STRANGE MENTAL FEATS.

SOME MARVELOUS DOINGS OF CALCULATING BOYS.

The Wonderfully Rapid Mental Work of Colburn, as also Safford and Bidder.

[Richard A. Proctor in the Courier-Journal.]

There are mental feats which surprise more than even the great mental achievements in which mankind justly take most pride. The work of a Newton differs in degree only, not in kind, from the work of a Galileo or a Halley; and Newton himself has told us that he accomplished his work, not through some exceptional quality in his powers, but by the patient "intention" of his mind for weeks and months on the subject he sought to master. Even the poetry of a Homer, of a Dante, a Shakespeare, or a Milton is but the best of its kind, not suggestive of abnormal mental powers. There are mental feats, however, far less than these achievements of great minds, far less valuable to humanity, which nevertheless suggest much more striking possibilities. They seem to indicate peculiarities of brain structure comparable with those casual peculiarities which biologists call "sports," as the long backs of the Ancon sheep, the occasional appearance of six fingers and toes in the human race, and the like. The recent recognition of the influence of heredity in mind and character as well as in body, gives singular interest to mental feats such as I am about to consider, since they suggest possible developments of brain functions by which men may hereafter obtain a mastery over problems at present beyond their power. In particular I would call attention to the evidence which some of these feats afford of combined powers of ready apprehension and perfect retention, which, were they possessed generally by the students of science, would enable them to range much more widely over the ever-increasing domain of knowledge than even the most skillful among them can at present.

From this point of view the wonderful powers which have been displayed by "calculating boys" deserve special attention. Newton was slow in calculation; and he labored, as it were, to fix his attention on the subjects to which his calculations related. How marvelously would those higher mental powers of his which raised him above all the thinkers in his own line have been aided had he possessed the swift and accurate calculating powers of a Zerah Colburn or a George Bidder, and their amazing power of retaining in their minds almost without effort, long arrays—or rather large groups—of numbers. The calculating feats of these lads, and of some others, seemed at first so marvelous that the idea was suggested that they employed some new process, akin perhaps to the use of logarithms by the calculator who works with pen and paper and book of tabular statements. But Zerah Colburn (who outside his wonderful calculating powers was almost as ignorant as Blind Tom), could reply only to questions about his methods, "God put these things into my head; I cannot put them into yours." Bidder was able to explain very fully his methods by which he made his rapid calculations; and, so far from diminishing the marvel his explanation added to it. For it showed that he went through processes, each one of which requires careful work and the retention of many groups of numbers, and this with rapidity incomparably greater than that with which the most practiced computer could deal with them on paper; nay, very much faster than they could have been set down from dictation.

Let us consider a few of the feats of the calculating boys.

Zerah Colburn was asked to say what number multiplied twice into itself would give the number 268,336,125. The idea was to see how far he would get ahead of a practiced computer, who was set to work finding the cube root of the number (for that was what Colburn was asked for) by the usual process. But before the practiced computer had written down the number, Colburn gave the number, 645. Colburn was at this time only eight years old, and he had not even so much instruction in arithmetic as most boys of that age have received. He knew nothing of the rules for extracting roots. But even if he had known how to extract the cube root of a number, his feat could not be less marvelous. Let any one who would learn to appreciate Colburn's calculating power try the following experiment: Set down the number just named and obtain the cube root by the ordinary method, making no hurry over the work; next copy the figures thus obtained, setting them down (in their order as obtained) as fast as a pen or pencil will travel, noting the time taken in this easy part of the work. Then consider that a child eight years old obtained the right result, without pen or pencil, in less time than had been taken to copy down the number itself to which all the calculation thus written out had been applied.

Asked what numbers will divide 36,083 exactly, Colburn at once answered "None." Let the reader try how long it takes with pen and paper to prove that this is really so. He will have to try the divisions 3, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 42, 47, 53, and many more, up to 187, before the proof will be complete.

Once, and once only, did Colburn have to make any considerable effort in dealing with a number as he had dealt with 36,083. The number was somewhat famous in mathematical annals—viz: 4,294,967,297, of which the great arithmetician Fermat declared that it had no division. Fermat even gave what appeared to him a proof of this, but the celebrated mathematician Euler showed that the proof was incomplete. Euler also, after a long labor, found a number, 641, which will divide Fermat's asserted "indivisible." Colburn was set the same task which had foiled Fermat, and had occupied Euler for months. The little child could not answer that day, nor the next, nor for a week or fortnight, but in the third week he gave the solution. During that time he had kept no records of his work save in that wonderfully retentive little brain of his. It may interest the reader to know that the number over which Fermat and Euler had contended is obtained by multiplying two into itself thirty one times and adding units. Colburn did the work of thus obtaining the number in a few minutes.

Bidder's feats acquire additional interest from the circumstance that he was able to explain precisely the methods by which he worked. I once had a conversation with Professor Safford, who had been for a long while known as a "calculating boy," about the method he used. He admitted that his ideas on this point were somewhat vague. He found, however, that his mind had a tendency, apart from any questioning, to turn to the study of numbers, and that when any number was named or thought of, he fell half unconsciously into the work of mentally resolving it (if it admitted of resolution) into factors. Possibly this mental tendency, accompanied by an abnormal power of recollecting numbers, might have helped Safford, and before him Colburn, in obtaining results quickly, because already immense numbers in multiplications and divisions had been mentally recorded and were thus as ready for application as with most of us is the multiplication table. But this was not the way in which Bidder's wonderful calculations proceeded. He worked them regularly out, though with a rapidity so amazing that one wonders in what way his brain recorded the results. If any one tries to multiply mentally two such numbers as 397 and 483, the digits obtained in the process are mentally named, and I suppose that most persons find, as I do, that the rate at which one names the digits mentally is not greater than that at which one would name them aloud. How then did Bidder manage when he multiplied together, as he frequently did, two numbers which contained fifteen figures! At the age of 14 he could do this with amazing rapidity. The process he employed was not ordinary multiplication, but still it was a well-known method—known as cross-multiplication—a method which everyone who has much to do with numbers employs easily enough in multiplying by a number of three or four digits, writing down the product at once in a single line, beginning from the right. But each successive digit of the result is obtained by a separate process, which even with four figures only in the multiplier gives quite as much to be mentally retained as even an expert cares for. Imagine, however, the mental work Bidder accomplished in multiplying by a number of fifteen figures! In the middle of the multiplication the process for obtaining a single digit of the result required him to retain in his mind's eye fifteen products, besides a large sum "carried over," to add all these together, setting down the unit figures and carrying on the rest. Yet Bidder would give digit after digit of the product—running a course from right to left—almost as fast as they could be set down, and he never made a mistake. I doubt if one in a hundred, even among practiced computers, could multiply together two numbers, each of fifteen figures, and obtain the correct result at the first trial.

What tends further to show that we should regard the the power shown by "calculating boys" as a sort of cerebral "sport," is the circumstance that Bidder at fourteen took all such calculations lightly. He never seemed to work. When a question had been answered he amused himself with his spinning top till the next question came. He showed better temper than Colburn when questioned about his methods, though it was only in his manhood that he was able fully to explain them. He was not only good-tempered but full of quiet fun. To him, it would seem, we owe a familiar puzzle—at least we can hardly imagine that, unless it had been newly invented, he would have propounded it, as he did, to a room full of college professors and lecturers. "When the examination was over," says Professor Elliott, "he said to us: 'You have been trying to puzzle me; I will try to puzzle you. A man found thirteen cats in his garden. He got his gun, fired at them, and killed seven. How many were there left?' 'Six,' was the answer. 'Wrong,' he said, 'none were left. The rest ran away.'"

In Bidder's case the powers possessed in boyhood were not lost with advancing years. As his son, G. P. Bidder, pointed out, shortly after his father's death, the elder Bidder's career as an engineer fully disproves the common idea that calculating boys grow up into very ordinary men. But the evidence given by the son, in regard to the inheritance of Bidder's children and grandchildren of some portions at any rate of the qualities possessed by the "calculating boy," is full of interest in its bearing on the doctrine of heredity, and important as throwing light on the question whether there is any prospect of such advantageous "sports" being permanently developed in families, and eventually in races.

"My father," says G. P. Bidder, "was aided, I think, by two things—first, a powerful memory of a peculiar cast, in which figures seem to stereotype themselves without an effort; and, secondly, by an almost inconceivable rapidity of operation. I speak with some confidence," he proceeds, "as to the former of these faculties, as I possess it to a considerable extent myself, though not to compare with my father. Like him, I always see mental pictures of figures and geometrical diagrams. If I perform a sum mentally it always proceeds in a visible form in my mind. Indeed, I can conceive no other possible way of doing mental arithmetic. Another way, however, is common enough—that, namely, in which the mind retains not the picture but the sound of numbers. As to other members of my father's family, his eldest brother, who was a Unitarian minister, was not remarkable as an arithmetician, but had an extraordinary memory for Biblical texts, and could quote almost any text in the Bible, and give chapter and verse. Another brother was an excellent mathematician. My children show considerable, I may say certainly more than the average, but not extraordinary powers of doing mental arithmetic." All this corresponds closely with the results which Mr. Galton has obtained in regard to the inheritance of bodily qualities and character—where usually we find the brothers and sisters of any one of abnormal qualities showing more of them than the grandchildren, beyond whom there is seldom any indication of inheritance when an average is taken, though individuals may reproduce the special qualities of the great-grandparent in a remarkable degree. Of such individual peculiarities, we have an example in the case of the Bidder family. For Prof. Elliott states that one of Bidder's granddaughters once said to him: "Isn't it strange? When I hear anything remarkable said or read to me I think I see it in print." (It would be interesting if the size and quality of the type of this imagined print were noted; for it might serve to indicate the time and circumstances of the beginning of this mental habitude.) Other mental feats afford even more striking evidence of cerebral "sporting." But I must defer their consideration to another occasion.

RICHARD A. PROCTOR.

Waists and Corsets.

The girl of the period seems to be a trifle more sensible than her sister of the last decade. Her boots are not quite as pointed at the toe, and their heels are not as distinctively "French." She does not as ambitiously emulate the camel in the wearing of a hump upon her back, and she has discarded the "rats" and cushions which erst were wont to make her coiffure into the semblance of pillows and bolsters. Unfortunately, however, she does not yet realize that beauty is inconsistent with a pinched waist.

Admirable as the wasp may be in his humble capacity as an insect, there seems to be no legitimate reason for a young woman's modeling herself upon his figure; but the young woman insists upon doingso.

She is wont to express the most fervent admiration for the Venus of Milo; but even at the moment when she stands rapt in contemplation of the grand creature, she finds it difficult to draw a full breath, so tightly closed is she in corsets.

Napoleon I., who had as much commonsense as military ability, was dismayed at the revival of the corset in 1812. He said to an eminent physician, in regard to it, "This wear, born of coquetry and bad taste, which murders women and ill-treats their off-spring, tells of frivolous tastes, and warns me of an approaching decadence."

Culver, whose work on comparative anatomy was published during the consulate, and who occupied high official position both at that time and under the empire, had also the greatest aversion toward this article of dress.

He once endeavored, by practical illustration, to force his views upon a young lady who was the victim of tight lacing. Walking with him in the Jardin des Plantes, she expressed her admiration for a very lovely flower.

"You were once like this blossom," said Cuvier, glancing at her thin, pale face. "To-morrow it will be as you are now."

The next day he led her to the same spot, where she found the flower drooping and dying. She asked the cause.

"The plant," said the great anatomist, "is an image of yourself. I will show you the trouble."

He pointed to a cord bound tightly about the stem, and continued, "You are fading away exactly in the same manner, under the compression of your corset, and you are losing by degrees all your youthful charms, just because you have not the courage to resist this dangerous fashion."

Said the last King of France, in an epigram which should have stung his subjects into common sense, "Once you met Dianas, Venuses, or Niobes; nowadays, only wasps."

Beauty is always to be revered and sought after, and the woman might be forgiven who, by torturing herself, really attained true lovliness; but when she attempts to improve upon nature, she merely defeats her own object. It is no more possible for her to enhance her charms, save by healthful living, than it is for a river to run up-hill.

The unnatural is always the ugly; it is but another name for deformity. The human figure in the shape of a wasp is as truly deformed as if its spinal column described a semicircle.—*Youth's Companion.*

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OUR YOUNG FOLKS.

A GRANDMA THAT'S JUST SPLENDID.

Grandma's eyes are dim,
And grandma's hair is sprinkled
With threads of white; her caps set prim
Above a face that's wrinkled.

But grandma's eyes are kind,
And grandma's smile is cheery;
She likes our noise—she doesn't mind;
She calls us "pet" and "deary."

She tells us such a lot
Of stories, with a fairy
And giant in; she knows it's what
We like—something real scary.

She never scolds at all;
She keeps our playthings mended;
She dresses dolls. She's what we call
A grandma that's just splendid!

A MISCHIEVOUS BEAR.

Misky was the name of a pet bear which some Russian officers presented to Dr. Guillemard, when that gentleman was cruising, on board the Marchesa, in the waters around Kamschatka. He was not fully grown at the time, but he had developed a capacity for mischief that entitled him to the consideration which a bear receives. It is a satisfaction to learn that he was shipped to England, and found a new home in the Zoological Gardens.

Misky, though a great favorite with every one, was perhaps not altogether a source of unmixed pleasure to us. To an unsuspecting visitor, the sight of him bearing down at a loose trot to investigate matters was anything but comforting, and it was in vain for us to tell our guests that it was "only his fun."

A gallant lieutenant coming on board one day in full dress proved too great a temptation for bruin, who immediately seized him by the coat tails. It was found impossible to make the bear let go until the discomfited officer had reduced himself to his shirt-sleeves, when, delighted with his success, the offender shuffled off.

He was apparently almost indifferent to pain. A smell of burning being one day discovered forward, one of the crew proceeded to investigate the cause, and found Misky standing upright on the top of a nearly red-hot stove, engaged in stealing cabbages from the shelf above.

He was growling in an undertone, and standing first on one leg and then on the other, but he nevertheless went on slowly eating heedless of the fact that the soles of his feet were burned entirely raw.—*Youth's Companion.*

WHAT IT COSTS TO RAISE A BOY.

Did you ever think, young folks, what it has cost your father and mother to raise and educate you? It may be well to keep it in mind when you are inclined to grumble.

"My father never did anything for me," recently remarked a young man, who, a few weeks ago, finished his school life, and is now seeking a good business opening. Judging by the words and the complaining tone in which they were uttered, the member of the firm who heard them is prone to believe that the young man's idea of "doing something" is an outright gift of a thousand dollars in a lump, or the purchase of a partnership in an established concern. This young man, to the knowledge of the writer, has never done one month's actual work for others in his entire life. His life has been passed in the pleasant pastimes of the home circle, in reading, study, hunting, fishing, ball-playing, yachting and other employments not particularly beneficial to others. He is the type of that class of boys whose parents are sufficiently well-to-do to keep servants to attend the household drudgery, and whose fathers follow vocations in which no use can be made of the boy's spare hours. Like most boys of his class, he looks upon his board and clothes for twenty years, together with his pony, jewelry, bicycle, etc., as matters of course. A writer in the Buffalo *Express*, while the complaining remark was still ringing in his ears, had the curiosity to make a compilation of what it costs to raise an ordinary boy for the first twenty years of his life, and here it is:

$100 per year for the first five years	$500
150 per year for the second five years	750
200 per year for the third five years	1,000
300 per year for the nex three years	900
500 per year for the next two years	1,000
	$4,150

Yes, this is a moderate estimate of the financial balance against the boy who complains that his father has never done anything for him.

Suppose this estimate is too great by half, it is still a neat sum and does not include that care which no money can pay for. Surely children owe a great debt of obligation and affection to their parents, and too many forget it.

LITTLE EDITH AND HER MAMMA.

A touching little incident comes to us of a young mother who was hopelessly ill, but quite conscious of her condition. One afternoon her physicians held a consultation and afterward announced the sad fact that she had but a short time to live to the husband and the sister of the patient. The four exchanged opinions as to the wisdom of telling her, and, quite unmindful of little Edith, the only child of the dying woman, five years old, who was busily playing with her dolls, apparently unconscious of what was going on about her. But in a few minutes the little Edith left her toys, walked slowly upstairs and went directly to her mother's room. With the aid of a chair she placed herself on the bed at her mother's side, when she kissed the wan cheek and asked in a low, tender tone: "Mamma, are you 'faid to die?" The mother was startled by the question, and hesitatingly asked: "Who told you?—do they think——" "No matter, dear mamma, you needn't be 'faid at all; hold my hand like this; shut your eyes close, and I will stay by you, and when you wake up adain you will be where 'tis all light." The eyes were closed as directed, the two hands tightly clasped for a few minutes, and when the members of the family re-entered the chamber the child looked up and said: "I helped dear mamma to die, and she was not 'faid at all."

AN INDEPENDENT LITTLE NEWSGIRL.

Her contrast is a little newsgirl. Every morning about 8:30 she jumps in the Broadway car at Ninth street, her arms full of papers and the broken stump of a cigarette between her little red lips. She is a sturdy little barefooted thing, eight years old perhaps, certainly not more, blue-eyed and flaxen-haired, with a brimless boy's hat on her head. She asks no favor of sex, but jumps on the train at full speed, slips through the conductor's detaining grasp, hides under the steps of omnibuses, and gives back cuffs and gibes with a venom that would not disgrace the noblest work of the Creator. The people in the street car tell a number of stories about her—that she supports her drunken mother, is an orphan with one little crippled brother, who lives down in Bleeker street in a dark cellar, but it is impossible to get at the truth of things where a child is in the case and our sympathy is excited. A very benevolent-looking gentleman in clerical garb tried to solve the problem by stopping her as she was leaving the car last week, and saying in—it must be acknowledged — a very Young Women's Christian Association tone: "My child, what is your name, and who are your parents?" "My name," replied this young person with the rusty knees and torn hat, "is Mrs. Lily Langtry, and my parents are attending to their business and makin' their fortin' at it, if you please."—*New York Letter.*

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A fool at forty is a fool indeed!"

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STRICTURE. **STRICTURES AND URINARY FISTULE.**—Hundreds of cases of the worst form of strictures, many of them greatly aggravated by the careless use of instruments in the hands of inexperienced physicians and surgeons, causing false passages, urinary fistulæ, and other complications, annually consult us for relief and cure. That no case of this class is too difficult for the skill of our specialists is proved by cures reported in our illustrated treatises on these maladies, to which we refer with pride. To intrust this class of cases to physicians of small experience is a dangerous proceeding. Many a man has been ruined for life by so doing, while thousands annually lose their lives through unskillful treatment. Send particulars of your case and ten cents in stamps for a large, illustrated treatise containing many testimonials.

NERVOUS DISEASES. **Epileptic Convulsions, or Fits, Paralysis, or Palsy, Locomotor Ataxia, St. Vitus's Dance, Insomnia,** or inability to sleep, and threatened insanity, **Nervous Debility,** arising from overstudy, excesses, and other causes, and every variety of nervous affection, are treated by our specialists for these diseases with unusual success. See numerous cases reported in our different illustrated pamphlets on nervous diseases, any one of which will be sent for ten cents in postage stamps, when request for them is accompanied with a statement of a case for consultation, so that we may know which one of our Treatises to send.

DISEASES OF WOMEN. We have a special Department, thoroughly organized, and devoted exclusively to the treatment of Diseases of Women. Every case consulting our specialists, whether by letter or in person, is given the most careful and considerate attention. Important cases (and we get few which have not already baffled the skill of full the home physicians) has the benefit of a full Council, of skilled specialists. Rooms for ladies in the Invalids' Hotel are very private. Send ten cents in stamps for our large Complete Treatise on Diseases of Women, illustrated with numerous wood-cuts and colored plates (100 pages).

RADICAL CURE OF RUPTURE. **HERNIA** (Breach), or **RUPTURE,** no matter of how long standing, or of what size, is promptly and **permanently cured** by our specialists, **without the knife and without dependence upon trusses.** Abundant references. Send ten cents for Illustrated Treatise.

PILES, FISTULÆ, and other diseases affecting the lower bowels, are treated with wonderful success. The worst cases of pile tumors are permanently cured in fifteen to twenty days. Send ten cents for Illustrated Treatise.

DELICATE DISEASES. Organic weakness, nervous debility, premature decline of the manly powers, involuntary vital losses, impaired memory, mental anxiety, absence of will-power, melancholy, weak back, and kindred affections, are speedily, thoroughly and permanently cured.

To those acquainted with our institutions, it is hardly necessary to say that the Invalids' Hotel and Surgical Institute, with the branch establishment located at No. 3 New Oxford Street, London, England, have, for many years, enjoyed the distinction of being the most largely patronized and widely celebrated institutions in the world for the treatment and cure of those affections which arise from youthful indiscretions and pernicious, solitary practices.

We, many years ago, established a special Department for the treatment of these diseases, under the management of some of the most skillful physicians and surgeons on our Staff, in order that all who apply to us might receive all the advantages of a full Council of the most experienced specialists.

WE OFFER NO APOLOGY. We offer no apology for devoting so much attention to this neglected class of diseases, believing no condition of humanity is too wretched to merit the sympathy and best services of the noble profession to which we belong. Many who suffer from these terrible diseases contract them innocently. Why any medical man, intent on doing good and alleviating suffering, should shun such cases, we cannot imagine. Why any one should consider it otherwise than most honorable to cure the worst cases of these diseases, we cannot understand; and yet of all the other maladies which afflict mankind there is probably none about which physicians in general practice know so little.

We shall, therefore, continue, as heretofore, to treat with our best consideration, sympathy, and skill, all applicants who are suffering from any of these delicate diseases.

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Especially has the success of our improved operations for Varicocele, Hydrocele, Fistulæ, Ruptured Cervix Uteri, and for Ruptured Perineum, been alike gratifying both to ourselves and our patients. Not less so have been the results of numerous operations for Stricture of the Cervical Canal, a condition in the female sexes, resulting in Barrenness, or Sterility, and the cure of which, by a safe and painless operation, removes this commonest of impediments to the bearing of offspring.

A Complete Treatise on any one of the above maladies will be sent on receipt of ten cents in stamps.

ALL CHRONIC DISEASES A SPECIALTY. Although we have in the preceding paragraphs, made mention of some of the special ailments to which particular attention is given by the specialists at the Invalids' Hotel and Surgical Institute, yet the institution abounds in skill, facilities, and apparatus for the successful treatment of every form of chronic ailment, whether requiring for its cure medical or surgical means.

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