*., its income about 3400*l*., derived from goods disposed of (the work of its inmates), from the payments made on behalf of the pupils, from legacies, donations, and subscriptions, from dividends, and the pew-rents of its chapel. The sums received for articles manufactured exceeded 900*l*., but the produce of these labours does not assist the funds of the establishment. The instruction of the blind in manual labour seems to be the primary object with the directors of the institution. The trades which are taught are those of basket-making, rope-making, weaving, shoemaking, sewing, knitting and platting sash-line. The most profitable of these arts is the rope-making; the locality of the institution contributes to the advantages derived from this trade. The sugar-houses require so vast a supply of cordage, that it can scarcely be furnished in a sufficient quantity. The next most profitable labour is the weaving of carpets, lobby-cloths, and bear-rugs. Masters possessing sight are regularly employed in teaching the various trades; the reasons why the institution derives no pecuniary advantage from the extensive labours carried on are sufficiently obvious when the expense of experienced masters is considered, the waste of materials by the labourers who are chiefly learners, and their quitting the asylum when they can earn enough to maintain themselves.

The total number of persons who have been received into this asylum from its commencement to the publication of the report, January 1859, was 1429. Some very interesting details are given in the same document on the causes of the calamity under which the pupils labour, so far as could be ascertained by the officers of the institution.

LIVERPOOL INSTITUTION, TOTAL NUMBER RECEIVED 1429.

		Totally.	Partially.	Total.
Blind from their birth		70	49	119
" "	small-pox	202	48	250
" "	inflammation	278	177	455
" "	cataract	56	93	149
" "	external injury	99	47	146
" "	defect in the optic nerve	76	64	140
" "	amaurosis	25	15	40
" "	imperfect organisation	6	14	20
Lost their sight at sea		8	1	9
" "	by gradual decay	5	3	8
" "	after fever	14	5	19
" "	after measles	8	5	13
" "	after convulsions	3	3	6
" "	from causes not mentioned, or imperfectly described	28	27	55
		878	551	1429

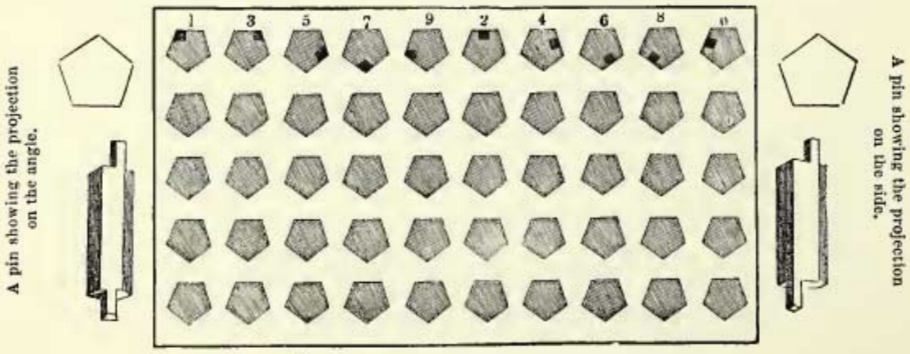
From the reports of the Liverpool Asylum, as well as from others which we have seen, the blind seem to be pretty equally scattered in all parts of the kingdom. Of the 1429 persons who have been inmates of the Liverpool Asylum, 225 have belonged to Liverpool, 294 to other parishes in Lancashire, and 910 to distant parts of the kingdom. A large proportion of the income of the institution is derived from Liverpool and its vicinity. The blind of that district have therefore a just priority of admission. There are 79 pupils in the Liverpool Asylum; 18 were admitted in 1858, and 21 left. Among those thus admitted, 8 are between fourteen and twenty, 4 are between twenty and thirty years old, 4 are upwards of thirty, and of 2 the ages are not specified. Most of those who have completed their education receive a gratuity of from two to five guineas when they quit the asylum, which sum is intended to assist them in procuring a few tools and materials for commencing the trades they may have been taught. This provision is both benevolent and wise; for there are numerous cases which come under the notice of the directors where poverty accompanies the deprivation of sight, and where, consequently, the instruction imparted would be of no practical benefit were not some means afforded of making it available to provide for their common necessities. The observances of religion appear to be regularly regarded: prayers are read in the chapel morning and evening, and the chaplain attends twice in each week to teach the catechism. The appointed hours for labour in the Liverpool Asylum are from six in the morning to six in the evening, one hour being allowed for breakfast and recreation, and another for dinner. Some of the pupils occupy a large portion of their time in the practice of music, singing, reading, &c. Frere's system of raised type is used, but the superintendent is not prepared to say which of the several series of books is most eligible for the bliud. There are no fixed hours for acquiring the art of reading by touch, but instruction is given at such times as the teachers can spare from their other duties. Many of the inmates are middle-aged adults, whose object in entering the institution is expressly to acquire facility in some employment by which they can maintain themselves, and who leave as soon as they have succeeded in learning a trade, some of them only remaining under instruction from six to twelve months. This information has been supplied by the superintendent.

In the year 1794 an Asylum for the Blind was established in Edinburgh. The benevolent Dr. Blacklock, who resided in that city many years, had long anxiously wished that such an establishment should be formed for the education of those persons who, like himself, were deprived of sight. He mentioned his wishes to his friend Mr. David Miller, who was also blind, and was himself an eminent example of what might be effected under the influence of early and judicious instruction. In the year mentioned, it was determined by Mr. Miller and the Rev. Dr. David Johnston, of Leith, that an attempt should be

made to provide an asylum, and means were taken to call public attention to the object. Mr. Miller communicated with the Abbé Haüy, and in many ways rendered important services during the infancy of the institution. The chief end in the formation of the contemplated asylum, next to imparting ordinary instruction (orally, it is presumed), and imbuing the minds of the objects with religious truth, was to place them under such superintendence as should train them in those trades in which the blind "are best fitted to excel;" at the same time rewarding them for their labours according to their progress and proficiency. In later years the directors of the asylum have extended their views, devoting increased attention to the intellectual culture of the pupils; but still the main object appears to be that of training them to habits of manual labour. The economical character of the Edinburgh Asylum must be a striking feature to all who compare its expenditure, considering the amount of good it accomplishes, with that of similar institutions. We have frequently heard of the excellent management of the public charities of Edinburgh; but in none is such management more visible than in this. In 1806 the directors formed a separate establishment for females, and since that time they have opened a school for the instruction of the young blind. It is by early training only that the blind, in common with others, can be brought under an effectual mental and moral discipline. By giving instruction to the young in the higher departments of knowledge, and by thus raising the intellectual character to the elevation of which it is capable, we are of opinion the directors will discover that the arts in which the blind are best fitted to excel are not the ordinary mechanical trades, to which, in our British institutions, and too generally abroad, all higher considerations have been sacrificed. Why are not their mental powers, which are unaffected by their physical calamity, cultivated? Such cultivation will qualify them for occupations in which they may succeed as well as those who possess the advantages of sight. The enlightened policy of the directors of the Edinburgh Institution has placed them in the first rank among the benefactors of the blind: their school for the young is a most interesting section of their establishment; and it may be hoped that many of its pupils will be trained to higher occupations than those of basket-making, weaving, &c. We do not anticipate that all the blind can be exempted from manual labour, any more than that all other men are fitted for employments requiring a high degree of intellectual vigour, and acquirements which even the greater portion of mankind are unable or unwilling to make: but we do not hesitate to affirm that the blind have been systematically trained in arts in which they never can enter into competition with seeing persons; and that they have not been sufficiently educated in that kind of knowledge in which they might have become at least as perfect as those who possess all their faculties. The former part of our proposition is allowed by the directors of the Edinburgh Asylum, who say that "when they (the blind) become as skilful workmen as their circumstances admit, they still labour under a disadvantage unknown

to others." An argument which might with great propriety be used to enforce the advantage of mental cultivation in preference to manual dexterity, is the loss invariably attendant on the manufactures carried on at the asylums. It appears to us from our examination into the expenses of different establishments, that the more extensive the scale on which the manual arts are conducted, the greater the losses, from waste of materials, a succession of learners, &c. On the score of cheapness therefore it is desirable that such operations should be confined within as narrow limits as may seem prudent, and that intellectual education should be extended as widely as the talents and qualifications of the pupils will allow. Instead of the accounts of such institutions showing so great an amount of positive losses, we should not only see this item reduced, but find the pupils qualified for a sphere of usefulness superior to any which they can ever reach by any attainable degree of dexterity in manual occupations.

In the Edinburgh Asylum, the whole machinery seemed to be of a high order; the devoted attention of the different officers is visible in the discipline and happiness of the inmates, and there can be no doubt that the institution is effecting great good. The young blind are instructed in reciting the scriptures, in spelling, in grammar, in vocal and instrumental music, in reading, by means of the sense of feeling; in writing, arithmetic, mathematics, history, geography, and astronomy. The means by which instruction in these various branches is conveyed have been mentioned; in all institutions of this nature they must be generally the same, varying perhaps in some of their details. Several of the mechanical contrivances for conveying scientific knowledge to the pupils are the inventions of Mr. Johnston, the former secretary (nephew of Dr. Johnston, who was named as one of the founders of the institution), in conjunction with Professor Wallace, a gentleman who was deeply interested in all that concerned the institution. An orrery, a cometarium, and raised maps of the heavens, all so constructed as to convey information by the touch,—while the reasoning powers are at the same time addressed,—are among the inventions of these gentlemen. The map of the world is described as comprising "the eastern and western hemispheres, represented on each side of a circular board. The land is made rough, the seas, lakes, and rivers smooth. Towns are represented by small pins. Mountains are ridged, and boundaries simply raised. Degrees of latitude are marked round the edge of the circle, of longitude along the equator, which is raised above the surface of the earth. The orrery represents the orbits of the planets by brass circles, and the planets themselves are shown by spheres indicative of their relative dimensions; the spheres slide upon the brass orbits. The ecliptic exhibits raised figures of the signs of the zodiac, the degrees of the circle, and the days of the month, all tangible, and adapted to the learner who has to depend upon touch for his impressions. The *arithmetic board* is 16 inches by 12, and contains 400 pentagonal holes with a space of a quarter of an inch between each. The pin is simply a pentagon, with a projection at one end on an angle,

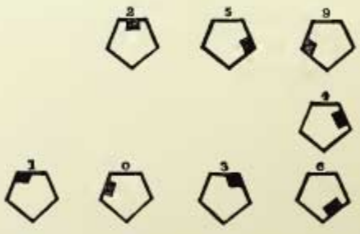


The Arithmetic Board.

and on the other end on the side. Being placed in the board, with a corner projection to the left upper corner of the board, it represents 1; proceeding to the right upper corner it is 3; the next corner in succession is 5; the next 7, and the last 9. In like manner the side projection, by being turned to the sides of the hole, progressively gives 2, 4, 6, 8, 0. The size of the pentagon, and a drawing of the pin, showing the projections on the side and angle, are given with the board above.

By the use of this board the pupils may be carried to any extent in arithmetical knowledge, and make their calculations with as much satisfaction as those who see. The last improvements in the Arithmetic Board were made by William Lang, at first an inmate of the Edinburgh Asylum, afterwards of that of Glasgow. Further to illustrate its use an example is given below of a sum in multiplication, which will be at once understood on comparing it with the board above; this example shows $259 \times 4 = 1036$. The pentagons represent the pins with their projections as supposed to be in the holes of the Arithmetic Board.

We have the testimony of Dr. Guillié, that the blind study the exact sciences under great advantages, and with remarkable success; but we cannot agree with the doctor that the blind, any more than *les clair-voyans* have a natural disposition for mathematical studies. The eminent success of Saunderson, Moyes, Gough, and others, afford sufficient proof that blindness is no great impediment to such pursuits;



there may possibly be some advantages consequent on the degree of abstraction which appears necessarily to accompany blindness. On this supposition however we do not lay much stress, because we cannot admit that there is *naturally* any compensative principle by which men who labour under one defect or deprivation, are enabled to exercise the powers which are left to them with greater accuracy than others

who have no such deficiency. If a seeing person would cultivate his sense of feeling to the same extent as the blind, his perceptions of touch would be as delicate as those of the blind man. It is not probable that so refined a cultivation will ever be tested by experience, as it would require a greater degree of philosophical curiosity than we ever witnessed or heard of, and be attended with a longer and more painful effort than we think any one would voluntarily undergo for the sake of making the experiment.

The Bristol Asylum for the Blind owed its origin to the benevolent exertions of two members of the Society of Friends, Messrs. Bath and Fox. It was opened in 1793, in a disused Baptist meeting-house. After attempting several of the trades, basket-making was commenced, and although other occupations are followed, fine and coarse baskets have been the staple manufacture of this asylum to the present time. In 1803 its funds were so greatly increased that the committee of management were enabled to spend 1800*l.* on the purchase of premises in Lower Magdalen Lane, and its operations were there carried on till its removal in 1838 to the present eligible situation at the top of Park Street, where a building was erected in the early English style, with a chapel in architecture of a later character, and became a prominent ornament to the city. This building provides workshops for 100 pupils, and bedrooms for 70. At a subsequent date, rooms were added for washing, baths, and shower-baths, and a more recent purchase of land in Tyndall's Park gives ample room for exercise and amusement. If the utility of the asylum may be deduced from the progressive increment of the sales the conclusion will be satisfactory, as in 1794, its second year, their amount was 18*l.* 8*s.* 6*d.*, and in the year ending 1857 there was received "for baskets, table-mats, flower-stands, hearth-rugs, door-mats, and knitting, 1088*l.* 2*s.* 2*d.*"

The distribution of time in mental occupation and manual labour is as follows:—The pupils rise at 6 a.m., and work or take exercise till breakfast at 8 o'clock; at half-past 8 prayers are read by the master; the school-room is then occupied from 9 to 6, the classes being changed every hour. By this arrangement each pupil receives two hours' instruction daily. One hour in the day is allotted to musical practice, two hours' instruction being given to each pupil every week; the remaining time till 6 o'clock is occupied in manual labour, and, as occasion offers, the master or matron reads to the pupils while at work; but three days in the week they read collectively. On two evenings the pupils assemble for practice with the music-master, and the remaining evening they attend the chaplain for religious instruction. Supper is served at half-past 7; immediately after prayers are read by the matron, and the household retires to rest about 10.

Instruction in the Bristol Asylum is conducted by a chaplain; by the master, who teaches reading, arithmetic, geography, and history, and who has a blind assistant of either sex; by a music-master, with similar aid; by a basket-maker for the men, who has also two blind assistants; and by a female basket-maker, with one assistant possessed of sight and one who is blind. Great advantage is thought to be obtained by this employment of blind teachers, especially in the initiation of new pupils. The system of printing preferred in this asylum is that in the Roman character, by the late Mr. Alston of Glasgow. The books published by that gentleman were introduced in 1837, and have continued in daily use to the present time. A 'Life of James Watt,' an 'Elementary Geography,' 'Our Lord's Sermon on the Mount,' and a 'First Reading Book,' have been published at this institution in Roman capitals and lower case.

The report of the chaplain on the scriptural instruction of the pupils is very satisfactory. The report from which we quote states that nine of the younger ones had received confirmation, five of whom had become communicants. The master's report to the committee on their secular instruction is equally satisfactory: biography, history, arithmetic, grammar, and geography are the subjects of his statement; while the music-master considers the progress of some and the proficiency of others in music and singing as deserving commendation. All who are engaged in the management speak of the pupils as intelligent and well-disposed, and as manifesting a spirit of cheerful obedience. The welfare and conduct of the former pupils is not overlooked in the report of the committee: special instances are recorded of some of the advantages the asylum has conferred on individuals, and it is also stated that satisfactory accounts continue to be received from others, who, from the trades they learned and the industrial habits they acquired while at the asylum, are now earning a living in such a manner as not only to reflect credit upon themselves, but also on the institution. There are in the Bristol Asylum 66 pupils: males, 42; females, 24; upwards of 40 of them are under 20 years of age.

The School for the Indigent Blind in London was established in 1799 by four gentlemen of the metropolis,—Messrs. Ware, Bosanquet, Boddington, and Houlston. At first the pupils were few, and it did not attract any extraordinary share of public attention. About eleven years after its formation, the patronage of the public enabled the managers to take on lease a plot of freehold ground in St. George's Fields, opposite to the end of Great Surrey Street, where suitable buildings were erected, within which the institution is still carried on. An Act of Parliament was obtained in 1826, which invests the committee with all the rights and privileges of a corporation, and they then purchased the freehold of the ground on which the buildings had been erected. These buildings were found insufficient for the purposes of

the establishment, and the committee purchased an adjoining plot of ground, upon which a new and enlarged building is erected. In 1800 there were only 15 persons in the asylum: the present number of inmates is 154,—75 males and 76 females. The inmates are "clothed, boarded, lodged, and instructed." The funds of the charity are ample. The receipts have seldom exceeded the expenditure. In addition to its annual subscriptions, donations, and legacies, it possesses a funded capital amounting to above 80,000*l.*, besides other available property. The articles manufactured by the females are, for sale, fine and coarse thread, window sash-line and clothes-line, fine basket-work, ladies' work-bags, and other ornamental works in knitting and netting; for consumption by the pupils, knitted stockings, household linen, and body linen. The occupations of the males are making shoes, hampers, wicker-baskets, cradles, rope-mats, fine mats, and rugs for hearths and carriages. These articles are sold at the institution, and it is said that the window sash-line is highly approved of by builders of the first eminence. The sale of articles manufactured during the year 1857 produced 815*l.*

An extraordinary change has taken place in the educational aspect of this establishment in the lapse of the last twenty-five years; its chief object at that time was instruction in manual labour; a few of the pupils were taught music, but the attempt to teach reading and writing had been abandoned from the unwillingness of the inmates to receive instruction. The recent reports contrast most favourably with those of former years. Not only are the pupils carefully instructed in the principles of the Christian religion, including the Holy Scriptures, and in vocal and instrumental music, but the following secular subjects are also well taught; namely, reading, writing from dictation, history, and geography; the emulating test of half-yearly examinations is also applied to this part of their education, and their inspectors in successive years (the Rev. J. D. Glennie and the Rev. W. Taylor) reported most favourably of the results. The former of these examiners says: "Both boys and girls are carefully and thoroughly instructed in the Holy Scriptures, Church Catechism, and Liturgy of our Church, and they have done justice to the instruction so received." In the boys' school, he was "much struck with the accuracy and rapidity with which the arithmetic, as far as Proportion and Practice, were performed." He congratulates the committee on the "efficient and satisfactory state of the school." The Rev. W. Taylor states that, "the first and second classes read steadily and carefully on Alston's system, showing that they did not read from memory, but made out the words as they occurred. The lesson on English history given by the schoolmistress was very satisfactory." The examiner of the boys' school, at Christmas last, reported favourably as to their proficiency in reading, religious knowledge, ciphering, embossed writing, English history, and geography; a small class also worked some problems in Euclid for him in very good style. The chaplain's classes, held on four days in the week for special religious instruction, comprise some not in daily attendance at the school, and exclude those who have not yet learned the Catechism.

The report states that "few of those who study music attain proficiency as readers or workers, and that great difficulty exists in procuring situations for blind organists. It is therefore most important that before making application for a pupil to receive musical instruction, his friends should well consider whether they have a fair chance for securing for that pupil employment as an organist or teacher of music. If a pupil becomes a good musician and is able to command employment, he may do well, but if from lack of talent, or other causes, he is unable to find employment as a musician, or to gain a living at a trade, he will probably become a burden to his friends."

During the year 1857, a novel and most important feature was introduced iuto the school, by the formation of a band of about forty instrumental performers, who are instructed in secular as well as sacred music. The band contains about an equal number of wind and stringed instruments, and during last year they gave a concert at the Hanover Square Rooms, which cleared upwards of 120*l.* for the charity, after all the heavy expenses were paid. The report states, "that though an attractive feature of the school, it is difficult to assign the band a higher office than that of supplying to the pupils a most pleasant and welcome recreatiou in their leisure hours."

One other feature in the operations of this school, derived from the example of a contemporary institution, demands especial notice from the writer of this article, with whom the idea originated, and by whom it has been carried out for many years at the institution with which he is connected, namely, an inquiry at certain intervals as to the after-life of the pupils. Such an inquiry can alone truly show the results of education; it is applicable to all schools, but more especially to those where children are boarded and educated for a series of years, and in whose future welfare, those who have directed their education, known their failings, and their better qualities, cannot but be interested. To all schools of poor-law unions it ought at once to be applied. The managers of the London School for the Bliud, have sent out since the year 1854, about 150 forms of inquiry respecting pupils who have left school, and are now at work in the country. The inquiries embrace the following points: their present mode of gaining a livelihood; their average weekly earnings; their power of reading; their knowledge of music. and the use they make of it; and their moral character. The result of these inquiries is very satisfactory;

about ten only have not been answered; the pupils, with rare exceptions, possess good moral characters for steadiness, diligence, and Christian principle; for the most part these returns are attested by the minister of the parish. Most of them retain, to a greater or less degree, their power of reading, though many of them are greatly in want of books. Few are able, even with the utmost exertion to maintain themselves fully; but most of them are doing what they can, and only twelve receive parochial relief. Those able to do most towards their support are workers at baskets and mats, but the greatest difficulty prevails in finding employment for the musical pupils, many of whom having been educated for musicians, are unfitted for work of any other kind, and spend most of their time in idleness. The importance of the industrial work taught in the school is thus clearly established.

The Hospital and School for the Indigent Blind of Norwich was originally established in the year 1805, first for that city, and subsequently (as the condition of receiving a donation) for the county of Norfolk also; but its doors have been opened to other parts of the kingdom since the year 1819. The blind in the more elevated sphere of society appear not unfrequently to have been the first benefactors of their more indigent brethren. Mr. Tawell, a blind gentleman residing in Norwich, first called the attention of that city and its neighbourhood to the wants of the blind, and with a munificence commensurate with his zeal, he purchased "a large and commodious house, with an adjoining garden of three acres in extent," which he offered as the basis of the institution. The plan of the Norwich Asylum was to unite a school for the young with an hospital for the aged. It designed to admit the young pupils at the age of twelve years, and to keep them in the school till they should have attained a sufficient knowledge of some trade, as far as this could be accomplished within three years, but under no consideration to keep them longer than that time: some however have been kept longer. With respect to the aged, the rules express that none shall be admitted who have not attained the age of sixty-five years. It appears from the account of the institution published up to the end of 1833, that from the establishment of the institution to that date, 153 pupils had been admitted and 48 aged persons: 77 had been discharged qualified to work for themselves; 12 had proved incapable of instruction; 4 had left the asylum without leave, 13 had been discharged for irregularity, and 16 at their own request; 43 had died, and 36 remained on the books. The expenses seem to have averaged about 1100*l.* per annum, and the income about equalled the expenditure. (We can give no more recent account of the Norwich school, as no answer has been received to our inquiries.)

The Asylum for the Blind at Glasgow is pre-eminently a manufacturing establishment, although much attention is also given to the religious and secular education of its inmates. It was founded by John Leitch, Esq., of Glasgow, who was himself partially blind; he bequeathed 5000*l.* towards opening and maintaining the institution. Since the opening of the asylum in 1828 to the commencement of the present year (1859) 334 blind persons have been admitted; of this number 103 are now in the establishment. The manufactures carried on are of sacks and sacking, twine, baskets, mats, mattresses, and knitting. The sales in 1858 produced 5960*l.*, which was about 870*l.* less than the previous year, and the value of the manufactured materials on hand was 2024*l.* The revenue is chiefly derived from the sales, and in this respect the Glasgow asylum differs from every other in the kingdom. It solicits no annual subscriptions, but depends entirely for its support upon donations and legacies; this source is precarious, and sometimes, as during the past year, a deficit occurs. By the system pursued in this asylum the blind are placed, as nearly as circumstances allow, on a level with other workmen. Many of the adults reside with their families in the city, and go to their labour at the asylum like other artisans. The superintendent purchases the raw materials for the manufactures, and keeps an account of the work each person performs, from which a statement of their earnings is made, and they are paid every Saturday. The male adults are allowed the same rate that other workmen have for the same kinds of work; if a man can make five or six shillings a week, he receives that sum for his weekly wages. At the end of every four weeks a statement of his earnings is made up from the work-book, and whatever he has earned over that sum is paid to him, and also an additional shilling a week as a premium upon his industry. If the amount which he ought to earn be not earned, or the work be bad, no premium is allowed. At the monthly settlement some of them will have several shillings to receive in addition to their regular wages and premiums. Ever since the regulations regarding wages have been adopted, a marked improvement has taken place both in the quantity and quality of the work produced. The blind workmen and their families receive the fruits of their labour with much pleasure. A spirit of industry is excited and kept up very different to their former habits, and an opportunity is thus afforded them of enjoying the blessings of home, which could not be cultivated when they were maintained within the establishment. A few elderly females are placed upon the same system; they work in the institution, but reside at their own homes. Females generally, above the age of eighteen years, are admitted as day-workers; they dine at the asylum and receive regular weekly wages; their apartments are separated from those of the males, and no intercourse is permitted. Boys and girls from ten to sixteen years of age reside in the house, and in addition to attendance on their classes, they are taught to perform light works suitable to their age, till old enough to be removed into the regular workshops. The girls and female adults are under the superintendence of a matron, who also has the management of the sales. Several of the blind men are employed in calling on the customers of the asylum to deliver goods and to solicit orders. It is common for adults who reside in distant parts of the city to go to and from their employment without a guide, and no accident has ever happened to any of them. The usual branches of learning are taught to the young blind in the Glasgow asylum; the time devoted to school by both boys and girls is five hours a day on five days of the week, the chaplain being their teacher. The books used are printed in the Roman alphabet, which was arranged under the superintendence of John Alston, Esq., the former treasurer of the asylum, these books are printed on the premises, and are so numerous as to form a library in raised type. [BLIND, ALPHABETS FOR THE.]

There are three Asylums for the Blind in Dublin. The oldest of them, Simpson's Hospital, was opened in 1781; it was founded and endowed by a merchant whose name it bears, who was himself subject to a disorder of the eyes, and was also a martyr to the gout. The design of the hospital is to provide an asylum for blind and gouty men, the preference being given to those of good moral character, who have formerly been in affluent circumstances. About fifty persons partake of the benefits of this charity. It was incorporated in 1799, and its income is about 3000*l.* per annum.

The Richmond National Institution for the Indigent Industrious Blind is supported by subscriptions and donations; it was opened in 1809; the inmates, who are all indigent, are instructed in the trades ordinarily taught to the blind. At present the institution contains forty men and youths, who are lodged, maintained, and clothed there.

The Molineux Asylum is supported by subscriptions, by the profits of a chapel, and by charity sermons; it is solely for the reception of females, who are admitted at all ages. Those above fifty have here a permanent abode. The younger section of the establishment are lodged, clothed, and fed; and for a certain number of years receive instruction in those employments by which it is intended they shall earn their living. This asylum was opened in 1815, in the mansion of Sir Charles Molineux, Bart. This family has been among its most liberal benefactors.

In 1835, the Ulster Institution for the Deaf and Dumb, established at Belfast in 1831, admitted blind pupils also. This union of the two classes is a specialty in which this establishment does not stand quite alone. Between the two classes of inmates there is nothing in common, so far as their education is concerned; different senses being addressed, the process of instruction is essentially different, but when a medium of intercourse has been established between them by means of the manual alphabet, their being associated together is not without some points of interest.

On subjects of instruction the first place is given to religious training, and as a result of this, some of the blind pupils have become devoted and efficient city missionaries; one of them occupies an important position as one of the ministers at Brooklyn, New York. The other common branches of an English education also receive attention, and all who have voice and ear practise vocal music. About six hours daily are devoted to school, and two and a-half hours to manual labour. A large amount of the instructions conveyed is given orally, but the relief books printed at Glasgow, and those produced at Bristol are used by the pupils. Ninety-one deaf and dumb, and thirteen blind, are now in this institution.

The Limerick Asylum for Blind Females was established in 1835, chiefly through the instrumentality of the Dean of Waterford. It is capable of accommodating twenty inmates, but the funds of the institution do not afford support to this number.

The Yorkshire School for the Blind was instituted at York in memory of the late William Wilberforce. Its design is not so much to provide maintenance for the blind as to give them such instruction as may help them to gain a livelihood for themselves, attention being at the same time paid to their moral and religious instruction; their friends or parishes therefore contribute towards their support while they are in the institution. Those persons only are admissible who have lost their sight to such a degree as to be able at most only to distinguish light from darkness—those who have a capacity for instruction—those who are free from any dangerous or communicable disease—and those who have no vicious habits.

It is found from the recent reports of the Yorkshire school that less time is devoted to manual labour than in these asylums generally; but it must be remembered that the inmates are young. Music is much cultivated, and affords satisfactory evidence of its utility. With the view of forming a correct opinion on this subject, inquiries were instituted in 1856, as to the condition of the pupils who had left school. It was found that eleven had obtained situations as organists, and were enabled to maintain themselves fully; four others were engaged in teaching music and tuning instruments, and thus maintained themselves to a great extent. In addition to those who had left school, there were six male adults and one female still resident in the school, who were filling organists' situations. The results of these inquiries as to other industrial pursuits were less satisfactory, and the inference drawn was, that

music was the only really remunerative pursuit for the blind, under the present arrangements of the Yorkshire School.

Another hint of considerable value may be drawn from the series of reports of the Yorkshire school. A year or two ago, a sergeant was engaged to drill the pupils, and it has been found of the most essential benefit to them. One of the pupils remarked, that he walked with much greater confidence since these exercises had been practised, and this feeling will be one of general experience; it may therefore be commended to the attention of other establishments for the blind. The superintendent of the Yorkshire school is W. D. Littledale, Esq., who is himself blind, and whose whole heart seems to be given to the improvement of the school. The general branches of education are taught, and books in the Roman type are preferred. The Rev. W. Taylor, author of the 'Tangible Euclid,' formerly devoted to the interests of this school, has left York; his attention, however, is still directed to the welfare of the blind. The number of pupils in the York school is sixty.

Henshaw's Blind Asylum, at Manchester, was opened for the admission of inmates in 1838. An endowment of 20,000*l.* was left in the year 1810 for the support of such an asylum, by the will of Thomas Henshaw, formerly of Oldham. Notwithstanding the large accumulations arising from this source, no part of Mr. Henshaw's bequest could be appropriated to the purchase of land for such asylum, nor for the erection of a suitable building; and the sum of 10,000*l.* was subscribed by the inhabitants of Manchester for these objects. The building, together with one in exact correspondence, for the education of the deaf and dumb, was erected at Old Trafford, and the approximation of the two charities was rendered closer by a subsequent agreement of the respective committees for the erection of a chapel in the space between the two buildings, thus connecting them as consistent parts of one uniform structure, in the English Academic style of architecture. The object of the asylum is not only to afford a home to the impotent and aged blind, but also "to maintain and afford such instruction to the indigent blind of both sexes capable of employment, as will enable them to provide, either wholly or in part, for their own subsistence, and to promote the employment of, or to employ, blind persons." The training of the inmates is therefore both intellectual and industrial, but it is not stated in the last report how the school instruction is carried on. It may be inferred that the books in Roman type are used; the late governor, Mr. Hughes, emphatically says, "I would discourage all systems of embossing which could not be read and taught by seeing persons." The articles manufactured are more various than in the generality of these asylums. The number of inmates in 1858 was seventy-five.

The Royal Victoria Asylum for the Blind, at Newcastle-upon-Tyne, was founded in the year 1838, to commemorate the coronation of Her Most Gracious Majesty the Queen; its object, as expressed in its first regulation, "being, to afford to the blind an elementary education, and instruction in those branches of trade and manufacture which shall be found suited to their capacity," as well as to afford them spiritual instruction. During the existence of the asylum, 115 pupils have been received into it, of whom 37 are now under its care, 22 of whom are males, and 15 females. Pupils are received into it from the four northern counties of England. The works of the inmates are of the usual kinds; the forenoon of each day is given to manual labour, the afternoon to music and general education. The relief books in Roman capitals are preferred.

The West of England Institution for the Blind was established at Exeter in 1839. It contains twenty-five inmates of the two sexes, all of whom are taught the usual branches of education, including music, and some to make baskets, mats, rugs, sash-line, &c. Sixty-two of its boarders and forty-one day pupils have quitted since its commencement. Its income is derived from the usual sources, namely, subscriptions, donations, board of pupils, and sale of work. Lucas's raised alphabet is used, and it is one of the regulations of the committee that "the system of teaching to read shall be that by means of the raised stenographic character."

An Institution for the Blind and Deaf and Dumb was formed at Bath about the year 1840. A considerable number of pupils of both these classes have been instructed under its care; and at the date of the last report (1858) it contained fifty-one boarders, of whom twenty-eight were deaf and dumb, twenty blind, and three partially blind and deaf and dumb; it also extends its benefits to day and sunday scholars, of whom it numbers twelve deaf and dumb, and four blind. Miss Elwin, of Bath, has taken a benevolent oversight of this establishment, from its first commencement to its present mature condition. A "Home" for blind girls has also been formed, for those who, having passed the allotted period of five years' instruction, have no friends able to provide them with a suitable place of residence. The training which the blind children receive is both intellectual and industrial; the former comprehends reading, on Lucas's system, arithmetic, geography, music, and singing; the latter is confined to basket-making. The morning hours are devoted to labour; the afternoon to mental and religious instruction. In the "Home," the greater part of the day is spent in basket-making, which contributes in part to the support of the establishment, and the inmates are frequently read to while they are at work.

An asylum for the young blind was established in Brighton in 1841, the pupils not to be under six, nor exceeding twelve years of age. It is designed for the town of Brighton and the diocese of Chichester, with power to the committee to receive candidates from other localities. This school is under the management of Mr. Moon, one of the inventors of raised characters, to whose system attention has been directed in the article, BLIND, ALPHABETS FOR THE. The school contains twenty-one pupils.

The Midland Institution for the Blind is situated at Nottingham, and comprehends the counties of Nottingham, Derby, Leicester, Lincoln, and Rutland. Its chief object is the education and training of the younger part of the blind community. The age of the inmates varies from nine to twenty-four. The usual intellectual and religious instruction is imparted, and the trades are much the same as those followed in other establishments; it is thought some new trades might be profitably commenced, and, among others, brush-making. No male pupils are allowed to commence work till they can read; but the female pupils, from the day of their admission, spend half the day in their work-room, to be instructed by the governess in sewing and knitting, and the other half in school. The teachers, except the governess, are all blind. Lucas's system of raised type is generally adopted, but some of the pupils can read Moon's and the Roman books. The schoolmaster, who is blind, reads books on six different systems, but gives the preference to that of Lucas. In arithmetic the pupils are considerably advanced, and can work and comprehend fractions and decimals; the arithmetical board and pegs differs from that used in the institutions of Scotland. The admission of day-pupils *free* on the recommendation of a governor is a good feature in this establishment, though it is not confined to it. Such pupils may remain as long as there is room for them; and when they have acquired a trade, so as to make articles sufficiently well for sale, they are employed and paid journeyman's wages.

The General Institution for the Blind, at Edgbaston, near Birmingham, was commenced in 1846 by private benevolence, and adopted by the public the following year. Its income is derived from the usual sources, namely, subscriptions, legacies, donations, payments on behalf of pupils, sale of work, &c. The present number of pupils is fifty-nine, and they are classified both for school and labour, so as to give all the advantages suitable for their age. The school teaching comprehends reading, spelling, arithmetic (peg and mental), geography with the aid of globes and maps, and object lessons. There are upwards of sixty maps, and one is used by every two pupils. These maps are made by friends of the superintendent, and have been much admired by the conductors of different institutions. In music the pupils practise from one to three hours a day, according to their progress and talent. Church music only is taught. Four of the pupils, from sixteen to eighteen years of age, have obtained situations as organists, at salaries varying from 20*l.* to 30*l.* a year. In reading by the touch, Moon's system is used. This institution has the advantage of an indefatigable treasurer, Thomas Goodman, Esq., whose exertions for this and other charities which have for their object the relief of human suffering, are beyond all praise.

The title of the next institution to be noticed would lead to the supposition that a new sphere of operations was to be brought under observation. It is called "The London Society for Teaching the Blind to Read." It is situated in Avenue Street, Regent's Park, and it has been in existence twenty years. The indications of its distinctiveness are few, and chiefly relate to its plan of admitting pupils, and its adhesion to Lucas's system of reading, in which it has published the whole of the Scriptures and many other works. The usual kinds of school-instruction and of labour are taught to the pupils, of whom there were sixty in the institution in 1858. As an auxiliary in the cause of the blind, it must prove beneficial. According to its rules, it receives free boarders on the nomination of donors of 250*l.* in one sum, and by election of subscribers for three years; indigent boarders on payment of 15*l.* per annum; music being an extra charge of two guineas per annum. Male adults are not lodged in the house, and have to pay 2*s.* a week for lodgings in the neighbourhood. Day-pupils are admitted free on the recommendation of a subscriber.

The establishments of which some account has been given are not the only means carried on in these days for alleviating the condition of the blind, and increasing their means of happiness. Other appliances are also in action. Although blindness cannot be considered as the heaviest of human calamities, it is one which claims the most immediate sympathy and prompts the universal desire for its relief. Societies have been established for teaching the adult blind to read; many of which are connected with Moon's system. Mr. Moon, himself blind, commenced his printing labours at Brighton more than ten years ago; his books are not only largely used in that place, but in many other provincial towns, which have been supplied with home teachers, and in which lending libraries have been established. One of these societies has been formed in London; from it have emanated two lending libraries of Moon's books; and its first report (1857) states that in eighteen months 236 blind pupils had, for longer or shorter periods, been under instruction; of these 117 had learned to read, of which number 53 were above 50 years of age, and 8 were from 70 to 75. It would be very ungracious to cast a shade of doubt on the statements put forth of the rapidity with which the art of reading was acquired by these aged persons through the medium of touch; yet

there must be some fallacy, the facilities given by a previous knowledge of reading and spelling must have existed, for even aged persons with all their senses cannot learn to read *in three lessons!* If they could read and spell before they lost their sight, or if they had learned to read on some other system previously, the wonder ceases to some extent. The work is a good work, and requires nothing marvellous to sustain it. The London depository for the books on Moon's system is at 25, King William Street, Trafalgar Square.

In Euston Road, near St. Pancras Church, a thoroughly practical work is going forward for the amelioration of the condition of the industrious blind. It is known as "The Association for promoting the General Welfare" of this class of people. It has been in operation about five years; it provides means of industrial employment for those who have not been so fortunate as to obtain admission, and consequently instruction, in asylums; it supplements the education of those who have had this advantage; it teaches trades to those who have learned none, and finds a market for the work, thus enabling many of the adults so taught to support their families; it supplies regular work to many at their own homes; it finds workshops for others within the precincts of its own humble establishment. At present it affords employment to sixty-seven blind men and women, some of whom have been withdrawn from begging and destitution, and it has a list of upwards of ninety candidates, who desire to be put into a similar mode of earning their bread, and who will be gratified in their desire when the public favour to the establishment demands more articles than the present workers can supply. The town traveller and the porter of the establishment are both blind, yet they traverse crowded thoroughfares, and walk long distances, self-dependent, or trusting on the good-will of strangers for information and direction. Blind agents are also employed in selling the goods manufactured in several towns in different parts of the kingdom. This society is assisted by subscriptions and donations, for from the waste of materials and the slowness of the learners it cannot be self-supporting. The foundress of this truly beneficent association is Miss Gilbert, a daughter of the bishop of Chichester, herself blind, and a contributer of 2000*l.* to its endowment fund; for more than a year she worked the plan alone. Its control is now made over to a committee of influential men, and it may be hoped that the practical wisdom which devised its plans will be carried out with that ability which will ensure success commensurate with its object. The above account of this excellent charity is abridged from an article in 'Household Words.'

Charities for the blind also exist which grant annuities under certain conditions. The oldest of these is Hetherington's, it was established in 1774; the other is the Blind Man's Friend, established by Mr. Day; in October 1858 there were 2500 applicants waiting for this charity.

It appears that voluntary benevolence, together with the provision made under the Poor Law Act, by which the blind may be maintained during education in the asylums established, will in the course of time provide for the training in industrial pursuits of all the blind who require such aid. Great has been the progress towards this end during the last twenty-five years. The intellectual training will doubtless keep pace with the industrial, now that the public are aware how much can be done. The increase of books is also certain, with so many competitors for public favour in the field. It has been already stated that the Scriptures are published in four distinct systems. Attention should now be directed to the publication of a good reading-book on secular knowledge, the subjects of which should be consecutive, progressive, and systematic. The republication of some existing school-book is more desirable than the preparation of an original work for many reasons; but it should not be a miscellaneous collection of lessons without plan or arrangement on every variety of topic in succession, tending to bewilder and excite rather than to satisfy the mind. The moral tone of the inmates of the various schools is a subject of special mention in many of the accounts we have received, yet it is thought some advantages would arise from a stricter classification, so as to prevent the young blind from mingling with the adults and the aged. In the workshop the restraint which is necessary for the young is irksome to the older inmates, and the exercise of all their good principles is requisite to prevent the rising of a rebellious spirit. Separate establishments for children and adults, or an entire separation in the same building seems desirable. At Norwich there is such a provision. The inmates of Henshaw's asylum, at Manchester, are not restricted as to age, and are in for life, but the old are not separated from the young, consequently they cannot have that quietude which age and infirmity require. In one or two of the establishments drill and gymnastics receive attention. These physical exercises are highly commended by Dr. Blacklock, as giving confidence, and they should be universally cultivated among the young blind. It is a question worthy of some consideration by the managers of our asylums, as to what extent blind teachers can be eligibly employed in the various departments. As far as the communication and transmission of ideas are concerned, the bliud teacher may possess some advantages over the seeing one, yet circumstances arise in which the evils attendant on the want of sight counterbalance these advantages. In the *schoolroom* we find bad habits and positions of the body; in the *workshop*, badly shaped articles and waste of materials; in the *musical department*, wrong positions of the hands, and a bad system of fingering, with an awkward attitude and distortion of the countenance in singing. It cannot be expected that blind teachers should be aware of these things. An exact record of the after-life of all the pupils should be kept in every asylum for the blind. Such records are the result of the care and attention of teachers, and of the application and attainments of pupils, and the blind themselves should know that such an account of their future course will be recorded, and published for the satisfaction of those who generously support these establishments for their benefit.

The number of blind men who have become eminent is large; for some account of them we must refer to the work of Dr. Guillié on the 'Instruction of the Blind,' to blind James Wilson's 'Biography of the Bliud,' to the first volume of the 'Pursuit of Knowledge under Difficulties;' and to Dr. Kitto's 'Lost Senses—Blindness;' in these works we read of philosophers, mathematicians, divines, musicians, rhetoricians, lawyers, historians, poets, naturalists, road surveyors, mechanics, travellers, and even sculptors, who laboured under the infirmity of blindness.

The addition of deafness to blinduess seems almost to shut out a human being from the external world. It is difficult to conceive how the mind of a deaf, dumb, and blind person can be occupied—much more difficult to say how it can be improved and educated. Yet there are many cases of this three-fold deprivation known, and there are always one or more such instances undergoing instruction in our blind or deaf and dumb institutions. The case of *James Mitchell*, the son of a Scotch clergyman, which was investigated by Dugald Stewart, Mr. Wardrop, and Dr. Spurzheim, is the best known; *Julia Brace*, a pupil in the asylum for the deaf and dumb at Hartford, Connecticut, is another instance of the same kind; *Victorine Morisseau*, a pupil in the Imperial Institution for the deaf and dumb of Paris, was another sufferer under this accumulated calamity; *Laura Bridgeman*, a pupil of Dr. Howe, in the Boston Asylum for the blind, is not only defective in these senses, but also in that of smell. She has had companions in the same affliction in *Oliver Caswell* and *Lucy Reed*. *Edward Meystre*, of Lausanne, is another case of the kind. He too has met with an instructor. Each of these instances is a history in itself of a mind sealed up, but unsealed by the indefatigable zeal and skill of their respective teachers. Space is not allowed us to go into the manifold processes which patience and enterprise invented for conquering the difficulties which interposed between these minds and the world without. The results are not merely satisfactory, they are marvellous.

The blind are not a moody or a discontented class—fun, frolic, and mischief are as inherent in them as in others. We extract a few anecdotes from an interesting pamphlet published some years back by Mr. Anderson, who passed many years of his life as teacher and superintendent in the several asylums of Edinburgh, York, and Manchester, which show their vivacious habits.

"Romping, jumping, laughing, and screaming, are as delightful to them as with boys and girls who see. The cross-bow, bow and arrow, trundling each other in a wheelbarrow, spinning tops, and to those who have a glimmer of light, called 'blinkers,' marbles, and a kind of cricket, all afford ample amusement, while there is no want of the usual boyish plotting and mischief. The girls also enjoy their play-hours very much, and contrive to stand in as much need of the needle as their more favoured sisters of sight.

"A girl at York took up a book lying beside me, turned up her face towards the gaslight above my head, and playfully observed, as she whirled over the leaves, 'Dear me, sir, what bad gas this is, I can't see to read a word by it!' The same girl standing near the fire, heard a companion trying to decipher some of the letters of the book in relief, 'Let me see,' said the latter, 'what's this—b i t, t e r; bit—what does that mean?' 'Sit a little nearer the light, my dear,' said her fireside companion, 'I know you don't see very well, Jane.' The tone of this indicated genuine playful mischief.

"A young man at the Edinburgh asylum, born blind, was at all times the essence of cheerfulness. He was one of our most correct 'messengers,' and a good collector of accounts, of which from the amount of our annual sales, we had many. He, as well as several others, could easily take from four to eight of these at a time. Coming along the passage whistling—he was always whistling—he began to grope about for his hat, which, not finding on its usual peg, he cried to a companion, whose foot he heard not far off, 'Willie, come here, man, and look for my hat, ye see better than me.' The one was as blind as the other.

"It is a remarkable fact that the blind scarcely ever hurt themselves, either against furniture, or in play. At Edinburgh they were constantly walking about the crowded streets. There were four or five 'messengers,' whose business it was to carry home all the goods sold—baskets, mattresses, rope-mats; and not only did they do this with the greatest exactness, but they were daily in the habit of going to all parts of the city, Leith, Portobello, and environs, to take measurements for bedding. I have many times had the dimensions of two, and even three beds brought to me—all on memory—with a precision not exceeded by the most expert workman, including the exact allowance of so many inches to be cut out for the bed-posts.

"I had occasion one evening, at Edinburgh, to send out one of these blind men with a mattress. I gave him the bill with it, that he might

receive payment. He returned with the account and the mattress too. 'I've brought baith back, ye see, sir,' said he. 'How so?' 'Indeed, sir, I didna like t'leave't yonder, else I'm sure we wad ne'er see the siller—there's no a stick of furnitur' within the door!' 'How do you come to know that?' 'Oh, sir, twa taps on the floor wi' my stick soon tell't me that!' Having to send the same man to Portobello, toward evening, I warned him (rather inadvertently!) that if he did not make haste it would get dark. 'My word, sir,' said he laughing, 'I wish I had a shillin' for ilka time I've been in Portobello i' the dark.'

"As a body, the blind are the most habitually cheerful of mankind. How it comes to be so I cannot tell, and I have no wish to theorise. I cannot designate the blind, as is almost universally done, 'the unhappy,' 'melancholy,' 'pitiable,' and so on. I know nothing more erroneous, or more opposed to the feelings of by far the greater majority." So says Mr. Anderson in his 'Observations on the Employment, Education, and Habits of the Blind,' and he was a man of large experience among them.

BLINDAGE (called also BLIND), is a term employed in military art to any temporary construction made to secure artillery against the effects of ricochet and vertical fire, or the troops against the effects of shells; it consists usually of stout timbers, covered with fascines, earth, and sodwork, and in fact is the temporary expedient for casemates.

In fortresses, when regular casemates have not been constructed for the protection of the ammunition and provisions, or of the soldiers while not employed in active duty, covered buildings of a temporary nature are formed for those purposes at, or previously to, the commencement of a siege. The simplest are such as are made against the side of some strong wall within the place, or, which is preferable, against the revetment of the counterscarp, in a dry ditch, on any of the fronts not exposed to the fire of the enemy. These inclined blindages consist, when timber is plentiful, of thick beams placed close together, and leaning against the wall at an angle of 45°, one extremity of each resting on a sleeper laid in the ground: in other cases the beams are placed at intervals from each other; over them are laid horizontal joists close together, and the whole is covered to the required thickness with fascines and sods when they can be procured; the entrance is at one extremity of the building. This kind of blindage is also constructed to cover the miner employed in piercing the escarp wall of a rampart when the breach is to be formed in it by the explosion of a mine.

A blindage is sometimes formed independently of any wall, by planting the timbers in the ground in inclined positions so that their upper extremities meet together in a ridge, when the building resembles the roof of a house, and the whole is covered with fascines and sods. But generally an area is enclosed by a wall made of strong palisades planted vertically in the ground, the roof being formed of timbers disposed horizontally and close together, above which comes the bed of fascines and earth. For a small magazine the inclosing wall may consist merely of gabions filled with earth; the area being covered as before.

A blindage is said to be bomb-proof, when, from the thickness of its roof, it is capable of resisting the shock of loaded shells; and splinter proof when merely capable of securing persons within it against the fragments resulting from the explosion of such shells.

The French give the name of blindage to any building already existing in a fortress, when a shell-proof covering has been made to it in place of its proper roof; this cover is obtained by placing girders over the interior, and overlaying them with joists and earth. And when the walls are not sufficiently strong they should be cut down to a convenient height, and covered as before. On the exterior of the building leaning blindages may be formed as above described, and sometimes the whole of the exterior walls are protected in the same manner, leaving only the entrances, which are generally opposite to the piers between the doors and windows, where some of the inclined timbers are omitted: but occasionally the walls and roof are merely strengthened and supported by shoars or inclined props firmly fixed below in the ground, and above resting against and supporting the extremities of the girders. For these kind of blindages such buildings should be selected as have their lengths in the probable direction of the enemy's fire, to avoid as much as possible their being exposed to direct fire.

To secure some of the artillery on the ramparts of a fortress against the effects of ricochet and vertical fire, shell-proof blindages are formed, by planting in the earth strong palisades vertically six feet on each side of the gun, extending from the interior slope of the parapet about 24 feet to the rear, across the terreplein or upper surface of the rampart; these carry a roof made with timbers, which extending forwards covers the embrasure as far as 9 or 10 feet from its neck, or interior extremity. These blindages are open towards the rear, and the guns fire through the embrasures as usual. The under side of the timbers of the roof is about 7 feet above the terreplein, and is covered with a double layer of fascines and earth above that to a thickness of about 5 feet. It has also been recommended to form the blindage in the thickness of the parapet itself, the roof being well covered with timbers, fascines, and earth, open to the rear, but the exterior closed by a number of stout timbers placed horizontally, so as to make a wall 4 feet thick, through which the embrasures are cut, like the portholes of a ship.

In the attack of fortresses, when the trenches of the besiegers become subject to a plunging fire from the place, they are protected by blindages; these are formed by fixing rectangular frames of timber, commonly called great gallery frames [MINES], vertically along the two sides of the trench, and placing similar frames or any timbers across the trench on the top of these, to carry the roof which consists of fascines covered with earth or raw hides.

Blinded trenches of this kind were formerly much used by the besiegers to protect their descent into the ditches of fortified towns; one of this kind was executed by the French for that purpose when they besieged Danzig in 1813.

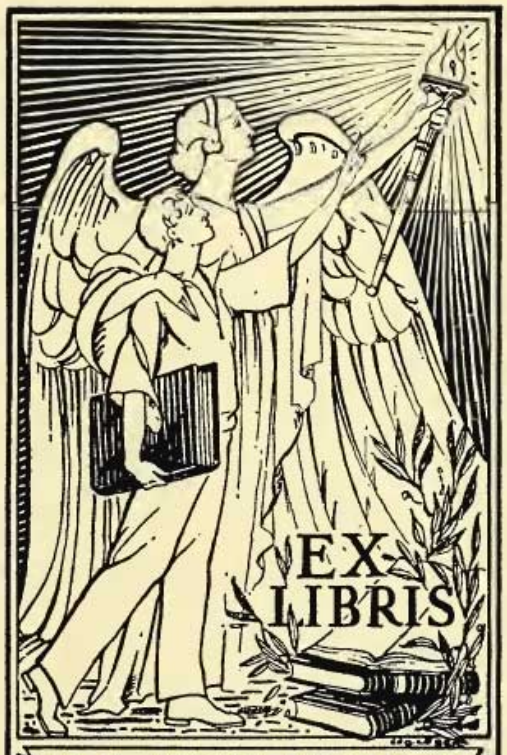
BLINDNESS. [EYE.]

BLISTER, a term used to express a bladder or vesicle raised upon the skin by the application of some external irritating substance, and also to denote the external application itself by which this effect is produced. The terms *vesicatory* and *epispastics* are also frequently given to the external application or other preparation. The substance usually employed as a vesicatory is the powder of the Spanish fly. [CANTHARIDES.] The powder of the cantharides is mixed with lard and wax, so as to produce a plaster of tolerably firm consistence, which is spread on leather and applied to the part for the space generally of from ten to twelve hours. The first effect of the application of the blister-plaster to the external skin is to produce a sense of tingling and heat; this is followed by redness, commonly attended with pain, and subsequently there takes place an elevation of the cuticle into a vesicle or bladder, which contains a fluid resembling the serum of the blood. On the effusion of this fluid the redness continues for some time; the serum gradually thickens, and at last is changed into a whitish curdly substance, under which new cuticle is formed, though occasionally the serum is converted into proper purulent matter, the blistered part successively contracting, until the whole wound is healed. Sometimes coagulable lymph is effused.

The effect of the application of a blister is the production of a true inflammation over the whole surface of the skin with which the plaster is in contact. The effusion of a serous fluid from the excited capillary vessels of the skin is one of the ordinary phenomena of inflammation. The formation of the bladder or vesicle is occasioned simply by the elevation of the cuticle from the true skin, by the fluid poured out from the cutaneous capillary vessels. The inflammation induced by the blister is the effect of a powerful stimulus applied to the cutaneous blood-vessels and nerves.

The extent of the inflammation is usually confined to the surface in actual contact with the blister; it is comparatively rare that any degree of irritation is communicated to the general system; and yet the relief afforded is often so great, that the effect appears disproportioned to the cause, a small external inflammation mitigating or removing an extensive and severe internal inflammation. Much discussion has taken place as to the principle on which this relief is afforded, and the real mode in which the blister produces the benefit observed to result from it is not clearly understood. It is certain that the chief benefit results in the state of what is termed local inflammation; that is, when the inflammatory action is confined to a single organ or to a part of an organ. In order to understand the true nature of the change effected in the part relieved, it is obviously necessary to understand the true nature of inflammation. [INFLAMMATION.] It may be here stated, that in inflammation artificially induced with a view of observing the phenomena that take place in this process, the blood-vessels of the part inflamed are seen to enlarge and to become preternaturally distended with blood, while the motion of the blood in such vessels is either very much retarded or ceases altogether. The knowledge of this fact enables us to understand, in some measure, the action of a blister. The application of a powerful stimulus, such as that caused by the Spanish fly, in the neighbourhood of vessels relaxed and over-distended with blood, relieves such vessels by depriving them of a portion of their blood, and by consequently removing the state of over-distention. For the stimulus applied to the skin determines a large quantity of blood to the cutaneous vessels under the influence of the vesicatory; this blood is derived from the blood-vessels of the parts in the immediate neighbourhood of the vesicated skin, from the blood-vessels of the inflamed part among the rest; and the blood-vessels of the inflamed part being relieved from the preternatural quantity of blood that distended them, return to their healthy action.

Another reason has also been assigned for the relief afforded by the application of blisters. It is observed, that when a morbid action exists in any part of the body, it may sometimes be removed by exciting a morbid action of a different kind in the same or in a neighbouring part. It is assumed that two morbid actions of different kinds cannot go on in the same part at the same time; hence the surgeon and physician, when they observe diseased action going on in a particular part of the body, induce, as near to that part as possible, another action of a different kind, frequently with the effect of lessening or altogether stopping the former morbid action. Now one of the instruments most commonly employed to excite this new action is the blister, and the excitement of such action, on the principle just stated, is conceived to be one mode in which the blister, as a general remedy, proves beneficial.



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