Calculating Boys.

THERE is no doubt that the power for mental calculation varies to a remarkable degree in different individuals, but it is not so much in adults as in children that the difference in the development of this particular faculty is so strikingly apparent, and many remarkable instances are recorded of children in whom it has developed itself in an extraordinary manner at a very early age. Among these, one of the most remarkable is the case of George Parker Bidder.

This boy was born in 1806, at Morton Hampstead, in Devonshire, on the borders of Dartmoor, where his father carried on a small business as a stone-mason. At the early age of four he showed a most extraordinary ability for calculation, which with slight assistance from an elder brother assumed quite phenomenal proportions. His peculiar talents soon attracted general attention, and his father found it a much more profitable employment to carry his son about the country, and exhibit him as the "Calculating Phenomenon," than following his trade. In this way young Bidder visited many parts of the country, astonishing the different people who came to see and question him, with the wonderful rapidity with which he was able to answer, without external aid of any description, the most difficult questions.

Of these the following are a few of the most extraordinary examples: If a flea spring 2ft. 3in. in every hop, how many hops must it take to go round the world, the circumference being 25,020 miles; and how long would it be performing the journey, allowing it to take 60 hops every minute without intermission? Answer: 58,713,600 hops, and 1 year 314 days 13 hours 20min.

The following question was solved by him in 40sec.: Suppose the ball at the top of St. Paul's Cathedral to be 6ft. in diameter, what did the gilding cost at 3½d. per square inch? Answer, £237 10s. 1d.

The following in 1min. 20sec.: Suppose a city to be illuminated with 9,999 lamps, each lamp to consume 1 pint of oil every 4 hours in succession, how many gallons would they consume in 40 years? Answer, 109,489,050 gallons.

Another curious question was: Suppose the earth to consist of 971,000,000 of inhabitants, and suppose they die in 30 years and 4 months, how many have returned to dust since the time of Adam, computing it to be 5,850 years? Multiply the answer by 99.

It is related that on one occasion the proposer of a question was not satisfied with Bidder's answer. The boy said the answer was correct, and requested the proposer to work the sum over again. During the operation Bidder said he was certain he was right, for he had worked the question in another way; and before the proposer found he was wrong, and Bidder right, he had solved the question by a third method.

But Bidder was not always content with being questioned only, but would sometimes puzzle his interrogators by a question of his own, and on one of these occasions he put the following:—

"A man found thirteen cats in his garden. He got out his gun, fired at them and killed seven. How many were left?" "Six," was the reply. "You are wrong," he said, "none were left. The rest ran away."

Whether or no he was the originator of this time-honoured joke, his biographers do not say.

During one of his exhibition tours, fortunately for the lad his performances attracted the attention of some eminent scholars, who, after making inquiries, subsequently undertook his education, and he was placed at a first-rate school at Camberwell, and afterwards

GEORGE PARKER BIDDER (AGE 8).
From a Painting by Miss Hayter.

at Edinburgh, where he carried off the prizes given by the magistrates of that town for the study of higher mathematics.

Bidder was afterwards employed for a short time on the Ordnance Survey; but finally he decided to follow the profession of an engineer, in which his extraordinary gift would have ample scope. It was while thus employed that he became associated with Robert Stephenson and the Birmingham Railway, and in the construction of this he took a very active part.

Some years after he entered Parliament, and numerous stories are extant of his wonderful skill in detecting a flaw in some elaborate set of calculations, whereby he was often enabled to upset an opponent's case. Or, at other times, he would establish his own case by arguments based upon mathematical data, possibly only at the moment placed before him. It is said that on one occasion an opposing counsel asked that he might not be allowed to remain in the committee-room, on the ground that "Nature had endowed him with qualities that did not place his opponents on a fair footing."

After taking a leading part in many important engineering works, he died at Dartmouth, September 20th, 1878.

Another of these extraordinary children, between whom and Bidder honours were almost equally divided, was Zerah Colburn, born at Cabot, Vermont, United States, September 1st, 1804. Signs of his wonderful powers appeared at a very tender age. The discovery was accidentally made by his father, who was much surprised one day to hear him repeating the product of several numbers, although at the time he had received no other instruction than such as could be obtained at a small country school, whose curriculum did not include writing or ciphering. He thereupon proposed a variety of arithmetical questions to his son, all of which the child answered with remarkable facility and correctness. At the age of eight, the boy was able to solve most difficult questions by the mere operation of his mind. Many persons of the first eminence for their knowledge in mathematics made a point of seeing and conversing with him, and they proposed to him a great variety of questions to test his marvellous powers. Among them were the following:—

ZERAH COLBURN (AGE 9).
From a Painting by T. Hull.

Give the square of 999,999. After hesitating a little, he replied 999,998,000,001, and observed that he produced this result by multiplying the square of 37,037 by the square of 27. He was then asked to multiply the answer twice by 49 and once by 25, a task which he accomplished successfully, though the answer consists of seventeen figures.

Name the cube root of 413,993,348,677. To this he gave the correct answer in five seconds. How many times would a coach wheel, 12ft. in circumference, turn round in 256 miles, and how many minutes in 48 years? To the first he replied in two seconds, 112,640; and to the second before the question could be written down, 25,228,800, and added that the number of seconds in the same period was 1,513,728,000. What are the factors of 247,483? To this he replied 941 and 263, which are the only factors.

Various other questions of a similar nature respecting the roots and powers of very high numbers were indiscriminately proposed to him, and he always succeeded in giving the correct answers. He could tell the exact product arising from the multiplication of any number consisting of two, three, or four figures, by any other number consisting of a like number of figures; or if any number consisting of six or seven places of figures were proposed, he would determine, with equal ease and expedition, all the factors of which it was composed. This singular faculty therefore extended not only to the raising of powers, but also to the extraction of the square and cube roots of the numbers proposed, and this without the assist-

ance of any visible aid in the form of pencil or paper.

Many persons tried to obtain a knowledge of the method by which he was enabled to answer with so much facility and correctness the questions put to him, but without success; for he positively declared that he was unable to tell how the answers came into his mind. That his process of operation was other than the usual mode of proceeding was evident, for he was entirely ignorant of the common rules of arithmetic at this time, and could not, it is stated, perform upon paper a simple sum in multiplication or division. But in the extraction of roots and the mentioning of factors, he gave the answers so promptly as not to admit of any lengthy operation taking place in his mind, when it would require, according to the ordinary method of solution, a very difficult and laborious calculation.

After exhibiting his powers in many parts of the United States, this child was brought to England in May, 1812, and exhibited at the "Exhibition Rooms" in Spring Gardens. During his stay in this country the Earl of Bristol, among others, took great interest in the boy's welfare, and sent him to Westminster School. Here he remained till 1819, when, unfortunately for the lad, he was removed, owing to his father refusing to comply with certain arrangements proposed by the Earl.

Colburn afterwards tried the stage as a profession, and was for a few months under the tuition of Charles Kemble; but his first appearance satisfied both himself and his instructor that he was not adapted for a theatrical career, and he finally became a master in an American University. In 1833 he published his autobiography, and from this it appears that his faculty of computation left him about the time he reached manhood. He died March 2nd, 1840.

In 1795 there was born, in Bilbao, a Spanish boy named Lacy, who also gave early demonstrations of his special powers, and at an early age was brought over to this country and exhibited here, creating no small stir by his wonderful performances in the calculating art.

A very singular instance of this curious development of the calculating faculty, and differing in several respects from those hitherto mentioned, is

JEDIDIAH BUXTON.
From a Painting by B. Kilingbeck.

the case of Jedidiah Buxton, who, though he can hardly be termed an infant prodigy, is of sufficient importance in the same capacity to find a place among them.

This man was born in 1707, at Elmeton, in Derbyshire, where his father was schoolmaster. But, notwithstanding his father's profession, Jedidiah's education was so much neglected that he was not even taught to write. How he first discovered his extraordinary faculty for numbers he could never tell, and, unlike his fellow-calculators, he does not seem to have shown any startling development very early in life; for it was not till he had arrived at man's estate that his powers assumed anything like phenomenal proportions. But once started in this direction, his mind seems to have been engrossed with the subject, to the exclusion of all others, so that he frequently took no cognizance of external objects, except with regard to their numbers.

It seems to have been invariably his custom, if any space of time were mentioned in his presence, to repeat the time in minutes and seconds; if any distance, the number of hair's breadths. By this means he greatly increased his power of memory with regard to figures, and stored up in his mind many products for use as they might be called upon. So remark-

M. M. J. R. LACY (AGE 9).
From a Painting by J. Smart.

able was his memory that, while solving a question, he could desist and resume the operation again where he had left off, even if it were a month after. His method of working was entirely his own, and he was not so much remarkable for his rapidity as for his invariable correctness.

He was once asked as a test of his powers: In a body whose three sides are 23,145,789 yards, 5,641,732 yards, and 54,965 yards, how many cubical eighths of an inch?—and after some time, although still continuing his work among a number of fellow-labourers, he signified that he was ready with the answer. Meantime his interrogator calculated it upon paper, and upon his taking out his pocket-book to take down the answer, Jedidiah asked which end he would begin with, for he was ready either way. His questioner chose the regular order, and, to his great surprise, found that in a line of twenty-eight figures he made no hesitation or the least mistake.

Two very remarkable things about this man were that he would suffer two people to propose different questions, one immediately after the other, and give each their respective answers, without the least confusion. He would also talk freely while working out his questions, as if it were no molestation or hindrance to him.

One of the most stirring events in his otherwise quiet and obscure life was a visit to London in 1754, when he was introduced to the members of the Royal Society, who asked him a number of questions, to prove his abilities, all of which he answered to their entire satisfaction and surprise. Beyond this he never left his birthplace, where he died in 1772.

Another boy, a German, named Christian Friedrich Heinecken, who was known as the "Infant of Lubeck," from the place where he was born in 1721, besides his remarkable faculty for numbers, is said to have known, at the age of one, all the principal events related in the Pentateuch, at two was well acquainted with the chief historical events of the Bible, and at three had a knowledge of universal history and geography, Latin and French. People came from all parts to see him, and the King of Denmark had him brought to Copenhagen in 1724, in order to assure himself of the truth of what he had heard regarding him. But shortly after this, little Heinecken was taken ill, when he predicted his own death, which took place in 1725, at the tender age of four.

Many other examples of these "freaks of Nature" are known, and among them may be mentioned one of a negro of Maryland, who, with no education whatever, possessed a wonderful power for numbers, and solved many difficult questions put to him. An account of his career appeared in the "Annual Register," 1788.

Being endowed by Nature with such extraordinary abilities, one naturally looks for some great mathematical work, or some startling discovery with regard to numbers, from these youths in after life, but in vain, for not one of them, with the exception of George Bidder, ever seems to have attained to anything of importance, or to have struck out any particular line for himself out of the ordinary beaten track; but rather, as time went on, they appear to have lost most of their marvellous power, or to have died before reaching an age when its practical application might have been made to serve some useful purpose.

CHRISTIAN FRIEDRICH HEINECKEN (AGE 3).
From a Painting by J. Harper.