

square standing for zero, a smaller one for I, and the other numerals were detected by their relative position to these.

Saunderson manipulated the pins with inconceivable quickness; but the exact way in which he used them in his calculations is altogether a mystery. It is probable that he used groups of pins, from time to time, to express certain stages in the operation, as memoranda to which he could refer again and again. Be this as it may, however, there is no doubt that he worked problems of every—even the highest—kind, both in common arithmetic and algebra, with great rapidity and equal accuracy. Genius as he was, and full of resources which genius alone can devise and use, he would doubtless have rejoiced to possess one of the plain and simple arithmetic boards now in use.

A popular impression is afloat that some clever blind people have the power of detecting colors by the touch. This is an error; touch can do nothing here. Yet the blind man may weave you a rug bright with all the colors of the rainbow, exactly after the pattern which you prescribe. In the first place, his threads of wool are all placed for him by his side, in one exact order, say white, crimson, blue yellow, and maroon. They are always in the same order and place, so that a takes up whichever he needs with unerring certainty. Hung up in front of him, but easily within reach of his fingers, is a square of smooth, thin deal, on which is traced the pattern of his rug in nails with heads of every possible variety of shape—round, square, diamond-shape, or triangular; tacks, brads and buttons; some driven home to the surface of the board, others raised above it; but all telling their own story of red, green, white or blue. He reads his pattern with his fingers, and weaves in the brilliant colors as deftly as if he saw every tint. If his touch is keen his pattern can be set for him by the help of letters and figures, certain letters standing for certain colors, and the figures indicating how many threads or strands are to be taken. Then the different colors all being arranged in regular order he skillfully brings out the intricacies of his pattern.

The material used for making baskets is sometimes colored with such substances that the red, for example, is harsher to the touch than the blue. In such cases the blind basketmaker is soon able, apparently, to detect colors by the touch, while in reality it is a difference in substance.

In the various institutions for the blind the making of baskets, brooms, brushes, mattresses, and other similar articles, is systematically taught. This work is performed with great neatness and dexterity. It is often said that the work of the blind can not be equal to that of the seeing; but the brooms and mattresses made at the New York Institution for the blind prove the contrary. Special care is also taken in that institution, as well as in others, that the pupils should gain practical information in regard to the cost of material, the proper prices to be affixed to manufactured articles, etc., so that when they leave the institution they may be able to do business independently, if circumstances render it needful.

The great passion in the life of a blind man, when once aroused, is music. Here he thinks he can achieve, if not immortality, at least renown and certain independence. It is to him a source of the highest, purest pleasure, a solace under all his troubles, almost light in his darkness. It rightly occupies a prominent place in all institutions for the education of the sightless, and surprising skill and proficiency is often attained.

Among the mural tablets of the ancient Egyptians it is said there is one from the tombs of Alabastron representing a blind harper sitting cross-legged on the ground, attended by seven other blind men similarly seated, who sing and beat time with their hands. They were clearly professional musicians, full of animation and interest in their work; and expressing by every feature of the face, as well as their very position, their darkened lot. In those ancient times no systematic provision appears to have been made for the blind; but when music became their resource, they seem not only to have met with compassion and help, but to have found a pure enjoyment.

There is a pleasant incident related of Mendelssohn, who went one hot summer to rest his overtaxed brain in Zurich. There he was besieged by eager admirers, but would accept of no invitation until hearing that the blind pupils of the Blind School were anxious, as they said, to "see him," he visited them. He spoke to the sightless assembly in kindest words, and listened to their songs and choruses, some even of their own composing, with interest and pleasure. And then the great musician asked permission to sit down at their piano, and wandered away into one of those wild and tender strains of speaking melody for which he was so famous. His silent, wrapt audience listened so intently to "The Song without Words," that a pinfall would have broken the stillness. One by one over the eager faces crept the air of deep, quiet joy, untill in the midst of the great flood of mingling harmonies, a voice came to them out of the very chorus they had just been singing. Then their enthusiasm knew no bounds. The great master had carried them away, at his will, to heights of joy and triumphant praise before unknown; he had whispered to them of sorrow, and the cloudy ways of life, in words of soft, unbroken tenderness; and now he stirred their inmost depths by a strain of their own weaving, into which he poured a new tide of living song, new grace, and new meaning. No words could tell what they felt; they could have pressed him to their very hearts for joy. This was not long before the great musician's death; but he still lives in the Blind School at Zurich, and there still remains as a precious relic the master's chair in which he sat.

Where real musical genius, intellect, and education are combined, the blind musician may at once take high rank: and not a few have astonished the world with grand and glorious strains. Occasionally, also, some strange prodigy, like "Blind Tom," attracts attention for a time. Until seven years old this old genius was regarded as an idiot. Suddenly one night he was overheard playing the piano in his master's drawing-room, touching it with singular grace and beauty, wandering through rapid cadences, and wild bursts of melody, as a finished musician. As far as could be known, he had never even touched a piano till that night. From that time forth he had free access to the instrument, on which he every day performed greater wonders, repeating without effort almost note by note any music once played to him, and with wonderful accuracy mimicking any fault or peculiarity in the style of the performer. His marvelous powers were soon exhibited to the public. He would sit down and play, with amazing correctness, difficult pieces of music, a dozen pages in length, which he had heard but once. Notwithstanding this dexterity, one of his favorite feats was to produce an outrageous, discordant jumble of sound which no ear of the slightest pretence to sensibility could produce or endure without intense pain and disgust. The case of Blind Tom stands alone as a positive anomaly.

While to a majority of the blind music is a source of delight the acquisition of it is generally laborious. The process of deciphering any of the printed signs by which musical changes are made known to them is long and tedious. Consequently the pupils are usually taught by dictation; a short passage being given by the teacher, and repeated by the pupil until he has mastered it. In this way a piece of music is gradually but accurately learned, and when once imprinted in the memory it is rarely forgotten or lost.

The blind have their sports and games and recreative employments; although for the most part these are of the quieter kind. Checkers, chess, dominoes, and games of a similar nature, are attractive to them, and often they acquire a great deal of skill. Numerous little fancy articles are made by stringing beads on small wire. The beads are arranged according to color in different boxes; the blind girl takes the end of her wire, and passes it several times through the beads, by which means several probably are strung on to the wire. She counts carefully the number she needs, in accordance to her own fancy, or the directions she has received, and retains those on the wire while she removes the