

# CHRISTIAN EDUCATOR

A SCHOOL AND HOME MAGAZINE

SEPTEMBER



BOOKER TALLIAFERRO WASHINGTON,  
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# The Christian Educator

IS DEVOTED TO

The Thorough, Systematic, and Symmetrical Culture  
of the Hand, Head, and Heart, in the  
Home, School, and Life.

Edited by FRANK WILLIAM HOWE.

Entered at the Post-office in Battle Creek, Michigan.

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## OUR DEPARTMENTS FOR 1898-99.

DURING the present school year the EDUCATOR will maintain the following general departments:—

**General Articles.**—From our contributors in the United States and abroad. Each number will have an illustrated description of the work of some school that is devoted to normal or industrial education, as exemplified in our last two numbers and in this. These articles are alone worth the year's subscription.—so our friends say.

**Professional Study.**—For teachers and parents, looking to the fullest understanding and discharge of their mutual duties. Simple discussions of standard educational doctrines. "The Reading Circle" is a sub-department devoted to independent or co-operative study of some standard educational masterpiece.

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**Physiology and Hygiene.**—A most interesting and valuable course of original lessons on this important subject, conducted on a new plan.

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**Current Interests.**—Timely topics related to education and general information. A sub-department of "Queries for Students" may be used for quizzing pupils in general exercises.

**"Observations."**—Editorial notes, comments, and educational subjects of special interest.

Besides such subjects as are suggested on page 29 in this department, a series of articles will be presented on the following topics:—

The Art of Questioning.

The Great Educational Reformers.

The Modern Educational Problem.

Moral and Pedagogical Psychology.

## CIRCULATION NOTICE.

THE EDUCATOR lives on its circulation, not on its advertisements or on contributions. We wish to draw your attention to the fact that the readers of any paper can do more than any one else to strengthen its circulation. Our readers are always our friends, and we wish them to introduce the EDUCATOR to all their other friends. We offer a standing cash commission to agents, and are always glad to receive names and addresses for free sample copies. Can you use a few for this purpose? Remember that the EDUCATOR can help you in every home in your school district, and the *Youth's Instructor* will be a great advantage to you if in the hands of every one of your pupils. See our special club rates.

Read our Special Book Offer on last cover, and send in your orders.

# THE CHRISTIAN EDUCATOR

An Illustrated Monthly Magazine

Edited by FRANK WILLIAM HOWE.

VOL. III.

SEPTEMBER, 1898.

No. 1.

## GREETING.

HERE is a hearty greeting to every teacher who takes up the work of another school year with the determination to make it stronger and better than ever before! If the EDUCATOR has helped you much hitherto, it will help you more hereafter. And if it happens that this is the first number you have seen, we want a few words with you at once to tell you what kind of journal the EDUCATOR is.

First, the EDUCATOR is *different* from any educational paper or magazine you ever saw before; if it were not, it might as well go by any other name, — or not at all. It differs conspicuously from other educational journals in its *contents*. Look over the list of our departments for proof of this. It differs also in the classification and arrangement of its contents. It is not a stereotyped imitation of any other paper, but a law unto itself. We like the arrangement, our readers do, and we are free to modify it whenever we choose.

The EDUCATOR is unique also in its illustrations, in that most of them are much superior to what are common in school papers. Our advertising space is also conspicuous for its brevity. We aim to give our readers, if possible, more than "value received" rather than to fill half the paper with advertisements.

But if we say all that ought to be said, it must be brief. The EDUCATOR occupies its own particular field, does not come into competition with other general or local educational periodicals, but furnishes an additional content and value not found, we think, in any other.

It is away out of the ruts of the ordinary educational journalism. It is devoted to the newer and larger problems. It gives the teacher help where other papers are mostly silent. It gives comparatively little attention to the mechanics of routine grade work, — hundreds of other papers can be had for that, — but discusses fundamental principles. It regards the teacher as a progressive student, — not as a machine.

Note also that the EDUCATOR includes *parents* as well as teachers within the pedagogical profession. It requires parents to take their proper place as educators in the home and copartners with the teacher in the school. It insists that the school work should grow naturally out of the home work, and train the student to a practical life of social usefulness.

It emphasizes certain important but commonly neglected elements of education, especially the personal and moral responsibilities of parents and teachers.

It is the *Christian* EDUCATOR because only a Christian education provides for *all* the educational needs of the individual and of society. It has no quarrel with any who hold a different view, but extends a helping hand to every teacher and parent who strives for the highest attainable excellence in the education of the coming generation.

This is perhaps sufficiently long for a formal introduction to new readers. It is not intended, however, to be formal. There is too much formalism in all our educational work. The EDUCATOR intends to be dignified, but as wise as possible, — and therefore responsive to the nearest needs of all its readers. We find it most pleasant and helpful to cultivate intimate relations, to make and receive suggestions, to ask questions and get them answered. So — what is your opinion of the value of such a paper as we have described? Look it over, verify its claims, and then write a little note to "ye editor" for his encouragement. ((If ye note is not too long, he will print it in his paper.))

If you like such a paper as the EDUCATOR is, please send us the names of your friends, teachers or parents, who would be most likely to appreciate it with you. Specimen copies are sent free in all such cases.

We close, as we began, with a hearty wish for the increased success of every earnest educational worker. If the EDUCATOR can help you in any way, let it.

## NOTES.

OUR correspondent in Honolulu is on time with an interesting educational article dated from "Honolulu, Hawaiian Islands, United States of America." That's right; come right in at once and make yourself a part of the EDUCATOR family.

THE EDUCATOR claims the best half-tone engraving of Booker Washington that has yet appeared in any publication. It was made from an original photograph by Chickering, of Boston, and was half-toned by our own publishers. They do such work right.

How do you pronounce the name of Rear-Admiral Schley? The editor recently heard the following observation from a Minnesota stage-driver, evidently Irish: "No, Sampson did n't do nothing at Santyeigo; he was n't there; it was Shelly that done the business!"

A WORD about "our circulation:" it is *not* larger than the combined circulation of all other educational papers; in fact, it is not so large as it ought to be. If any of our friends become enthusiastic in desiring to help us improve it, they are cordially referred to the last paragraph inside the first cover of this paper.

It is proper that the readers of an educational paper should know something of what the editor does during vacation in the way of increasing his usefulness to them. After attending the meeting of the National Educational Association in Washington, the editor of the EDUCATOR spent nearly four weeks lecturing to various Summer Training-Schools in Minnesota, and two in Michigan. Perhaps the following statement will sufficiently indicate the satisfaction given and received:—

\* The lecture delivered in the Presbyterian church before the students of the Summer School, by Prof. F. W. Howe, was a splendid effort. His theme, "The Hand, Head, and Heart," brought out the triple nature of a finished education. He showed that the tendency is to train the intellect to the neglect of the physical and moral nature. The moral nature must be trained to guide, and the physical to support, the mental.—*The Madelia Times.*

WE could fill two or three pages with such "press notices" and personal congratulations from superintendents and conductors, but will forbear. The subjects of the two lectures given, were, "Training of the Hand and Heart an Essential

in the Best Education," and, "The Professional Copartnership of Parent and Teacher." Our readers recognize these as fundamental principles of the EDUCATOR. The editor wishes to give expression to his hearty appreciation for the uniform courtesy and sympathetic interest shown by every superintendent, conductor, instructor, and school visited. The public-school teachers of Minnesota are alert and progressive, and—they like the EDUCATOR.

WE wish to call the attention of new readers of the EDUCATOR to our special departments of progressive lessons to be continued through the year, on Manual Training that can be taught by any teacher in any school, on Nature Study, and on Physiology. These are in addition to the progressive treatment of other subjects in our Home School, Professional Study, and Schoolroom departments. Dr. Olsen's conduct of the work in physiology deserves special notice because of the interesting and natural order in which the lessons are developed. The lessons which follow the present one will take up successively the topics of Respiration, Digestion, Circulation, Nutrition, the Bones and Muscles, the Nervous System, and the Special Senses. They will be fully illustrated with original drawings and demonstrations,—a course superior to any textbook we know. This course of lessons, and each of those in the other departments mentioned, are alone worth much more than the price of the EDUCATOR.

THE "Summer Training-Schools" of Minnesota were a unique development when first inaugurated a few years ago. They are now imitated in several other States. Many of the States in the "Institute Belt" have had for years the three-day or one-week institute, sometimes prolonged to ten days or two weeks; but Minnesota was the first—at least, so Minnesota people say—to conceive and execute the idea of making the institute a *training-school* sufficiently long to secure adequate results. These Summer Schools are not initiated or conducted as a private "normal" enterprise; but are officered and maintained by the State as a regular part of its educational system. They bring the State normal school to the rural teacher, and their influence has been remarkably efficient in placing the quality of the country school work on an equality with that done in the cities. The Minnesota educational system as a whole is worthy of extended study, and the EDUCATOR would like to give it a fuller consideration at some later time.

## TUSKEGEE INSTITUTE AND ITS FOUNDER.

"It is not so much a question as to what the white man will do with the Negro, as what the Negro will do with the white man's civilization."

These are bold and significant words to come from a man whose parents only thirty-three years ago were freed from slavery, when he was but nine years of age. To understand the import of them, we must know something of the educational history of Booker T. Washington. Born in a one-room log cabin, with



RECUPERATION.

no floor but the hard earth; nourished with nothing more delicate than fried bacon and corn loaf, eaten in the cabin corner or under the bed, the nine-year-old boy found himself at the close of the war a candidate for free and independent American citizenship. Hired to a "Yankee" woman who carried on a small truck farm among the coal mines of West Virginia, young Booker learned those lessons of thrift and industry that shaped his later life. In fact this shrewd Yankee truck gardener almost overshot her aim when she taught him the rudiments of the "three R's"; for she had frequently to go to his cabin at two o'clock in the morning and command him to desist from his books in order to get sleep enough for the next day's work. Already he was a *booker*,—the name ought to be accounted for somehow, — who knew also the educational value of work and things; already he was a Washington, under training to lead his race into educational and industrial independence.

Such a spirit must always find its goal.

In his own words Mr. Washington thus describes his introduction to a larger life:—

While working in the coal mines of West Virginia for the support of my mother, I heard in some way of the Hampton Institute, General Armstrong's school in Virginia; heard that it was an institution where a poor

boy could enter and have the privilege of working for a portion of his expenses. Almost without money or friends, by walking and begging rides, I reached Richmond without a penny; and there, by sleeping under the sidewalk by night and working on a vessel by day, I earned money enough to enable me to reach the Hampton Institute. Here I found the opportunity in the way of buildings, teachers, and industries, and by practical touch with industrial life, thrift, economy, push, to be surrounded by an atmosphere of business, Christian influences, and a spirit of self-help that seemed to have awakened every faculty in me, and caused me for the first time to realize what it meant to be a man instead of a piece of property.

After graduation at Hampton in 1875, he taught the public school in Malden, W. Va., with a success that was won largely by his personal sympathy and self-sacrificing benevolence toward the people and children. Then he was persuaded by friends, as a result of his ability in public speaking, to engage in the study of law; but was shortly called from these studies to take charge of the night school and Indian discipline at Hampton. After spending less than two years in this position, he was chosen to be the organizer of a new "college" about to be established in Tuskegee, Ala., through certain appropriations that were pledged as a political reward for swinging the Negro vote to an anxious candidate for the legislature. So the



IN THE PINE WOODS.

"Tuskegee Normal and Industrial Institute" came to be founded as the result of a political trade upon the Negro's suffrage, the like of which it has ever been the purpose of its founder to discourage and make impossible by the broadest and purest kind of education for both the Negro and his white

brother. Thus good may sometimes work out from a relative evil.

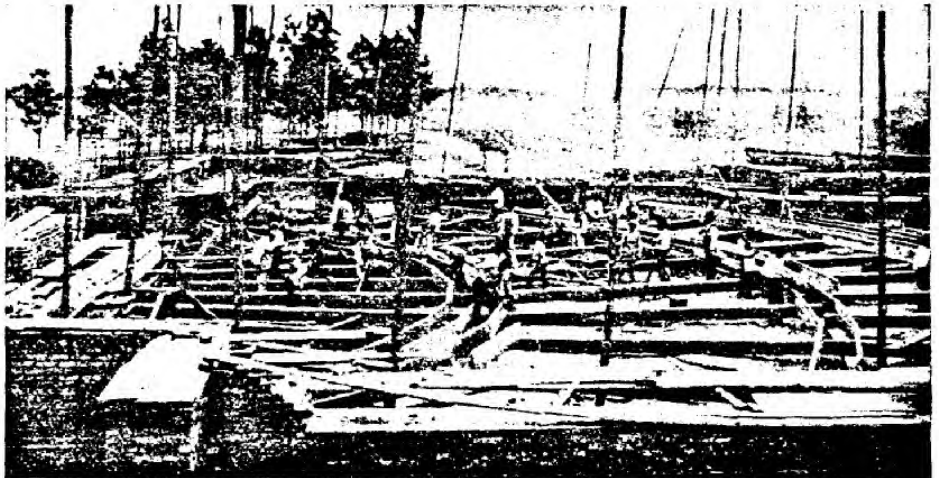
The possibilities of Tuskegee gave Booker Washington the long-sought opportunity of his life. In his own words again, he says:—



A CLASS IN FARMING.

While at Hampton I resolved that I would go into the far South and give my life to providing this same kind of opportunity for self-awakening and self-help that I had found provided for me at the Hampton Institute: and so, starting at Tuskegee, in 1881, in a small shanty, with one teacher and thirty students, and without a dollar's worth of property, this spirit of self-help and industrial thrift, coupled with aid from the State and generosity from the North, has resulted in our building an institution of 800 students from 19 States, 70 instructors, 2,400 acres of land, 38 buildings, 23 industries, property in all valued at \$225,000, and all carried on at a cost of \$75,000 a year.

Very wisely Tuskegee never became a "college" with any intention of conducting regular college courses, but only a modest Institute for industrial education. Fifteen years of higher education for the Negro had demonstrated his ability to stand alongside the white scholar in things abstruse and purely mental. Graduates of Negro colleges and universities had successfully competed with white men



BUILDING THE CHAPEL.

in examinations for government positions, often under the severest ordeals of race prejudice; but during the same period in hundreds of communities in the South the Negro was nevertheless being surely driven to the wall, socially, politically, industrially, and educationally, because he had no

leaders who appreciated his most pressing needs. He was almost ruined by his over-zealous friends and teachers. The conditions well warranted the question raised by Thomas J. Calloway in the *New England Magazine* for October, 1897:—

May we not as a race, for the past thirty years, have devoted too much of our effort and ambition to proving our equality by competing for places which have hitherto been forbidden us, rather than bending our energies to hold the positions which slavery left to us and building up these occupations as a prime condition for conquering other fields of labor? This was the gospel of the new leader. Principal Washington had not only mastered the lessons at Hampton, but carried the same to their full and legitimate conclusions. What had been educational method was developed into "a platform on which the whites of the South and the blacks can stand with full justice to each race."

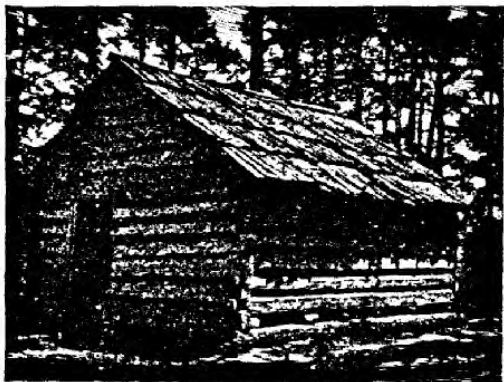
It will surely be of value to consider this industrial system as an "educational method," probably as good for whites as blacks. In the first place it tends to do away with the prejudice against manual

labor as being less honorable than professional service. "It teaches that all effective work done by the hand, is first done by the soul. It is the man that works the hand, not the hand that works the man."

In the second place, the system followed at Tuskegee prepares the individual for immediate

practical service rather than for matriculation in some higher institution. It educates for the needs of the individual and for the community life. If eighty-five per cent. of the Negro population of the South must probably devote themselves to agricultural pursuits, it is surely expedient to give them a thorough industrial training. "That education is best for a man, always, which stimulates most his peculiar genius, and enables him to become the most useful citizen in the occupation he selects."

The folly of a professional education for the



THE OLD SCHOOL.

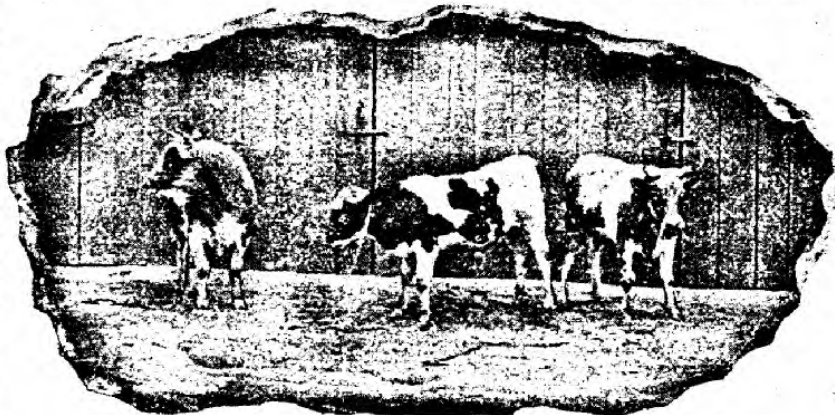
masses,—white or black,—and the folly of a public educational system whose only intended issue is into some learned profession, is clearly suggested by Dr. A. D. Mayo in the *New England Magazine*, from whom also the last preceding quotations are borrowed :—

We have been making teachers and preachers and professional men for three decades, and most of them are engaged in the work that was waiting for them when the war closed; but a close observer sees plainly that they are in danger of starvation unless more attention shall be given to the industrial and commercial sides of life, unless these graduates of the higher schools of learning—who are largely in the nature of social parasites, producing nothing, but consuming everything—have a commercial and industrial element to feed upon. This may be a blunt way of putting it; but it is none the less true. We need educated farmers, mechanics, and tradesmen in the South to-day more than we need graduates of higher schools of learning; because we have done little else than manufacture the latter since the war; and what to do with the learning after they have got it, is fast becoming a burning question.

This question is a live one in the North as well as the South. We are discovering that education is not to be secured by exclusively training the intellect without reference to physical and moral training. An all-round, symmetrical training is the great thing to be desired. This is the aim at Tuskegee—"to train men and women in head, heart, and hand to meet conditions that exist right about them, rather than conditions that existed centuries ago, or that exist in communities a thousand miles away."

This is the secret of Tuskegee's success. With these principles in its foundation, its growth and development no longer seem phenomenal but only natural and to be expected. The rest of its description is only statistical, but the statistics are exceedingly interesting. I quote from Mr. Calloway's excellent article previously referred to :—

During the first year two hundred acres of the present campus were purchased and the erection of Porter Hall was at once commenced. The completion of this first building was the greatest event in the history of the school. This lone building answered for dormitory, class-rooms, office, dining-room, laundry, and kitchen. The fare was very plain. A long table with oil-cloth cover, cheap iron knives and forks, and the cheapest crockery cups and dishes, were the proud possessions of this pioneer group of students and teachers. When the treasury was empty, and there was need of fuel, the students would sally forth into the woods with axes, and keep the wagons busy without any promise of pay. After that first building, others sprang up in rapid succession, not without hard struggle, but with more confidence. Alabama Hall, the second building, was begun with more pretentious plans. A brick-yard was started, and a sufficient quantity of bricks having been manufactured by the



A CORNER IN FUTURES.

students, the building was slowly erected by them; and not a lad but felt his spurs as the capstone was placed and the building was pointed out to visitors as a three-story structure erected by Negro boys. Altogether thirty-seven buildings have been erected during the

sixteen years of the school's history. The two hundred acres of the original campus have been supplemented by gift and purchase till there is now a total of two thousand four hundred and sixty acres belonging to the Institute. If in one solid tract, it would give a campus of nearly four square miles; but Marshall Farm, the principal tract used for cultivation, is five miles distant, Neshika Farm is ten miles away, and one farm is in Louisiana.

There are now carried on the following industrial departments: agriculture, horticulture, carpentry, blacksmithing, wheelwrighting, printing, painting, plumbing, foundry and machine work, shoemaking, brick-masonry, plastering, brick-making, sawmilling, tinning, harness-making, tailoring, plain sewing, dress-making, millinery, cooking, laundering, nurse training, housekeeping, and mechanical drawing. Aside from the indirect influences, there are two prime objects in carrying on each of these industries,—to furnish opportunity for poor but worthy students to work out a portion or all of their expenses in school, and to train young men and women so that they may become skilled leaders in the communities into which they go.

One of the most recent achievements of the school is the building of a new chapel which will seat twenty-two hundred people. The designing, drawing, specifications, and the detail work of actual construction, are all done by the faculty and students.

Self-help as a means of help for others is here the cardinal principle. The education is devoted to all the needs of the individual, however personal. The training is so largely parental that it takes account of even such things as systematic regulations for bathing, eating, sleeping, the use of the tooth-brush, and other requirements of personal tidiness and healthfulness.

Who shall say that this is not the best possible type of education even for youth of lighter complexion? Certainly the practical results of it justify the confident words of Tuskegee's founder: "By the way of the school, the well cultivated

field, the skilled hand, the Christian home, we are coming up; and we invite all who will to step up and occupy this position with us. We are learning that standing ground for a race, as for an individual, must be laid in intelligence, industry, thrift, and property, not as an end, but as a means to the highest privileges; we are learning that neither the conqueror's bullet nor fiat of law, could make an ignorant voter an intelligent voter, could make a dependent man an independent man, could give one citizen respect for another, a bank account, nor a foot of land, nor an enlightened fireside."

These are lessons needing to be learned by whites as well as blacks, North, South, and everywhere,—lessons for the students, teachers, and school patrons of America and of the world,—that no education is complete, effective, and justifiable, that does not give due attention to the

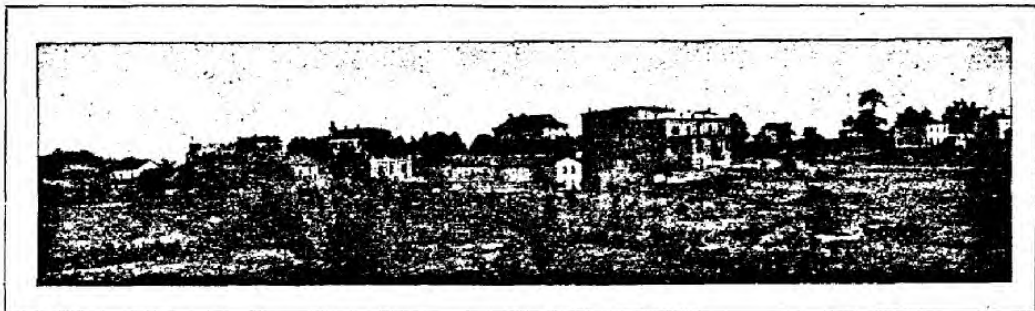
development of all the useful powers of the individual, give him command of himself and his environment, and fit him for the highest service of his fellow men.

FRANK WILLIAM HOWE.

A WORD may be added concerning the wide-spreading influence of the Tuskegee Institute, not only upon the education of Negroes in the South but upon educational thought generally in the United States. Principal Washington spends much of his time lecturing in various parts of the country, and in securing means for the maintenance of the philanthropic work carried on at Tuskegee. As to the influence and effectiveness of this educational extension work, it may be sufficient to cite ex-President Cleveland's opinion of Mr. Washington's address at the Atlanta Exposition: "I think the Exposition would be fully justified if it had not done more than furnish the opportunity for its delivery."



A GENTLEMAN OF THE OLD SCHOOL.





### EDUCATING THE CHINESE.

EDUCATING the youth of our mother tongue, and those of another tongue, are two things, diverse in the means, if alike in the results to be obtained. If the teacher's task in a school composed of those who use the same language, and who are reared under the same social and political environments as his own, is one that requires a knowledge of human nature, a liberal endowment of personal tact, and constant devotion to his calling, it is certainly complicated in no small degree in the case of those to whom his language is an enigma, and whose language is a riddle to him, and whose social education is but a fossilized incrustation of antiquity.

Such, however, is the predicament in which the teacher is placed who undertakes to teach the Chinese. Among those composing the Honolulu Chinese Boys' School, a number of the younger ones were born in the Hawaiian Islands, and acquire English quite rapidly. But a majority either come from China, where they were either born and reared, or have spent a number of years in Chinese schools, or both. A glance at school work in China may enable one to appreciate the novelty of our methods and work as they appear to these boys, as well as some difficulties the teacher must meet.

China has many schools, but nothing like a general system of education. There are few government schools, and no free schools except those opened by the missionaries. Boys only are usually taught, except again where missionaries have opened schools for girls, which in every instance must be separate schools. The current type of boys' school is of a fixed character, all on the same model, the same course of study prescribed for each, and of course private. At the age of five or six the boys are set to learn by heart, without any clue to its meaning, the "Trimetrical Classic," composed in a style far above their comprehension, even if they could understand the words. It is a sort of doggerel, in rhyming couplets of six words each, repeated rhythmically in measures of three words each. It begins: "Men at their birth are naturally good. Alike in nature, in practise they greatly differ. If not educated, the nature grows bad."

The next book, the boys' second reader, if you please, is composed entirely of surnames, arranged in the same style, with four words to a measure. Following this is the "Millenary Classic," containing exactly one thousand words in measures of five words each, no two alike in form or meaning, composed by its author in a single night under fear

of severe punishment by the emperor. Then the Confucian "Canon of Filial Piety," the pupil's first work in prose, is read, and *explained!*

Up to this point, and to a large extent throughout the course, the work is all done by dint of memory only. One might expect that boys who have spent five to ten years in this kind of work, would have developed prodigious memories; but so far I have discovered no remarkable cases, though it is perhaps not easy to judge accurately from their work on a foreign language.

In the Chinese school, each boy learns his lesson by shouting it at the top of his voice; but while this doubtless aids in memorizing mechanically, and has its advantages in a school where language only is studied, as in the Chinese, it works havoc in a school where other branches are pursued. It is a habit hard to break up; and the large amount of mechanical memorizing done in his early school days, makes the young Celestial extremely dull in those studies which require the exercise of reasoning power. In grammar, he simply commits to memory the language of the book; and if asked a question requiring an easy inference from something he has committed, will respond with a stare as vacant as a blank cartridge. In arithmetic, he outstrips the Anglo-Saxon in the mechanical processes; but to take the language of a problem and reason out the mathematical process that will solve it, is a toilsome task to him. In geography, he will draw a map to perfection; but to determine the relative position of a given point, is another question.

Yet not all this apparent lack in him is justly chargeable either to stupidity or to a deficient education; for he has all the time a language exceedingly foreign to his own to becloud his inherent brightness, and to impede his progress. There are boys in our school<sup>1</sup> who, the language notwithstanding, will keep equal pace with, or even distance, the average Anglo-Saxon. Then, too, all the studies in the English curriculum are new to the Chinese boy, except that of language itself. In his own country, even to learn to count, he must apprentice himself to some one whose business requires a knowledge of number.

Recitation by class is a thing of novelty to the newcomer. In the land of his birth, it is an unknown quantity to pupil and master. There each boy is heard singly. He is not even called to the recitation; but when in his own judgment he has memorized his lesson sufficiently well, he seizes

<sup>1</sup> The Honolulu Chinese Boys' School, previously mentioned, of which the writer is Principal.—Ed.

the first opportunity to glide up to his master's table, make a graceful bow, turn his back to the teacher, and glibly repeat its meaningless syllables. Accustomed to this isolation from his fellows, he finds it extremely difficult, when grouped with others, to pay attention to anything said or done by a classmate or by the teacher to any one else.

One may wonder how the Chinese schoolmaster gets through his daily routine of classes when each consists of but one pupil; but there is enlightenment in the fact that the daily session of the Chinese school usually extends from sunrise to sunset, with but one or two intermissions for food.

Again, the Chinese pupil seems utterly unable to account for the constant effort of the Anglo-Saxon to induce promptness and expedition in school work. It is as trying to him as are his sluggish and take-your-time movements to the teacher. The latter might, with as fair promise of success, undertake to hasten time itself, as to push a Chinese beyond his natural gait, physical or mental.

To meet and overcome all the difficulties in acquiring English, pointed out above or not pointed out, there is the proverbial patience and perseverance of the Chinese, combined with a liberal measure of self-conceit. As a rule, he knows no discouragement. This element in him is frequently carried to extremes that really impede his advancement. By no series of utter failures can he be persuaded that a subject he has been permitted to take up because of his persistent impotency, is too hard for him to be profitable, or that it might be taken up later to greater advantage.

But let patience have her perfect work. There are boys in our school whose work can be styled little short of perfect. The progress made in some instances may be of interest. During the term, one boy, just from China, passed through the primer, first reader, and advanced first reader, each twice, and through the second reader once, besides completing numbers to division. Another began with the second reader and simple numbers, and completed the second and third reader, common fractions, elementary lessons in grammar, and the geography of the United States. The class in fourth reader completed that, a biographical history of the United States, primer of physiology, arithmetic to interest, Swinton's Language Lessons, and elementary geography. Some of their compositions and map picture drawings, I would be glad to have the readers of the EDUCATOR see. A large majority of our boys will return next year, and we hope to see greater results.

Honolulu, H. I., U. S. A. W. E. HOWELL.

### AN AWAKENED LIFE.

[Every "experienced" teacher has observed one or more instances of an intellectual awakening in pupils so marked as to be little short of miraculous; but we sometimes overlook the fact that all education is simply an awakening of the individual to a consciousness of his own powers, capacities, and responsibilities. The following paragraphs, extracted from a commencement address by Prof. B. G. Wilkinson before the students of Battle Creek College, are so thoughtful and stimulating that we believe they will be valuable to every reader of the EDUCATOR. Space does not permit a reproduction of the entire address, which was equally instructive throughout.—ED.]

MILLIONS of men every day are born into this life, the end of which finds them in a condition much worse than when they began, and many at its close find that they have made little or no progress. The reason for this is found in the fact that every man is born asleep,—asleep to the great truth of physical development, asleep to the mighty principle of mental growth, asleep to the lofty ideals of spiritual life. Unfortunately, they pass through life and few of them are ever awakened. They were born dead, and have failed to use their dead selves as stepping-stones to higher things. A truly awakened life is one which seeks the highest destiny. The purpose formed will not embrace a life of ease and selfishness. On the contrary, it will look beyond the present and comprehensively embrace the future. The present will be laboriously employed in laying a foundation upon which may rest a lasting superstructure, not a superstructure which may fall in times of disaster, but one around which the storms of life may beat and roar, and when the tempests have cleared away, behold the edifice still towers up, noble and grand. No effect has the storm produced upon it, except that which may be observed in the removal of rough corners and in the glitter of the polished blocks.

In arousing life, the college, I believe, exists as one of the factors to secure the desired end. Officered by men who themselves are panting after the highest attainments, it is, or should be, one of the instruments most capable of fashioning the human soul. Imperfect though it has been in the past, the value of its work can not be questioned. It is related of Abraham Lincoln that, when on his first inaugural journey to Washington he beheld the buildings of a certain college in the distance, he turned to his friends who were with him and exclaimed, "If there is one thing in life which I have to regret, it is that I have not obtained a college education."

Moses was skilled in the wisdom and learning of the Egyptians; Paul was a graduate of Jerusalem Seminary; Peter, James, John, and the other disciples had the privilege of spending three years at the feet of the greatest Teacher that this world has

ever seen ; and yet as it was in the case of Moses and of Paul, so it is often with the graduates of the present, an after-course is necessary in order to impart that greatest of all attainments, moral character. Education,—and what is education but the continuous awakening and unfolding of life,—does not consist in a number of facts learned. It is the harmonious development of body, soul, and mind; and yet it is too often true that the greatest intellects lack a corresponding greatness in body and in spirit. They lack those broad social qualities which do more than intellect does toward the uplifting of humanity. These defects are impressed upon their students and imitators who studiously cultivate their abilities without avoiding their imperfections. Breadth of mind and liberality of soul—attributes sprung from the Most High himself—do not accompany narrow training. They are plants indigenous to another soil ; and yet, without these qualities, no man need expect to attain to the highest and most enduring results.

It was my privilege once to hear an able lecturer speak on the deeds and character of Martin Luther. He dwelt enthusiastically upon that point in his career when a new life had burst upon the reformer. He spoke of the great changes which this man of destiny had effected in the religious history of the world, and after he had dwelt a long time upon his religious work, and had mentioned the various lines in which his activities had been spent, he finished by saying that the life of no man had so profoundly affected the German people. So varied were his interests, and so diversified were his activities, that he built for himself monuments more enduring than marble. He indignantly swept away the superstitions of a religion, and gave to his people a pure and enlightened faith. He hurled his thunderbolts at a puerile learning which passed for praiseworthy scholarship, and changed the methods of educational thought. He pointed out the defects of government which oppressed the people, and gave the first move to the wheel of political revolution. Like an inexhaustible fountain, he poured himself out in the interests of humanity. From the spring started in the early acquirement of a splendid education, and augmented by the flow of Heaven's favoring inspiration, he drew fresh drafts, and gave a thirsty world to drink.

Martin Luther was indeed a true specimen of the awakened life,—a life which when studied inspires the observer with a manly disdain for niggardly selfishness. From the contemplation of its elevated spirit, we turn to behold with pity the life of that man who lives entirely for himself. No

one can live to the edification of others, who goes each morning to his business with no care for anything but the dollars which he may direct to his own coffers,— who passes his neighbor on the street with an unpleasant nasal contortion, ungraciously returning a cheerful greeting, and lives and loves only himself. May his influence perish with him, and his dollars let another take !

(To be continued.)

### SCIENTIFIC STUDY.

[It will be remembered by the readers of THE CHRISTIAN EDUCATOR that in the June number there was given a list of ten questions, under the head of "Some Food for Scientific Thought," that were calculated to draw out the minds of the readers along a line of independent science study. We expected, and have received, some response to this overture, and are able to present from Dr. Godsmark the following article, which may be considered as introductory to a number of others that will attempt to answer the questions suggested in our June number.—ED.]

SOUND, heat, light, and electricity, or in other words, the different manifestations of vibration, furnish us a field of study so vast and so beautiful, that it is with feelings of reverence and pleasure that we enter its borders, knowing that when we have spent a lifetime enjoying its contemplations, we have but explored the outlines of a field so great that eternity alone will suffice in which to grasp the hidden beauties of Infinite love therein revealed. Every manifestation of life, be it animal or vegetable, is the result of vibration. The majestic roll of distant thunder is only vibration, while the tinting of the delicate rose petal by the silent sunbeam is another manifestation of the same force. The tiny flower we crush beneath our feet, that turns its loving face to meet the rising eastern sun, following it through its course in the heavens, and looking its last farewell toward the western sky, is but obeying the same great law of electrical attraction and repulsion that is followed by the resinous trees of the forest, which manifest such a tremendous force in striving, seemingly, to avoid the course of the sun, and in so doing twist or wind their trunks, often two and occasionally three times completely around in their growth.

The lowest manifestation of vibration, above that of a mere blow, or perhaps the swinging of a pendulum, is that of sound. There is a sensation experienced by many people while in the immediate presence of the lowest tones of a pipe organ, a cataract, or heavy peals of thunder, that seems to be a manifestation, or in other words, the receiving by some of the organs of sense, of an impression that can not be called sound. This sensation of which we speak is a feeling of dread or awe

that is akin to fear. It is this manifestation of vibration that causes the deep roar of the lion, or the deep guttural tones of any infuriated beast of prey, thus to affect the senses of those who hear them. It seems to be an accompaniment to the lower tones of the musical scale as well as the lower forms of light. The lowest tone that is perceived by the human ear is that produced by thirty-two vibrations a second. The ear of man recognizes vibration as sound within a range of variation all the way from thirty-two vibrations a second up to as high as twenty-four thousand complete vibrations a second. The scientist Savart, who made extended researches in the field of musical vibration, claims that the human ear can be trained to recognize sound in as low a form of vibration as seven or eight per second; and as high as 36,500 complete vibrations a second. Be that as it may, it is generally accepted that sound is one of the manifestations of vibration.

The lower the number of vibrations a second, the lower will be the tone; while the greater the number of vibrations produced each second, the higher the pitch will be. When the number is increased to twenty-four thousand, or at most, 36,500 complete vibrations a second, the human ear ceases to recognize them as sound, and they are received by other organs of sense as an entirely different element. Many insects produce vibrations so rapid that the human ear fails to recognize them, yet naturalists assert that these are sounds perfectly appreciated and understood by other insects of the same family, and that they act upon them as calls of attention or warnings of danger.

The relative vibrations in the musical scale run as follows: C is produced by 128 vibrations a second; D by 144; E by 160; F. by  $170\frac{2}{3}$ ; G by 192; A by  $213\frac{1}{3}$ ; and B by 240 vibrations a second, and so on according to a definite mathematical rule.

Having established the principle that sound is one of the manifestations of vibration; that the greater the number of vibrations in a given time, the higher the pitch of the sound produced; and that there is a rapidity of vibration beyond which the ear ceases to recognize it as sound; we may pass to a brief consideration of another phase of sound; that is, its conductibility. It is well understood that sound is not manifest, or at least can not travel, in a vacuum; a bell within a receiver from which the air has been exhausted gives forth no sound when struck. Vibration, then, in order to be manifest as sound, must be produced within a medium more dense than what we call a vacuum.

We might question, were it possible for one to be elevated so far above the earth's surface as to be entirely outside of the earth's atmosphere, whether a sound could be produced upon the earth loud enough to be heard there? If the moon has no atmosphere at all, could the report of a cannon be heard there by one standing near by? Could the report of an explosion upon the sun ever reach the earth as sound?

Sound must have an *appropriate* medium in which to travel. It is transmitted by solid bodies with much greater rapidity than by the air. A stick of timber, a steel rail, a stone wall, a body of water, or any of the more dense mediums, will transmit sound-vibrations with greater rapidity than will the air, and the velocity with which the sound-waves are carried in the air depends largely upon its temperature. For instance, at a temperature of 32° F., sound travels 1086.1 feet a second; at a temperature of 50° F. its rate is increased to 1106.09 feet per second; while at a temperature of 61° F. its velocity is 1118.3 feet per second; so that as the temperature is raised, the velocity of sound is increased at the ratio of one and one-tenth feet for every degree.

Right here let me suggest one problem that may contain some food for thought: Why is it that this table of the rapidity with which sound travels, which is the fully established and unquestioned rule, does not work in calculating the rapidity with which the report of an electric discharge is known to traverse a given distance? It is a well understood fact that a report of a heavy discharge of lightning will follow much more closely on the sight of the flash than the actual distance of the discharge from the hearer would require? The small amount of time required for the transmission of the light is not the answer to this perplexing question. With this I will also ask another question that will assist the student in solving the former problem. Why is it that a distant peal of thunder reaches us as a prolonged roar, while to a person standing near to where the same discharge took place it is heard as a sudden crash or explosion? The answers to these queries will be made apparent as we progress in our study of the subject. In our next we shall have more to say concerning the nature of sound and its relation to the other manifestations of vibration.

OTHO C. GODSMARK, M. D.

[All readers of the EDUCATOR are cordially invited to engage in the study herein proposed. If there are any errors of fact presented, or any criticisms of statement to be offered, let us hear from you.—ED.]

Conducted by the EDITOR.

## THE NATURE OF EDUCATIONAL SCIENCE.

As previously announced, the EDUCATOR will conduct during the present school year a series of studies in education designed to be equally interesting and valuable to teachers and parents, school and home. Parents and teachers, regarded as fellow students of child-nature and child-culture, have certain obvious and mutual advantages to gain by making a common study of the best conceptions and methods of child-training.

In such a study the point of view must first be determined. Most of the difficulties and disagreements that arise in the discussion of any subject come from a failure to take the same view-point, to hold the same fundamental conceptions of the subject in hand. The definitions of education are various. To one, education is the general development and training of the intellect; to another, education is the satisfactory completion of a prescribed course of study in the high school, college, or university. A third, reacting upon these views, regards education as a mere physical concern,—the proper culture of the body and the maturing of all the brain cells. Still another, ignoring the training of mind and body, considers education as essentially a moral concern—the development of a good disposition and personal character. Others still, desiring to comprehend all these elements, generalize the term, and define education as the product of all the influences to which man is subject; and yet others have epitomized this view by saying that education is the fitting of man to his environment. And the last view is certainly as broad as it is long.

None of these definitions is complete in itself,—not even the broadest; for certainly the highest conception of education frequently requires that the environment shall be made to fit the man. And this conception, again, discloses the fact that man is a complex of energies and attributes imperiously moving through history toward a higher destiny. Opinions may differ as to what this destiny shall be; and so this page might be filled up with wise sayings about education. Without this, the lesson should be evident that the practical educator must take a shorter view of his immediate duties. Education as he must deal with it, is the intentional, progressive transformation wrought upon students

by the school and teacher, following or accompanying the conscious educational influence of the home and parent.

As teachers, both the instructor and the parent are responsible only for what they do—or allow—consciously, or with educational intent. This distinguishes the personal element in education from all those impersonal influences that contribute to or modify the child's education. For these the educator is not immediately or personally responsible; but his responsibility does include a careful supervision, and so far as possible, a direction, of all the influences that effect the child's physical, mental, and moral welfare; and to the Christian must always be added the responsibility that comes from a sense of his own personal accountability to his Creator.

Thus considered, education is the best development of the child as a tri-unity of physical, mental, and moral powers. The best education of the mind can not be had without conscious regard to the physical and moral interests. Education as it is conducted in the schools must, of course, be primarily addressed to the mind, since the mind is the instrument of contact and influence with other minds and with all conscious educational forces. Hence, school education must always be of the mental type. But we are learning that the mind itself can be best educated in certain directions by bodily exercises and industrial training. The motor system must be educated in balance with the sensory system. The analogy is true also of moral education; the will to *do* must be trained along with the judgment to *see* and *feel* our social and moral relations and duties. Says Professor Dewey, in his "Educational Creed:" "I believe that to endeavor to stimulate or arouse the emotions apart from their corresponding activities is to introduce an unhealthy and morbid state of mind. I believe that next to deadness and dullness, formalism and routine, our education is threatened with no greater evil than sentimentalism. I believe that this sentimentalism is the necessary result of the attempt to divorce feeling from action."

With these qualifications, education may and must always be typically mental; mental in the sense that through the development of mind we get control of the body, and that also through the mind we gain our conceptions of moral responsi-

bility, and are able to use all the powers of a trained body and a cultivated intellect in the discharge of our broadest and highest obligations.

From this view-point we shall in future numbers study the subject of education as administered by teachers and parents.

F. W. H.

### EDUCATE THE WHOLE CHILD.

WITH this broadening of public opinion concerning education comes the specific question: Do the ordinary school studies educate the whole child? "What is a practical education?" is answered by very few now as it was once answered by very many. The old answer had in mind little beyond the idea of "figuring," with possibly some ability to read and spell. To-day the number of people is growing who believe that if schools are supported at all, they ought to serve to develop not only skill in "figuring;" but also all that goes to make a useful member of the community.

Industrial education in the schools must come, and drawing must precede it. Drawing not only trains the hand, but it trains the intellect. When we come to understand the folly of stuffing the brain with facts, we will recognize the awful waste of time in our present school course, and see where an hour devoted each day to industrial work will add to the power of the pupil and detract nothing from the store of useful knowledge. — *The North-western Monthly*.

### BRAIN STIMULANT.

THE following advice from the *Medical Journal* is particularly applicable to overworked teachers:—

The best possible thing for a man to do when he feels too weak to carry anything through is to go to bed and sleep as long as he can. This is the only recuperation of brain power, the only actual recuperation of brain force; because during sleep the brain is in a state of rest, in a condition to receive and appropriate particles of nutriment from the blood, which take the place of those that have been consumed by previous labor, since the very act of thinking burns up solid particles, as every turn of the wheel or screw of the steamer is the result of consumption by fire of the fuel in the furnace. The supply of consumed brain substance can only be had from the nutritive particles in the blood, which were obtained from the food eaten previously; and the brain is so constituted that it can best receive and appropriate to itself those nutritive particles during the state of rest, of quiet, and stillness of sleep. Mere stimulants supply nothing in themselves: they goad the brain force to a greater consumption of its substance, until it is so exhausted that there is not power enough left to receive a new supply.

## The Reading Circle

[As announced in our last issue we begin herewith a new line of reading-circle study. This year we offer our readers a choice of one or both of two books by Professor B. A. Hinsdale, of the University of Michigan. They are his "Jesus as a Teacher," and "Horace Mann and the Common School Revival in the United States." The first must be of positive value to every teacher who agrees in the world's judgment that Jesus was the greatest teacher that has ever appeared in history; and the second should be of particular value to every teacher in American schools; both are among the latest and best products of the author's long-continued service in educational work. See special notice on last cover.]

### "HORACE MANN."

#### CHAPTER I. TWO CENTURIES OF COMMON SCHOOLS.

1. *Massachusetts*.—Character of the Puritans; Boston Latin School; Compulsory Education; Harvard College; Free Schools; The Township Unit System; "Traveling Schools;" The District System; Dame Schools; State School Fund; Dummer Academy; Plymouth Schools.

2. *Connecticut*.—Hartford and New Haven; Common School Fund.

3. *New Hampshire, Vermont, Maine, and Rhode Island*.—Shire and Half-shire Schools; Practical Home Education; Absence of Illiteracy.

4. *General View of New England Schools*.—Right to School Education; Parochial Schools; School Age; Number of Academies; Length of term; Co-education; "Ma'am Schools;" Spelling Books; *The New England Primer*.

5. *Virginia*.—The Virginian Type; Governor Berkeley; Andrew Bell; Convict Teachers; "Log Colleges;" Oldest American School; The Virginia Literary Fund; Jefferson.

6. *Pennsylvania and New Jersey*.—Philadelphia Schools; Nassau Hall (Princeton) and Queen's College (Rutgers); The Free School Act.

7. *New York*.—Governor Clinton; Regents of the University of the State of N. Y.; Lancasterian Plan; The Public School Society of New York City; Public School Lands.

8. *Kentucky and Tennessee*.—Academies, Colleges, and Universities; Private Schools.

9. *Ohio*.—Ordinance of 1787; Township School Districts; Rate-bills; Cincinnati.

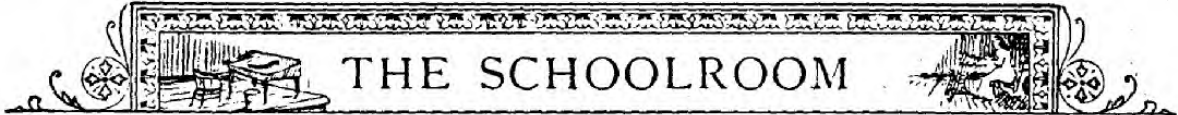
10. *Indiana*.—Public School Lands; State University.

### "JESUS AS A TEACHER."

#### CHAPTERS I AND II.

1. *An Introductory View*.—A comparison of preaching and teaching. Difference between Jesus and modern preachers and teachers. He spoke, not wrote.

2. *The Education of Jesus*.—Two points of view. Education older than the schools. Influence of tradition. Special characteristics of oriental life. Renan's picture of Nazareth and the Galilean fishermen. Difference between Eastern and Western life. The historical background. Dean Stanley on the sources of Christian imagery.



# THE SCHOOLROOM

Conducted by the EDITOR.

## CARE OF THE SCHOOLROOM.

It falls to the lot of most teachers to exercise a supervising care over the sanitary condition of the schoolroom. Not only their professional duty but the safeguarding of their own health requires this careful supervision. With the beginning of the school year the following recommendations from the Michigan State Board of Health should be adopted everywhere, unless some better plan is already in use:—

That the regular care of schoolrooms includes sprinkling the floor before sweeping, the subsequent dusting of desks or wiping them with a clean damp cloth, and the airing of the room before its use.

That interchange of books be allowed only under such conditions as render the transmission of disease impossible. That the use of slates be discontinued.

That persons known to be affected with tuberculosis of the lungs, or who persistently cough and expectorate, be denied the privileges of such room either as a teacher or pupil. That all spitting upon the floor by any person be strictly forbidden, and that proper conveniences for receiving sputa be supplied.

That, at least once a year, the room and contents be thoroughly disinfected, the woodwork and floor washed with an antiseptic solution, the walls whitewashed, and the plumbing and ventilating inspected.

This is a statement of what ought to be — not of what is, or is easy to accomplish, in many schools. School boards and janitors are not always anxious to invest time or money in conserving the health of teachers and pupils. Just as the teacher must often provide his own books of reference and illustrative apparatus, as an object lesson through which to elevate the educational sense of the community, so it may be necessary for the teacher to use his own means for securing the proper conditions of safety from disease for himself and pupils.

Certainly every schoolroom should have an effective disinfection at least once a year. The Michigan Board of Health issues an illustrated pamphlet showing how this can be thoroughly done at a small expense. The EDUCATOR will take pleasure in forwarding the names and addresses of any of its readers for a free copy of this pamphlet. Send today, and then show it to your school board; and then carry out the instructions yourself if the others will not. Educate your whole community on the importance of good health.

## ANNEXATION CEREMONIES.

A RECENT copy of the *Pacific Commercial Advertiser* just received from Honolulu gives a full account of the program of ceremonies by which the Hawaiian Islands officially became a part of the United States of America. The occasion is described as one of deep solemnity rather than as one of hilarious celebration. The lowering of the Hawaiian flag was a moment of intense interest. Many of the spectators were in tears. "It was solemn; it was sad; it makes a remembrance that will dwell with a man forever."

The first act in the ceremonies was the presentation to President Dole by Minister Sewall, of a certified copy of the Congressional "Joint Resolution to provide for annexing the Hawaiian Islands to the United States." President Dole responded in a brief speech in which he formally yielded up to the representative of the United States government "the sovereignty and public property of the Hawaiian Islands." In reply Minister Sewall said:—

Mr. President: In the name of the United States, I accept the transfer of the sovereignty and property of the Hawaiian government.

The Admiral commanding the United States naval forces in these waters will proceed to perform the duty entrusted to him.

This duty was to raise the American flag. First, the Hawaiian flag was saluted with twenty-one guns. Then the Hawaiian Government Band, minus the sixteen native members who had been excused, played *Hawaii Pono!* As the flag was hauled down a cornetist of the government band sounded "To the Colors," which was answered by the same call a moment later from a United States naval trumpeter as the Stars and Stripes were hoisted by command of Admiral Miller. Then the marine band from the *Philadelphia* played the "Star Spangled Banner," three cheers were given, and the new flag was saluted with twenty-one guns.

Following these ceremonies Minister Sewall read the proclamation of annexation, prescribing the conditions under which the functions of the government of the islands shall be carried on. All the government officers were required to take the oath of fealty to the United States. The office of Minister of Foreign Affairs is abolished, and the laws of the country, so far as they are not inconsistent with the Constitution of the United States, will

continue their usual course of administration until revised or modified by the commissioners appointed by President McKinley for that purpose.

Thus Hawaii, with all her problems of internal administration, becomes potentially one of the United States of America. "What shall we do with the Philippines?"

### GEOGRAPHICAL NOTES.

Now that peace has come, and with it responsibility for the government of new territories, it is time we were becoming acquainted with the geography and natural resources of our new possessions and new neighbors. Here are some facts concerning Porto Rico.

The Island of Porto Rico lies several hundred miles east and north from Cuba; and is, next to the "Gem of the Antilles," the most important of the West Indian archipelago. It covers an area of 3,608 square miles and is ninety-five miles long and thirty-five miles wide. Its population is a little over eight hundred thousand, of which about three hundred thousand are Negroes. There are a hundred and thirty-seven miles of railway and a hundred and fifty miles of wagon road, but nearly all the transportation in the interior is carried on by pack mules and riding horses. A good telegraph system connects the principal towns, and the telephone also has been introduced.

San Juan, the capital town, with a population of twenty thousand within the walls and an equal population in suburban districts, has no sewerage system and no public waterworks, drinking water being supplied by cisterns filled with rain-water caught on the flat roofs of the houses. The city was founded two hundred and fifty years ago, is walled in, and has a moat and drawbridges. Ponce is the second city in size, having a population of 15,000; Mayaguez 12,000, Fajardo 9,000, Arecibo 7,000, Aguadilla 5,000, Humacao 4,000, Naguabo 2,000, and Arroyo 1,200.

The principal exports from Porto Rico are sugar, molasses, chocolate, cocoanuts, tobacco, coffee, oranges, bananas, and bay rum. The principal imports are flour, breadstuffs, dried meats, and agricultural machinery.

The total Porto Rican trade averages about thirty million dollars a year, of which sixteen million dollars represents exports and fourteen million dollars imports. Under the fostering influence of American push a larger share of this trade will undoubtedly come to the United States.

### NOTES ON ENGLISH.—NO. 1.

A BOOK recently issued contains this sentence: "There was not a place in the world but would have been honored with his presence." This conveys the idea that every place in the world would have been visited, had not some circumstance, not stated, stood in the way; but the author meant

that any place in the world that Jesus might have chosen to dwell in, would have been honored by his presence. Any person could honor [pay honor to] an occasion with his presence; but only a great man could honor [confer honor upon] a place by his presence. These prepositions are frequently confounded. In general, "with" denotes instrumentality; "by," agency. Compare, "slain with a sword," and "slain by the sword."

**PARTITIVE GENITIVE.**—When a noun naming the whole of which a part is taken is made the object of the preposition *of*, it is said to be a "partitive genitive." It is incorrectly used when the whole, and not a part, is meant. "He gave me half of his time," "Nine tenths of the village is under water," are examples of its proper use; but, "All of the troops were called out," is wrong, for the whole and not a part of the "troops" is the subject of thought. "All the troops" is the proper phrase. The partitive genitive construction is used with some verbs as "partake," "accept," etc. *Accept of* is more often misused than not. We accept of the cake, accept of one's hospitality, or anything in which we share; but we accept an invitation, accept salvation, accept a doctrine, because not a part, but the whole, is received. We would not think of saying "reject of;" yet it would be quite as logical as "accept of" in the latter use.

### A PRONUNCIATION DRILL.

THE following words, used in a mock-heroic extravaganza by the New York *Times*, are in current literary use, and are said to involve no case of disputed pronunciation. Try them.

interesting	mock	vocables
inquiry	goddess	pestle
oyer	vagary	visor
terminer	bade	flaccid
indisputable	reptile	lithographer
heinous	servile	tribune
pageant	rapine	seine
juvenile	pretense	gaunt
extraordinary	hiatus	futile
pedestal	precedence	docile
directing	precedent	pathos
spectators	simultaneously	ordeal
tiara	gross	virago
carat	railery	alias
nonchalance	promulgate	vaccine
leisure	anarchism	scabious
maniacal	probity	desuetude
laundress	predilection	obsession
squalor	patronage	irrevocable
detestation	dilate	inventory
hideous	glaciers	asylum
grimaces	franchise	homicidal



When the students have thoroughly learned the pronunciation and *meaning* of these words, let them be used in a story, taking the words in succession down each column. The stories may be read aloud as a test of pronunciation and meaning.

AN EXERCISE IN PHYSIOLOGY.

The following "exercise," attributed to a "Roxbury boy" by the *American Kitchen Magazine*, illustrates how physiology may be mistaught. It could be made a good exercise for correction both as to fact and expression. Use it :—

Bones are the framework of the human body. If I had no more bones in me I should not have so much shape as I have now. If I had no bones in me I should not have so much motion, and grandma would be glad, but I like to have motion. Bones give me motion because they are something for motion to cling to. If I had no bones, my brains, lungs, heart, and larger blood vessels would be lying round in me sort of loose like and might get hurted, but not much lest it is a hard hit. If my bones were burned, I should be all brittle and you could crumble me up because all the animal would be out of me. If I was soaked in a kind of acid I should be limber. Teacher showed us some bones that had been soaked. I could tie a knot in one. I had rather be soaked than burned. Some of my bones don't grow close and snug to my other bones like the branches to a trunk of a tree do and I am glad they don't, for if they did I could not play leap frog and other good games I know. The reason they don't grow that way is because they have joints. Joints is good things to have in bones. There are two or three kinds, the ball and socket joint like my shoulder is the best. Teacher showed it to us only it was the thigh joint of a cow. One end was round and smooth and saucer-like. That is the socket and oils itself. Another joint is the hinge like my elbow. It swings back and forth oiling itself and never creaks like the schoolroom door does. The other joint ain't much of a joint, that is the skull and it don't have no motion. All of my bones put together in their right places make a skeleton. Cripples and deformed people don't have any skeletons. Some animals have their skeletons on the outside. I am glad I ain't them animals, for my skeleton, like it is on the chart, would n't look well on my outside.

Now as a corrective to any wrong notions in the foregoing, study the following questions. The answers are all found on pages 22-24.

1. What is Biology, Physiology, Morphology ?
2. What is Anatomy ? How does it differ from Histology ?
3. Why is a knowledge of Chemistry and Physics necessary in studying Physiology ?
4. What is meant by the phrase, "conservation of energy" ? *Ans.*—That energy is never lost, but only changes from one form into another. For example, ki-

netic energy is converted into heat by vigorously rubbing two surfaces together.

5. What is metabolism ? Describe both kinds.
6. What properties are common to all forms of life ?
7. What is nutrition ? What processes does it include ? Why is it so important ?
8. How is life always manifested ? What is protoplasm ? (See the article in the department of "Physiology" in the June number of the EDUCATOR.)
9. Describe the living cell.
10. Explain the physiological division of labor. What advantages are thus gained ?
11. Describe the tissues of the body.

BIRD STUDY.

How many teachers know the names, appearance, and habits of the most common wild birds in their neighborhood ? The following outlines will assist in opening a most interesting and valuable form of nature study :—

I. HOW TO KNOW BIRDS.

1. By their Movements { Flight.  
Hop or Walk.
2. By their Voices { Song Voice.  
Call and Conversation.  
Fear Note.  
Anger, or Defiance.
3. By their Bodies { As a Whole { Color.  
Size.  
Shape.  
Parts { Wings.  
Tail.  
Head.  
Feet and Legs.
4. By their Habits { Feeding.  
Nesting.  
Migration.

II. HOW TO STUDY BIRDS.

1. Time { Best in  
Early Morning  
and Evening.
2. Place { Habitat.  
Feeding Places.
3. Manner { Not with a gun.  
With pencil and paper.  
With great patience.

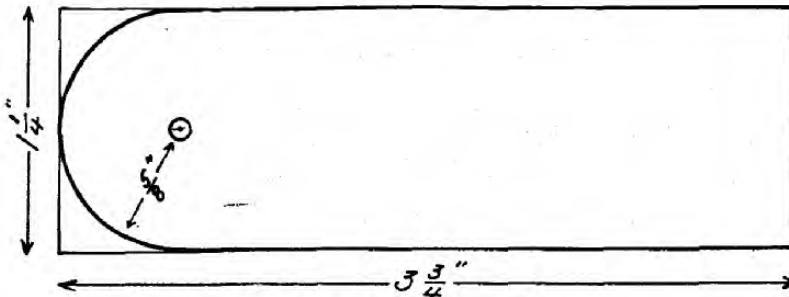
—From an Institute Talk by Dr. John Ogden, Minneapolis, Minn.

SPEECH is gold when the soul has gold to put into it, and sounding brass when there is but brass back of it. There is, of course, great difference in the transparency of speech. Some men shut the windows ; some have stained glass, to let in the light, and hide what is within. And yet what is there will out. If genuine character is within, it will manifest itself. If angels are within, they will show themselves, as will also imps of darkness.—Emerson E. White.

Conducted by A. J. BRISTOL, A. B.

## EDUCATIONAL HAND WORK.—NO. 3.

In the two preceding articles of this series we have spoken of the outfit required,—simply a knife for each pupil, and some basswood or soft pine one eighth inch thick,—and have given drawings and a few suggestions as to how teachers and parents can direct the activities of a child in making with the knife some useful articles. They have included only models requiring principally whittling to a straight line. The first exercises should by all means be of this character; but care must be taken that the children be not kept too long upon models varying so slightly that the interest wanes. The novelty of whittling in school instead of being constantly employed at books will not always remain a novelty.



KEY TAG. (Exact size.)

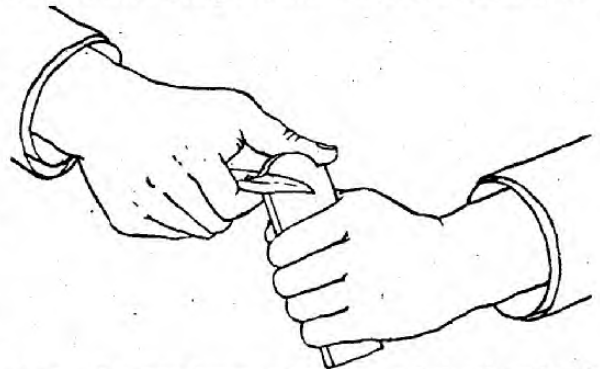
As a simple exercise involving the use of what is known as the paring cut, the above drawing is all that is necessary. As described in the last number, every model should first be made by the teacher, from which the pupils make a free-hand sketch, and then a mechanical drawing from which to work. In drawing circles or arcs, as in the examples given, a pair of compasses is best, but if obliged to cut expense to the minimum, the live teacher will draw from some active boy the means of securing the desired result, by using a string with knots tied therein the proper distance apart, through one of which a pin passes, and the pencil point through the other.

The paring cut alluded to above is illustrated in the little sketch opposite, showing the manner of holding both the piece and the knife. With the thumb held quite firmly against the edge of the stick, explain to the children that the motion is principally that of closing the hand. In cutting to a curved

line there is a rolling of the forearm to suit the particular curve, be it convex (as in this case), concave, or a combination of these in a compound curve, as will appear in later exercises.

The process is not a difficult one, and probably every one who has tried to have children cut to a straight line has found some at least who were inclined to use this method rather than the one illustrated in the last number. There are times, indeed, when it is best to use this cut instead of the other, as when the grain of the wood being whittled will not admit of its being held properly for the other method of cutting. But the teacher will be on the alert, and not allow it to be used simply because, from the previous habit of the child, the immediate results are better. As teachers we are looking more for the result in our *pupils* than in the *material* they use. Their finished exercises should indicate *growth* of power to execute. (Query: Which method should be used in sharpening a lead pencil? Compare with the *MAY EDUCATOR*, page 14.)

In boring the hole for the string, it will be necessary to caution the children against allowing the knife to close, else there may be more than one case of cut fingers. To guard against such accidents, as well as to have less trouble from the temptation to put the knife in the pocket instead of returning it to the teacher, it is well to furnish schools with straight knives instead of those which

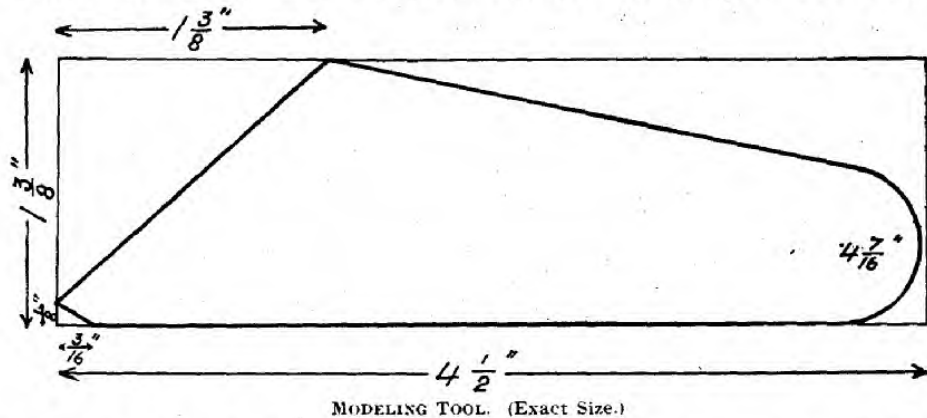


close. But accidents may occur, and the thoughtful teacher will be provided with court-plaster and a roll of linen for bandaging slight wounds.

In modern educational thought, much attention

is paid to sociology, and the teacher has in manual occupation for the children a chance to inculcate the idea of helpfulness to others as well as a certain noble dependence on one's own resources. In the two following models—clay-modeling tool and match-strike—as well as in the models described

Some instruction may be necessary to prevent the pupils from splitting down the side when paring the ends. So it will be well to have them notch in to the semicircle before beginning to pare. As shown in the case of the pencil sharpener, the dotted space is to be covered with sandpaper.



MODELING TOOL. (Exact Size.)

As teachers we can not fail to see the intimate relation such work as this has with almost all the legitimate work of the school. Quite a number of simple pieces of apparatus for experiment in Nature Work may be made by the pupils, its relation to certain geometrical forms is apparent, and

in the last number, we have an application of both of these principles.

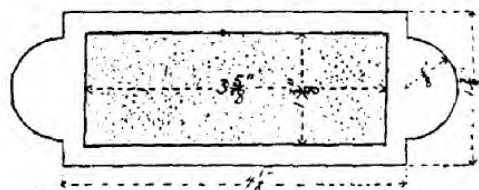
abundant opportunity is offered for connecting geographically the materials used with the parts of the world where they are found.

After making the drawings of this tool upon paper, draw from the pupils whether they would mark it all out on the wood before beginning to whittle. Possibly some child will see that they would be likely to fail in the first attempt at getting a straight line, and so will reason that, in that case, unnecessary work would be done, should the whole drawing be made on the wood before whittling any. By an explanation of the use of the tool for both forming the clay and scraping the slate when the clay is to be removed, the teacher can cause the children to think as to the particular shape given it. The rounded end fits easily into the hand, and the acute-angled point is needed in working in small spaces when modeling.

USE YOUR KNOWLEDGE.

THE great difficulty with much educational work is that it tends to the formal accomplishment of certain prescribed tasks, without much thought upon the reasons and uses of them. The only remedy for this is to think as you work. This principle is well set forth in the following selection from the *Sunday School Times*:—

“Information does not necessarily lead to thought. The amassing of facts does not in itself give a man wisdom and knowledge, any more than the ownership of a marble quarry gives a man a palace for a residence. Facts can be a help to thought, and they are of service to one who uses them in his thinking; but many a man who has a small store of acquired information does more wise thinking than many another who has filled his mind or his memory with facts or data without knowing what to do with them. There are students who, like European couriers or Oriental dragomans, have learned to speak in a dozen different languages without being able to think in one. Mental activity is not usually correspondent with the acquisition of mere facts of knowledge; yet mental activity is essential to wise thinking. . . . The true measure of our intellectual power is in our independent mental control and use of our acquisitions of knowledge, not in what we have obtained or even the most important information which we do not know what to do with.”



MATCH STRIKE. (Reduced.)

A point to be guarded in both this exercise and the foregoing is to have the line of the sides tangent to the arcs of the respective circles. In the former case it can best be secured by drawing the diameter of the circle at right angles to the sides; and in the latter case, draw the radii perpendicular to the respective sides; and in each case, when cutting the arcs, require the pupils to whittle to the points thus indicated.

## VALUE OF EDUCATION.

EDUCATION should increase the earning capacity of the individual. The winning capacity should be demonstrated, even if the individual foregoes its full financial reward; in fact, the best-educated man always earns more than he gets; and winning capacity will always break down ignorant prejudice against education. As Booker Washington says, "There is not an ounce of prejudice in the American dollar."

Secretary Wilson recently emphasized the value of a practical education to the farmer, and every other man, in these words:—

The uneducated man earns on the farm from ten to twenty dollars a month; the educated man earns easily from fifty to one hundred dollars. The native horse, without blood or development, in some of our north-western States is valued at ten dollars a head; a well-bred, well-developed horse is worth from one hundred to one thousand dollars. A native cow in some of our newer States yields seven dollars and fifty cents' worth of products in a year; the improved cow in the hands of a skilled dairyman yields seventy-five dollars' worth of products in the same time. Corn in Iowa some years is worth ten cents a bushel, where it is the one crop of the farm, but the skilled feeder makes it worth forty cents. The common pineapple weighs from three to four pounds, and sells for from ten to twenty cents; the scientist hybridizes the same pineapple, and makes it weigh from eight to twelve pounds, worth seventy-five cents or a dollar, besides improving its flavor. The young man's labor when he comes to college is worth no more than that of the uneducated farm hand; but if he studies the science relating to some one industry, his labor is in demand everywhere. His earning capacity was equal to one laborer when he entered; it is equal to half a dozen after he has graduated.

## CONSIDER THE HORSES.

In a certain boarding stable in New York City are posted the following regulations that might well be observed everywhere.

"No man will be employed who drinks intoxicating liquors. No man shall speak in a loud tone to any of the horses, or in the stable where they are. Horses of good blood are nervous; and loud, excited conversation is felt by all the horses that hear it, and makes them all nervous and uneasy. No man shall use profane language in the hearing of horses."

## WHEAT.

AMERICA'S wheat and other grain crops this year are among the largest ever reported. Many farmers would probably not object if some new Leiter should attempt another "corner" in wheat. Now is a good time to note the States that produce the most wheat, corn, and oats, and compare their output with that of other countries. The *Western Teacher* furnishes the following table in millions of bushels for the year 1897:—

United States.....	492	Roumania .....	44
Russia.....	387	Argentina.....	37
Asia Minor.....	316	Austria.....	33
France.....	270	Bulgaria.....	30
British India.....	180	Turkey (Europe)....	28
Germany .....	108	Australasia .....	24
Italy.....	102	Belgium.....	21
Spain.....	101	Chile.....	15
Hungary .....	98	Algeria.....	13
Great Britain.....	53	Egypt.....	11
Canada.....	51		

It is a matter of importance to the farmer to know what percentage of his seed wheat will germinate and grow. The farmer's children can ascertain it by a simple experiment. Thoroughly work up about a square foot of ground, and then flatten it down evenly. Let it be selected in a shady place where it will not be overheated at this season of the year. Then thoroughly soak the soil by pouring on water. Carefully lay out on the surface one hundred kernels of the wheat to be tested, just as it averages in quality. Cover the grain with a board, and in about a week every seed will have sprouted that would grow if sowed in the field. Count out the kernels that failed to germinate, and the number left will be the required percentage of good seed wheat.

TRY this game of "potato sculpture," providing each participant with a potato and a sharp knife. Allow the company about twenty minutes to carve, as best they can, some chosen object, as a face, a sheep, a pig, or a cat, or some article of furniture; or let each one make what his fancy dictates. Set on some wooden toothpicks; they will be useful in strengthening slender parts and in mending the work, if a head or other part should get broken off.

## TRAIN CHILDREN GENTLY.

NEARLY every one has at some time been touched by the uncomplaining sacrifices which children in families of a certain order are called upon to undergo, says a writer in *Current Literature*. There are persons fond of exercising mastery, who fancy a child is well trained when its powers of reason and volition have been completely subjugated. Often the voice of God directs the child against the will of the parent, whose eyes are hidden that he may not see, whose ears are shut that he may not hear. There are children dying by half inches in New York who might thrive in a country environment. They are sacrificed ruthlessly to the parent's choice of residence.

There is, too, a class of parents who, from lack of heart, sympathy, education, tact, judgment, insight, generosity, perpetually sacrifice their children, running athwart their latent possibilities with unthoughtful vetoes and disastrous counter-commands. The individuality, the genius, the child may possess is alien to their own natures, and they labor blunderingly to eradicate it. Somehow the right of a child to the perfection of its own temperament should be secured, as well as some reasonable opportunity to act upon his environment in the fashion his instincts and intuitions direct him as conducive to his own welfare. To summon to this world a child soul with whom to be always warring at cross purposes of wrongful adaptation, is a horrible abuse of the parental office.

## QUESTIONS FOR MOTHERS.

THE Crocus Hill Mother's Club, of St. Paul, Minn., sends out the following list of suggestive questions for parents. The EDUCATOR would be pleased to receive answers to all or any of them.

1. Do you think a mother's success in training her children increases in proportion to her ability to understand and enter sympathetically into their thoughts and feelings?
2. Does the school help you in training your children in habits of right doing? If so state three ways; if not, why?
3. Should the school give more time and effort to moral training?
4. Should the government of home and school conform?
5. How can child students help to unite the education of home and school?
6. Do you think good health in the child essential to good mentality and morality?
7. Do you think self-control in adult life is secured by inhibiting self-control in childhood?

8. How may parents protect the purity of their children?

9. The little child is at first self-centered: what is the cause of selfishness?

10. If a child's mind unfolds like a plant, in natural order, would a knowledge of the order of development of mental processes be of assistance to you in understanding what to expect from a child in mental capacity, and what to provide in mental food?

11. Altruism means love or service for others: when is it manifest in the child?

12. Inasmuch as nearly all children look with favor upon handicraft, should work be a vital part of education?

13. What do you consider the most valuable lines of work in child-study for mothers?

14. Has child-study done anything for you up to this point? If so, what?

15. What do you consider are the mother's greatest needs to make her more efficient in the training of her children?

## CHILD-STUDY — BY HIMSELF.

Too much of the current "child-study" regards the child merely as a phenomenon to be investigated, rather than a being with human feelings and opinions. An exchange publishes the following infant soliloquy which may serve to light up the other side:—

I am here. And, if this is what they call the world, I don't think much of it. It's a very flannelly world, and smells of paregoric awfully. It's a dreadful light world, too, and makes me blink. And I don't know what to do with my hands; I think I'll put my fists in my eyes. No, I won't. I'll scratch at the corner of my blanket and chew it up, and then I'll "holler;" whatever happens I'll holler, and the more paregoric they give me the louder I'll yell. That old nurse puts the spoon in the corner of my mouth in a very uneasy way, and keeps tasting my milk herself all the while. She spilled snuff in it last night, and when I hollered, she trotted me. That comes of being a two day's old baby. Never mind; when I'm a man I'll pay her back. There's a pin sticking in me now; and if I say a word about it, I'll be trotted or fed, and I would rather have catnip tea. I'll tell you who I am. I found out to-day. I heard folks say: "Hush, don't wake up Emeline's baby!" and I suppose that pretty, white-faced woman over on the pillow is Emeline. No, I was mistaken; for a chap was in here just now, and wanted to see "Bob's baby," and looked at me, and said I was a "funny little toad, and looked just like Bob." He smelt of cigars, and I don't like them. I wonder who else I belong to. Yes, there's another one, that's "Gamma." Emeline told me so, and she took me up, and held me against her soft cheek, and said, "I was Gamma's baby, so I was." I declare I do not know whom I do belong to; but I'll holler, and maybe I'll find out. There comes Snuffy with catnip tea. The idea of giving babies paregoric and catnip tea, when they are crying for information!

# NATURE'S LABORATORY

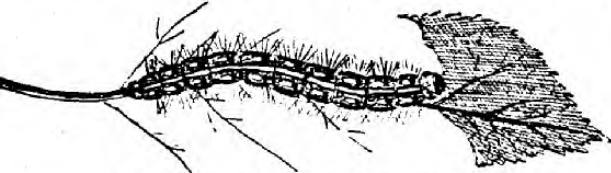
Conducted by A. W. KELLEY, Ph. D., M. D.

## NATURE STUDY.—NO. 3.

### INSECT METAMORPHOSIS.

ONE of the most noticeable peculiarities of insects is their metamorphosis, or change of form. Nearly all insects pass through this peculiar change, there being commonly three distinct stages.

In the first stage the insect is usually a crawling worm-like caterpillar, and is called a *larva*. This Latin term means a mask or cover, the idea being



TENT CATERPILLAR. (Larval stage.)

that the insect is not in its true or perfect form, but is covered by a dress that will soon be laid aside. When this is done, it is called the *imago*, meaning the exact image of the parent insect.

In the second stage, this worm-like caterpillar is wrapped in a special covering prepared for the purpose. While it is thus wrapped up, it is in its sleeping state, and is called a *pupa* (the Latin for baby), because it appears somewhat like a baby wrapped up and asleep in the cradle.

Some of these baby insects sleep a long while in their snug beds, or *cocoons*, while others change in a short time. The common house-fly remains in its bed only a few days, while the  *cicada*, or "seventeen-year locust," remains in its covering about sixteen years before it changes to the perfect adult stage.

The larvæ of different insects have different names. Commonly the larvæ of hard-winged insects are called *grubs*, while the larvæ of moths and butterflies are called *caterpillars*.

Various names have also been applied to the pupæ, such as *chrysalides*, *aurelia*, and *cocoons*.

In the adult stage, insects eat very little, as they have then attained their growth. But not so with

the larvæ; they are voracious eaters, and it is in this stage that the insects injurious to vegetation do the most damage. As an example of these may be mentioned the potato beetle and army worm, which are so destructive to growing crops.

The rapid growth of the larvæ causes them to shed or cast their skins several times before they attain their full growth, even as larvæ. The silkworm sheds its skin three or four times during its growth.

When about to enter the pupa stage, each larva seeks an appropriate resting-place for its chrysalis. Some burrow into the ground and spin a silken lining for the walls of the earthy cave in which they are to spend their long period of rest, while others roll themselves up in leaves, or crawl to some secluded spot and attach themselves to a twig or leaf, and there construct a silken home called a cocoon.

The silken thread of which the cocoon is constructed is furnished by a pair of minute glands located near the mouth of the insect. These

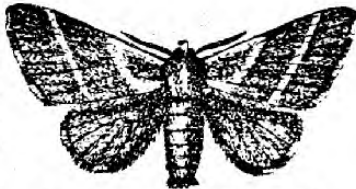


BUTTERFLY. (Escaping from chrysalis case. Pupa shown on the ground.)

glands excrete the liquid silk, which is wound around outside until the body is entirely covered, with the threads cemented together, thus forming a compact wall around the pupa.

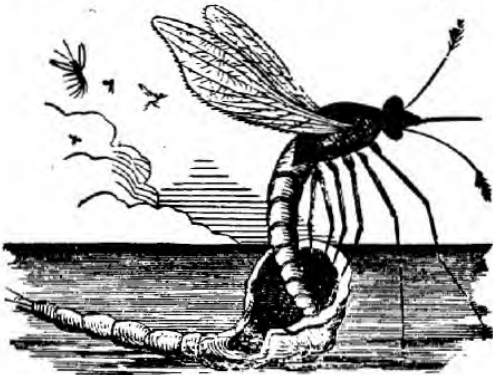
It now sheds its skin for the last time and is prepared for its long sleep through the winter months. When the warm spring days return, it prepares to leave its winter quarters; its wings begin to form, and at the proper time it leaves its home, spreads its wings, and flies about—not, however, to eat the leaves of plants as it did in the preceding summer, but to visit the flowers and sip the nectar found there, and also to select suitable plants upon which to deposit its eggs.

The thread of the silkworm is continuous in its cocoon, and can be unwound by the manufacturer of silk. For this purpose the cocoons are first heated in ovens to destroy the pupa in them. They are then steamed until the gelatinous substance



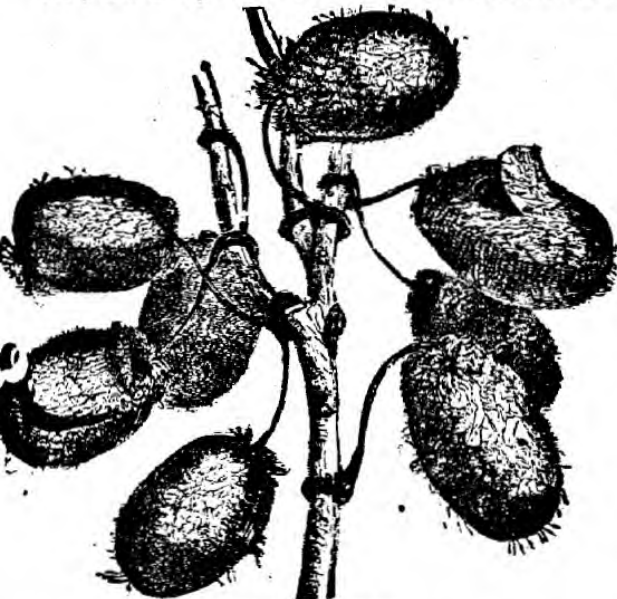
THE IMAGO. (Adult stage of caterpillar.)

which cements the thread together has softened, and the threads are then unwound without being broken. This silk thread varies from five hundred to fifteen hundred feet in length.



GNAT. (Emerging from pupa stage.)

Some insects go through an imperfect metamorphosis, as the grasshoppers and locusts. They are produced from eggs, without wings, but have formed gradually while they are in a state of activity. The careful study of insect life furnishes one of the most interesting sources of information. And no thoughtful student of the habits of ants, bees, and many other members of this lower world,



COCOONS OF SILKWORMS.

can fail to see in them an intelligence that reflects the wisdom and providence of the Creator and upholder of all nature.

EDUCATION is but a preparation of the physical, intellectual, and moral powers for the best performance of all the duties of life.—*Ellen G. White.*

## NATURE STUDIES IN THE COMMON SCHOOLS

THERE is certainly something deficient in the instruction of children when they are carried through their course of studies, at an average age of fifteen or sixteen years, without learning anything of the nature, relations, habits, and uses of plants and trees and birds and insects, the objects which are before them every day, and which in various ways affect them most materially. Our best educators have lacked a proper perception of the importance of these subjects; our teachers have been uninstructed and uninterested in them, and a dense ignorance of them is generally prevalent. No person can properly lay claim to-day to a fair education who has not been trained in the elements of one, at least, of the biological sciences. If this postulate is true, how shall we class the rank and file of our public school teachers, who are almost wholly uninformed scientifically on these subjects? It is time to begin anew, and to work on different lines. The well-informed teacher could not employ to better advantage a half-hour daily than by giving instruction before the pupils collectively in relation to plants and animals; and in no other branch would there be more willing and attentive pupils. And this might be done without interfering with the pursuit of the "three R's," and with actual benefit thereto. Even in the lowest grade, and the kindergarten, children can be thoroughly interested in these subjects. It is evident that the remedy for this weakness in our course of common school instruction must begin with the teachers; and superintendents of public instruction and school commissioners should take the proper course to educate the teachers in the elements of plant and animal life, in order that all the children in our schools may be trained in relation to these subjects.—*Vick's Magazine.*

CARL SPENCER, writing in the *Woman's World*, says that the slaughter of singing birds accounts for the insect plagues, and that we are "about to be devoured by myriads of crawling things, since these have been preferred to the winged singing creatures. The plague of caterpillars, etc., grows worse every year; whole orchards are being destroyed this summer; forest trees are perishing, many towns are losing their elms and maples; while in field, garden, and flower-bed is the same story of destruction. No wonder, when our native insect-eaters have been slain by the million year after year"—and mostly for personal ornament.

Conducted by A. B. OLSEN, M. D., M. S.

## HUMAN PHYSIOLOGY.

### INTRODUCTION.

PHYSIOLOGY deals with the vital activities of living organisms. It answers the question, How does the animal or plant live? But in order to understand vital phenomena, it is necessary to study the structure of the organism. Such study answers the question, What is it? and is called Morphology. The term comes from the Greek *morphe*, form, and *logos*, speech, and may be defined as the science of form and structure. Thus it deals with the framework of the cells and their grouping together to form tissues, and the grouping of these again to form organs. Morphology has two branches, Anatomy — from the Greek *ana*, up, and *temno*, cut — and Embryology, also Greek, from *embryon*, germ or rudimentary form, and *logos*, speech. Anatomy is the study of adult forms of life, and Embryology the study of developing forms. Histology is the study of minute structure, by use of the microscope.

The following table shows the relation of these studies to biology, which is the science of life.

Biology (Plant or animal)	}	Morphology	{	Anatomy, Histology, Embryology
		Physiology		

There are several branches of physiology, as Plant Physiology, Animal Physiology, Comparative Physiology, etc. Our study will be in Human Physiology.

A knowledge of the elements of physics and chemistry is very necessary in order thoroughly to comprehend the different physiological processes of the living body, for these processes are essentially chemical in their nature, as well as physiological. They may properly be called chemico-physiological, since they are a combination of both. Some of them can be reproduced in the laboratory all but perfectly.

The body may be considered as composed of chemical substances. The chemical elements found in the body are carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, chlorine, fluorine, silicon, sodium, potassium, calcium, magnesium, iron, and sometimes lithium and manganese. For the most part these elements exist in numerous very complex combinations. These chemical compounds

are both organic and inorganic. The former are again divided into nitrogenous and non-nitrogenous organic compounds. The nitrogenous include proteids, albuminoids, ferments, and coloring matters. The non-nitrogenous are represented by the carbohydrates (starches and sugars) and fats.

Among the inorganic constituents of the body may be mentioned water, free hydrochloric acid (found in the stomach), the chlorids of sodium (common salt) and of potassium, and various phosphates and carbonates.

The fundamental laws of physics, such as the conservation of matter and energy, are fulfilled in the body. Most of the energy is derived from food, in which it is stored up in the form of potential energy. The food supplies material for growth and repair of tissue; but these processes require only a small portion of the daily allowance. By far the greater part is burnt by processes of oxidation to supply the body with heat, so that a certain fixed temperature may be maintained.

These processes of growth, repair, and oxidation represent the chemico-physiological activities of cell life. They are termed metabolism, and the cell is said to be in a state of metabolic activity. There are two kinds of metabolism. The first is constructive, integrative, or synthetic, and is called anabolism. By means of anabolic changes, inert food material is built up into living protoplasm. The second is katabolism, and is essentially destructive, disintegrative, and analytic; living tissue after having served its purpose is broken down, and becomes tissue waste. This waste material must be got rid of as soon as possible, for it contains poisons that irritate and injure the living cells, and interfere with their proper nutrition.

Metabolism is constantly going on in all parts of the body, in some tissues slowly, in others more rapidly. The rate is within certain limits proportional to the functional activity of the organ. This instability is perhaps the most marked characteristic of living matter. On account of these unceasing changes the body has been likened to a channel through which matter is continually flowing as long as life lasts. As fast as the old worn-out material is disintegrated and eliminated, fresh, new substances are eagerly seized from the blood by the living cells to replace the loss. Elimination, as well as nutrition, takes place through the blood, hence there is



an interchange going on between the tissue elements and the blood. So long as this interchange is properly balanced, health is maintained, and the body preserved.

A careful study of living organisms shows that they possess in common the following properties:—

1. *Nutrition*, or the ability to appropriate suitable food material by means of which they can grow and maintain life. In the broad sense of the term, nutrition, or nourishment, includes digestion, absorption, assimilation, and elimination. Nutrition is universal. Both animals and plants, one-celled and many-celled, possess this property. It is obvious that nutrition is essential to the maintenance of life, and that all other properties depend directly upon it to a greater or less extent. When a gland is in functional activity, it receives an increased blood supply, which favors metabolic changes. On the other hand, when the gland is quiescent, the supply of blood is diminished.

2. *Irritability*. It is difficult to describe this property; for it is not fully understood. In general, it is the ability of living cells to respond to suitable stimuli. The stimuli may be physiological, mechanical, chemical, electrical, or thermal. Physiological stimuli originate in the body through the agency of the will or reflexly. The character of the response depends on the nature of the stimulus within certain rather narrow limits. Thus, increasing the strength of the stimulus increases the response obtained. The degree of irritability varies with the nutrition. Insufficient nourishment lowers vitality and consequently weakens all the vital processes. When the irritability is diminished, a greater stimulus will be required to produce a response. An abundance of suitable food invigorates the body and gives tone to the muscles. Increased vigor means more life and greater powers of endurance. Thus disease is resisted more perfectly, and the natural immunity of the body is increased.

3. *Reproduction*, or new-formation, is a property possessed by all forms of life. The all-wise Creator ordained that every living thing should bring

forth after his kind, and thus life is perpetuated. The tiny one-celled ameba enlarges, elongates, constricts at the middle, and divides, and now there are two daughter amebas. The offspring always resembles the parent. An acorn becomes in time a mighty oak, never an elm. A kernel of corn produces a large stalk with one or more ears containing hundreds of kernels. From the egg of the common fowl the chick is hatched, which comes to possess all the characteristics of its parents in size, color, and habits. This is the great law of heredity. And yet no two forms are exactly alike. They may resemble each other very closely, but careful observation will reveal points of difference.

Indeed, no two leaves are identical in form. Maple leaves are easily recognized by their general form and structure; but each differs in some way from all others.

Life, animal or vegetable, is always manifested through a very complex semifluid substance called protoplasm. It is composed of various substances, the most important being proteids, albuminoids, carbohydrates, and a variable amount of mineral matter. The amount of water varies enormously, and may be roughly estimated at from ten to ninety per cent.

The smallest living element is called a cell. The smallest animals consist of but one cell.

The same is true of plants. Larger forms consist of a mass of cells. A cell is nothing more than a minute mass of specialized protoplasm. These cells vary much in size and form, being spherical, oval, pear-shaped, rod-shaped, flattened, or triangular, and with or without branches. The largest can only be seen by the aid of a microscope, while some are so small that they can scarcely be made out with the greatest magnification. In the center of the cell is a small body called the nucleus (see Figs. 3 and 4). This gives the appearance of a cell within a cell. The nucleus may be regarded as the most important part, for it appears to control the functions of the cell. It also plays an important rôle in the process of cell-division.

All organisms are made up of cells and of substances derived from cells. In the lowest forms, a single cell performs all the duties of life. The

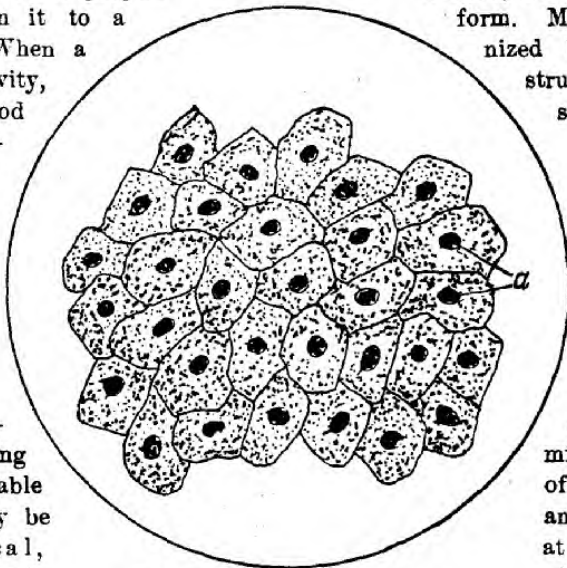


FIG. 3.—SQUAMOUS EPITHELIUM.

From the skin of a frog, viewed from the surface. a, nuclei. Magnified 450 diameters.

common ameba, which has already been referred to, is a good illustration. Having no mouth, it selects its food, and surrounding the same with its body, assimilates it directly; having no feet, it yet moves about, although slowly. Indeed it appears to possess intelligence, although of a low form.

But as we ascend the scale of animal life, a physiological division of labor is met with. Various groups of cells undergo special development in different lines to fit them for special duties. Thus, to a certain group is assigned the work of secreting saliva, another group undergoes differentiation into muscle, and comes to possess to a high degree the property of contractility. Still another is fitted to receive visual impressions, and finally forms the essential part of the organ of sight. This physiological division of labor accounts for the great variety of cells in form, size, and function. Each has a duty to perform for the body as a whole, as well as duties pertaining to itself.

In this way cells are grouped to form tissue, and the latter are variously combined to form organs. The following is a brief classification of some of the more important tissues of the body:—

1. *Undifferentiated Tissues*, such as the blood cells. White blood cells closely resemble the ameba. Their motion is similar to that of the ameba, hence they are said to possess amoeboid movement.

2. *Supporting Tissues*. This group includes bone and cartilage, as well as the ordinary forms of connective tissue. The skeleton, which forms the framework of the body, and to which all parts of the body are attached, is composed of bones. These are held together by cartilage and connective tissue ligaments. Muscles are attached to bones by cords called tendons. These are composed of dense tough connective tissues. There are two kinds of connective tissue, elastic and non-elastic. The latter is called fibrous connective tissue, and is the most abundant. It is the most widely distributed of all

the tissues, and serves as the great supporting and binding tissue of the body. Both varieties are often found together, making up what is called areolar connective tissue. This form is typical in the true skin, or dermis. Supporting tissues of all kinds are characterized by few cells, and a relatively large amount of substance derived from cells. This is in the form of fine delicate threads called fibers.

3. *Muscular Tissues*. This group forms the bulk of the body. There are three varieties, voluntary or skeletal, heart, and involuntary muscle. Voluntary muscle is by far the most abundant, and, as the name indicates, is under the control of the will.

Involuntary muscle is found in the walls of the alimentary canal and blood-vessels. It is the lowest form, and is sluggish in its action.

Heart muscle is found only in the heart, and forms the bulk of that organ.

4. *Nervous Tissue* is the most highly developed of all the tissues. It is also very widely distributed, and serves the purpose of bringing all parts of the body into harmonious action. Nervous tissue is composed of cells and fibers; but the fibers are really an outgrowth of the cells. The nerve-cells forming the essential part of the special organs of sense are the most complex and the most highly differentiated of all the

cells of the body, and hence can be best understood when studied later than simpler tissues.

5. *Reproductive Tissues* have a limited distribution. They consist of highly specialized cells whose function is to produce new individuals.

6. *Epithelial Tissues*. There are two kinds, protective and secretory or glandular. All parts of the body are covered with many layers of epithelial cells which serve as a protection. The alimentary canal is also lined by epithelium, which serves the double purpose of protection and secretion. The digestive juices of the body are manufactured by glandular epithelium.

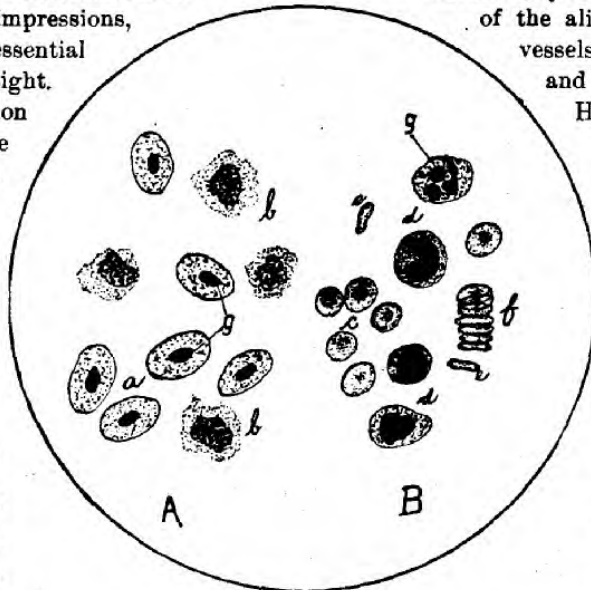


FIG. 4.—BLOOD CELLS.

A. from the blood of a frog: a, red blood cells; b, white blood cells; B. from human blood: c, red blood cells; d, white blood cells, or leucocytes; e, red blood cells seen on edge, dumb-bell shape; f, rouleau of red blood cells (coin-pile arrangement); g, nuclei. Magnified 450 diameters.

THE war between Spain and the United States continued one hundred and fourteen days.

It is reported that at the next conference of the six great powers, soon to be held, the United States will be recognized as the seventh great world-power.

CHINA is waking up. An imperial edict has been issued, putting Western learning on an equality with Chinese literature as a condition of obtaining degrees. Western ideas have become so popular that the women have even begun to abandon foot-binding.

*Cuban Cities.*—There are 112 cities and towns in Cuba. The only large city is Havana, whose population is about 200,000. The next in size is Matanzas, with a population of 50,000; then follows Puerto Principe, with 40,000; Cienfuegos, with 26,000; Cardenas, with 20,500; Sagula Grande, with 14,000; and Manzanillo and Guantanamo, each with about 9,000. The remaining towns are small, only two reaching a population of 900.

*English as a Commercial Language.*—English is now spoken by about one fourth of the world's population; Russian comes next in order, and German third. Most of the world's commercial business is conducted in English, and two thirds of the letters that pass through the post-offices of the world are written in English. Even in South America and the East Indies, a large proportion of commercial transactions and correspondence is conducted in English.

*Bismarck.*—Prince Otto von Bismarck, the great German statesman, died July 30, at the age of eighty-two. The present greatness and military power of a united Germany is owing in a large measure to his personal efforts. Under the present emperor he did not exercise the same autocratic rule as during the reigns of his father and grandfather, and was soon retired to private life. Bismarck and Gladstone were long recognized as the two great statesmen of Europe. They leave no acknowledged equals in the field of public action.

*A New Revised Version.*—When the Revised Version of the Bible was completed about fourteen years ago, it was expected that it would soon supersede the King James translation. It is now given out that the American members of the Revision Committee will soon bring out another revised version in accordance with their own ideas, which differed somewhat from those of their British coadjutors. They agreed, however, not to publish an American edition until fourteen years had elapsed from the appearance of the first; and this period has nearly expired.

*The New Postage Stamps.*—The Postmaster-general, in recognition of the trans-Mississippi International Exposition, has issued a series of special commemorative postage-stamps. The subjects of the stamps are as follows: one-cent, Marquette on the banks of the Mississippi; two-cent, Farming in the West, or, Ead's bridge over the Mississippi, showing a portion of the city of St. Louis; four-cent, mounted Indian chief; five-cent, hunting the buffalo; eight-cent, Fremont raising the flag on the Rocky Mountains; ten-cent, a design representing the hardships of emigrants. The whole issue will consist of 322,600,000 stamps.

*Our New Secretary of State.*—It is announced that Ambassador Hay is to be Secretary of State, to succeed Judge Day, who now heads the Peace Commission. While all parties commend the successful way in which Judge Day has conducted the delicate and difficult duties of the secretary's office under peculiarly trying circumstances, he pleads that he can not afford to continue longer in it, because he is a poor man, and unable to meet the social expenses that are connected with the position. His successor is better qualified in this respect, and his marked success as Ambassador to England, gives ground for the opinion that the friendly relations of the United States and Great Britain will be greatly strengthened by his appointment as Secretary of State.

*The Philippines* are still a problem. Manila is captured and the Spanish captain-general has escaped to Hongkong; but Aguinaldo and the

natives are still to be provided for. On the question whether America should retain control of the islands, ex-Attorney-General Harmon recently expressed these opinions:—

We should have to change both the name and the nature of our nation to admit any State out of America, especially if it be populated by alien races. Few, if any, are bold enough to advocate this. To get dominion over strange people for the mere purpose of governing them, not admitting them as equals in a family of States, . . . is rightly called an "imperial policy." We can not, under our system, govern any people without letting them help govern us.

It is not pleasant to play Cassandra. [Professor Norton of Harvard finds it so.] It is easier to join in the shouting and dancing of those who seem to think the past is dead and the future assured. But one's duty to his countrymen is to give warning of evil when he believes he detects its approach.

*Some United States Commissioners.*—The events of the war have called for an unprecedented number of special commissioners—such as ex-President Cleveland might have called "paramount" commissioners. To supervise the pacification of Cuba and provide for the inauguration of a stable government, President McKinley has appointed a Cuban Commission consisting of Rear-Admiral Sampson, Major-General Butler, and Major-General Wade. Likewise a Porto Rican Commission has been appointed, consisting of Rear-Admiral Schley, Major-General Brooke, and Brigadier-General Gordon. The Hawaiian Commission consists of Senators Cullom and Morgan and Representative Hitt for the United States, and Sanford B. Dole and Justice Frear for Hawaii. The general Peace Commission, which, besides performing other duties, will help define the future status of the Philippines, consists of Judge Day, Senators Davis and Frye, and Mr. Whitelaw Reid, with a strong probability of Justice White as the fifth member. There has also been appointed by the British and American governments a joint British-American Commission to settle pending questions concerning the Atlantic and Pacific fisheries and other matters. The members for Great Britain and Canada are Lord Herschell, Sir Wilfred Laurier, Sir Richard Cartwright, Sir Louis Davies, and John Charlton, M. P. The American members are General J. W. Foster, Representative Dingley, Senators Fairbanks and Gray, John A. Kasson, and T. J. Coolidge.

*The Saratoga Convention.*—One of the most unique and significant movements in American politics was the recent holding of a non-partisan con-

vention in Saratoga, N. Y., to formulate opinion as to the future foreign policy of our government, especially in regard to the islands that have recently fallen into our hands. Notwithstanding the entire revolution of our past policy which it involves, the convention unanimously adopted the following statement:—

With our view of natural right and of the inestimable privileges of civil liberty, we should not be justified in returning the conquered islands to the misrule and oppression from which we have relieved them. As soon as the islands under our present protection can be trusted to govern themselves, they should be allowed to do so, the United States retaining under its authority only necessary naval stations. Until such time as they may be able to govern themselves, they should continue under the protection of the United States; and the question as to whether, at some future period, and at the mutual desire of both, they should be permanently annexed, should be left to the time when it arises. The United States, on behalf of each of the territories in question, and so long as it shall continue under our protection, should adopt proper measures for securing out of the revenues of these countries the establishment of free, elementary, unsectarian schools, sufficient for the instruction of all persons of school age.

*Some Recent Events.*—A ninety-five pound nugget of gold was recently found in West Australia. — England has assumed a protectorate over Southern Arabia, including a territory larger than France. — Admiral Cervera has been summoned to Spain by the home cabinet. — Mt. Vesuvius is in an active state of eruption. — China is laying plans for a new navy. — Lake Tulare, the largest in California, is completely dried up, and crops are being planted in its basin. — Captain-General Blanco has resigned. — President J. B. Angell has left Constantinople to return to his duties in the University of Michigan. He is succeeded by Oscar S. Straus as U. S. Minister to Turkey. — The cable between Hong Kong and Manila is again in operation. — The United States Navy Department has opened bids for sixteen new torpedo-boats, to cost \$6,900,000. — The war tax income now approximates \$1,000,000 a day. — The czar of Russia has issued invitations for an international conference looking to a general disarmament of all nations. — The "Infanta Maria Teresa" has been floated, and her machinery and boilers are found to be in good condition. — The celebrated Dreyfus case will be re-opened by the French Government, because of the confession and suicide of an officer who forged evidence in the trial.



## OBSERVATIONS

WE find *School Education* much in evidence among the teachers of Minnesota ; and it is one of the best journals published anywhere. Every public-school teacher ought to take his own State paper ; and every progressive teacher will take two or three more along with it. Include the *EDUCATOR*, for valuable help and information not to be expected in a local paper.

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LET your "morning exercises" be general, something in which the whole school can participate, without raising any question of conscience. Always have some week-old "Queries for Students" to be answered by volunteers. Use talks, recitations, and readings that will stimulate and educate the moral sense of students throughout the day, and always have inspiring music—not doggerel or twaddle, but cheering, uplifting, ennobling music. Make the morning hour not a period of mechanical formalism, but a text for high living,—and be sure you yourself live up to it.

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It gives one the highest kind of satisfaction to be heartily thanked—as the editor recently was—by an intelligent mother, for expressing the thought that right motherhood and fatherhood embraces a constant duty toward the education of the child that can not be discharged by turning him over to the exclusive guidance of any teacher, however conscientious and competent. Teachers can not do it all, schools can not, nor books, nor "the State." Wise parenthood is the only assurance of the child's educational welfare. And the wisest teacher is the one who can arouse parents from indifference to enthusiasm and intelligent home co-operation in the school training of their children. It must be a work for the gold of love and not for the love of gold. And that teacher is always paid the best who makes himself, or herself, indispensable to the highest educational life of the community.

---

ONE of the absurdest maxims of the "new education," when applied universally and invariably, is the direction, "Never tell a child anything that he might find out alone." It is on a par with that other absurd doctrine that the child must toil-

somely traverse the whole history of the race in re-discovering what the world found out centuries ago. Imagine a child learning the alphabet—if he ever does learn it—or the process of counting, or extracting cube roots, by mere inductive approximations. A discouraged student of astronomy said he could understand how our ancestors discovered the location of the stars, but never how they managed to find out the names of them. We all have to be told some things, and the normal child shows his good sense in accepting such things without too much incredulity or demand for proof. Give the child a start ; require a reasonable amount of original effort ; put his mind on the stretch ; and then tell him what he needs to know. The rule should be, Develop a need for information, and then supply it. What is the use of living in a world of progress in this nineteenth century, if we are not to use it as a leverage for the future ?

---

WE borrow two instances used by Editor Gillan, in the *Western Teacher* for February, and raise the question upon them, Which of the two is the more reasonable, direct, forceful, and virtuous ? The first is a school excuse written by an Australian mother, and quoted in the *London Globe* :—

Please, sur, mi kids kant go to skule, as there close is wore hout, and thay kant git more till the wheats sould.

And the other extract "is from a pedagogical article published not long ago in an educational journal whose editor is a professor of pedagogy in a great university :"—

Even the conception of a possibility of action is coincident with the duty of action : so, inasmuch as there is the conception of the normal human type, it becomes the duty of mankind to approach as near this as possible. This can be accomplished only by the consciousness of the solidarity of the human race ; accordingly, the higher we ascend in the interfusion of our sensibilities, the greater duty devolves upon us.

Undoubtedly ; and the more conspicuously felicitous is our ability to differentiate the transcendental and evanescent phases of our ratiocination into their appropriate categories of terminological expression [breathe here], the more imperiously imperative is our duty to employ the vernacular with coherent perspicuity. "Let us have peace."

THE Nebraska Federation of Women's Clubs, through its Educational Committee, is becoming one of the most efficient agencies in the West for improving and directing educational forces outside of the schoolroom. They have set before themselves this standing question: "How may we work from the outside to help the teacher on the inside to improve the schools?" Their circular letters to club members are very suggestive as to what is necessary and possible in school improvement, especially in the matter of sanitary and artistic surroundings. They emphasize the importance of industrial training and the value of ethical teaching and scientific child-study. The country school and teacher are most in need of this kind of assistance. There ought to be in every school district one or more capable women who would act as coadjutors with the teacher in uplifting the moral and esthetic sense of pupils, parents, and the whole community. There are such women in every community; what they need is to be aroused to an appreciation of their own responsibilities, and the possibilities of good about them. It is an important part of the EDUCATOR'S mission to stimulate and co-operate with this sense of parental responsibility to work hand in hand with the teacher in the best educational effort. And such clubs should include fathers as well as mothers. (See next article.)

### CO-OPERATION.

In our last number before vacation the EDUCATOR proposed the inauguration of a mutual benefit association for parents and teachers. By a typographical oversight the article was entitled "A Christian Educator's Association," instead of A Christian Educators' Association. The place of that little apostrophe might make a vast difference to many discerning readers. The proposed organization was intended to be an association of Christian educators, not a private cult to be dominated by the CHRISTIAN EDUCATOR. The name suggested itself only because from the beginning the EDUCATOR has stood for the important principle of making the relations between parent and teacher as close and mutually helpful as possible.

Now we renew the suggestion. We may be years ahead of time; but the time is coming when intelligent parents will assert themselves by an active interest in the school education of their children, and the best teachers will most heartily cultivate and co-operate with this interest. The EDUCATOR seeks to hasten the time when this co-operation shall become most effective in improving all phases of our educational work. Individual teachers and parents, here and there,—and their number is rapidly growing,—are alive to the intimate connection that naturally exists between the home and the school; but the indifferent must be aroused. And many people become aroused to the importance of a principle or a responsibility only when it has become the basis of some extensive movement or organization. A doctrine must be preached and disciples gained before it attracts much attention. The practical value of organization, however simple, is that it economizes effort, and sooner or later attracts the attention of the indifferent with better prospects of enlisting their acceptance and co-operation.

"Organization is the test as well as the sign of intelligence." But the organization need not be complex; it is usually the better the more simple it can be. And an approximate agreement upon general principles must always precede formal organization. Concerning the subject of the best co-operation between parents and teachers, the EDUCATOR believes that most persons who favor it are Christians in sentiment, or those who are willing to co-operate with such. No others are likely to be interested in the education of "the whole child." Now we have had in recent times the suggestion of several and various "educational creeds," none of which seem fully to include all that would be desired by this class of persons. So in their behalf

### ABOUT FATHERS—*Teachers?*

By JULIET WILBOR TOMPKINS.

*Teachys*

When ~~the~~ jump up and they holler,  
"Here, jim! you rascal, you scamp!"  
And hustle you round by the collar,  
And waggle their canes and stamp,

You can laugh right out at the riot—  
They like to be samed and dared;  
But when they say, "James," real quiet—  
Oo—oo—that 's the time to be scared!



*Oliver Kuford*  
From St. Nicholas, May/98

[As amended by School Education.]

we ventured in the June EDUCATOR to put forth the following as —

#### OUR EDUCATIONAL CREED.

1. We believe that merely intellectual education, having no intended reference to the development of moral character, is as likely to be harmful as beneficial to the individual and to society.

2. We believe that the best intellectual development can never be secured except in conjunction with the highest moral development of the individual, and vice versa.

3. We believe that neither the best intellectual nor moral development can be secured except in conjunction with the best physical health and development.

4. We believe that the highest development of body, mind, and character can not be secured except in accordance with the sanctions and principles of the Bible. Hence, —

5. We believe that only in true Christian education can be found the highest type of training and culture for man's physical, mental, and moral nature.

6. We believe that Christian parents should exercise and improve their ability to educate their own children at home, up to the age of eight or ten years, before committing them to the guidance of any but Christian teachers.

7. We believe in the fullest possible measure of intelligent co-operation between all teachers and parents, and that this can be secured only by means of educational association for mutual improvement.

The foregoing creed is not fixed nor infallible, but open to free discussion and amendment. It is proposed with the conviction that a study of what is embraced in it can not fail to be of great profit to all concerned. Among the questions which it suggests may be mentioned the following: —

The Mutual Responsibilities of Teacher and Parent.

The Kindergarten vs. the Home.

The Place of Manual and Moral Training.

The Best Correlation of Studies.

The Bible in Education.

The Relations of Parochial and Public Schools.

Christian Education vs. Pagan Education.

The EDUCATOR predicts that some of these are to become the great educational questions of the future, if they are not already of the present. Some of them have been discussed in former issues of this journal, the others will be presented as early as their interest warrants. Considered in connection with our other announcements for the coming year, the EDUCATOR commends them to the attention of its readers. The editor adds the personal request that all who feel responsive to these suggestions immediately indicate their interest by mailing their personal criticisms or encouragements to the EDUCATOR.

This is what we said in the June number. Now we wish to make the invitation more personal. If you are in sympathy, mainly, with these views of educational co-operation, if you desire to encourage their discussion and participate in the advantages to be secured, please send us your name and address. If the responses are sufficiently encouraging, the EDUCATOR will undertake to issue a series of special studies in pamphlet form on the best means of school and home improvement. We want your suggestions and personal assistance. We should like to have every reader become a member of the Christian Educators' Association, or of any association by any other name that will bring the spirit of the school into the home and the spirit of the best home life into the school. Write to the EDUCATOR about it. Here is our platform for 1898: —

Better Education for Everybody.

Industrial and Moral Education for All.

Fullest Co-operation Between School and Home.

Join us.

## Queries for Students

[This is a standing sub-department for the benefit of all who are students. It should enable every one to read the EDUCATOR and every other paper more intelligently. All these "Queries" are taken from the articles in this number of the paper, or directly suggested by them. They are excellent for general information exercises in the school and home. The EDUCATOR will be glad to credit the best set of answers to these questions, sent each month, by schools or individuals. This may serve as the introduction of a Correspondence Department valuable to all concerned.]

1. What is? — sociology, ratiocination, paregoric, altruism, egoism, metamorphosis, food of silkworms, the plural of medium, the singular of sputa, the oldest school in America (page 12).

2. Where is? — Hampton Institute, Tuskegee Institute, Smithsonian Institute, Northfield Institute, The Trans-Mississippi International Exposition, Mayaguez.

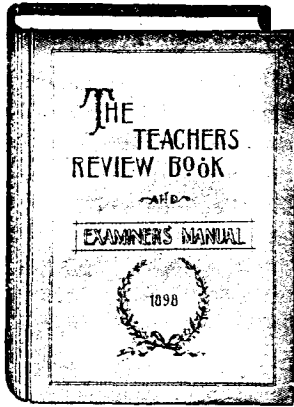
3. Who was? — Marquette, James B. Eads, John C. Fremont, Dean Stanley, ex-President Cleveland's "paramount commissioner" to Hawaii, Horace Mann, Cassandra, Professor Norton.

4. Pronounce — apparatus, overture, coadjutor, the list of words on page 14.

5. Meaning of? — arc, radii, overture, Celestial, antiseptic, matriculation, category, esthetic, extravaganza, postulate, inhibit, epitomize, analogy, apostrophe, — origin of "court-plaster"?

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## Two New Books for Teachers, By PROFESSOR B. A. HINSDALE.

### Jesus as a Teacher.

The scope of this book may be seen from the following chapter headings:

An Introductory View; The Education of Jesus (two chapters); His Insight into Mind and Character; His Relation to Tradition and Legalism; How Jesus Used the Scriptures; His Historical Antecedents; His Institutions; His Authority; His Use of Accommodation; His Methods of Teaching (three chapters); His Recognition of Apperception; His Use of the Developing Method; His Recognition of Moral Perspective; How He Handled Cases; His Severity; Jesus and the Child; His Theory of Teaching. To these there is also added a second part, "The Making of the New Testament."

#### SOME NOTICES.

It seems to me praise to your book to say that it has few or no cant expressions in it, and is everywhere a translation of the light of the old into the language of the present day. What you have written is a very valuable book on the method of instruction of the Great Teacher.—*Dr. W. T. Harris.*

"Jesus as a Teacher," by Prof. B. A. Hinsdale, is a sober, substantial, well-digested book. It holds itself more aloof from the merely formal side of truth, and gives itself more freely to its vital aspects than one would expect it to do as arising in the interests of pedagogy. The volume carefully presents the circumstances which imparted character to the teachings of Christ, as well as a full consideration of his spirit and method.—*The Didal.*

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