

CHRISTIAN EDUCATOR

A SCHOOL AND HOME MAGAZINE

JANUARY



PROF. GOODLOE H. BELL.

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The Christian Educator

IS DEVOTED TO

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of the Hand, Head, and Heart, in the
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Edited by FRANK WILLIAM HOWE.

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ANOTHER PLAIN TALK.

THIS month we have some special words for our readers who have allowed their subscriptions to get in arrears. Would it not be a good new-year resolution to pay up your financial debt to the EDUCATOR? We might specify quite a number of reasons to show that a magazine needs the prompt financial support of its readers. The EDUCATOR is not an endowed institution, and it carries practically no advertisements; it is all solid reading, at very low subscription price. There are doubtless other magazines that give more than six pages for one cent,—five cents for the month,—but the EDUCATOR is worth alone more than its cost to our readers.

But we are always glad to extend to our patrons the added advantages of any arrangement we can make with the publishers of other good periodicals. We have a special list of remarkable combination offers on the third page of cover. We expect that it will be carefully read. Notice that there are upwards of thirty standard weeklies and monthlies that can be had with the EDUCATOR for the *one price* of the other periodical. In other words, in

these cases our subscribers get the EDUCATOR *free* by subscribing with us for the other periodical named. (We almost hesitate to point out that in some cases—see list—both the EDUCATOR and the other magazine can be had for *less* than the regular price of the other magazine.)

How can we do this?—We don't do it; the *other magazine* does it for the sake of getting *new* subscribers through the influence of the EDUCATOR. That is the truth in a nutshell. We simply pass the offer along to those who want the EDUCATOR and are willing to get it *free* by paying the regular price—or less—for a well-known periodical.

With this incentive before our delinquent subscribers, we expect their renewals will be promptly sent in. It is important to state that you are *not* an "old subscriber" for the *other* periodical which you order. If you want the EDUCATOR only, send fifty cents at once.

Note our special last-page offer with the *Teachers' World*. Send to us for sample copies. The regular commission will be given on the EDUCATOR in this combination. Write for particulars.

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THE CHRISTIAN EDUCATOR

A School and Home Magazine

Edited by FRANK WILLIAM HOWE.

VOL. III.

JANUARY, 1899.

No. 5.

GEMS FOR THOUGHT.

[From the author of "Christian Education."]

THE true object of education is to restore the image of God in the soul.

MORAL excellence and fine mental qualities are not the result of accident.

IN the word of God the mind finds subject for the deepest thought, the loftiest aspiration.

THE symmetrical structure of a strong, beautiful character is built up by individual acts of duty.

THE first study of youth should be to know themselves, and how to keep their bodies in health.

THOSE who are conversant with the Scriptures will be found to be men and women who exert an elevating influence.

GOD is the foundation of everything. All true science is in harmony with his works; all true education leads to obedience to his government.

MANY consider it a mark of humility to be ignorant and uncultivated. Such persons are deceived as to what constitutes true humility and Christian meekness.

PEARLS FROM BEECHER.

THE mother's heart is the child's schoolroom.

Defeat is a school in which truth always grows strong.

Doctrine is nothing but the skin of truth set up and stuffed.

God pardons like a mother who kisses the offense into everlasting forgetfulness.

HISTORY will disregard him who disregards her.
— *Dr. Philip Schaff.*

THE schools in which Jesus learned, were not the schools of the scribes, but the school of holy obedience, of sweet contentment, of unalloyed simplicity, of stainless purity, of cheerful toil.—
Canon Farrar.

SOME OBSERVATIONS.

IMPERIALISM — to be, or not to be — is still the dominant American question. In the scope of the issues involved, it is not less important than the old slavery question. In fact, it appears to be the same old question in a new form. Imperialistic expansion has never been in the interest of human freedom.

Take a long, steady look at our remarkable combination offers inside of second cover. The EDUCATOR alone costs only fifty cents, but in many of these combinations it costs nothing to the subscriber. Order at once.

THE term "education" is a misnomer when applied to any system that leaves the pupils powerless to help themselves, thus making them intellectual cripples. It becomes our duty, as teachers, to remove this tendency by cultivating self-help and self-reliance, as far as possible, in our daily administration.— *The Author of "Preston Papers."*

OUR correspondence department is growing in interest. One of the principal functions of an educational journal should be to stimulate a sense of fellowship between reader and writer. While the EDUCATOR means to be accurate and dignified, it does not assume to speak *ex cathedra* on any

subject. Every one of its readers is expected to exercise the right of private opinion — especially when that opinion pronounces the EDUCATOR to be the best home and school magazine published.

PROF. G. H. BELL.

As an esteemed contributor to the CHRISTIAN EDUCATOR and the virtual founder of Battle Creek College, a description of which constitutes our leading article this month, it is peculiarly fitting that the life-work of Prof. G. H. Bell should have more than a passing notice in this magazine. Though advanced in years, his life full-rounded with worthy achievement, he had his wish — “to die in the harness.” The accident which caused his death cut short an educational career that was still vigorous and fruitful, but “he lives yet in the lives of others.” In addition to the active daily instruction of a number of private and special students, he was engaged upon the preparation of a volume of lessons on Nature-Study, a subject in which he found perennial delight. It is to be hoped that the results of this latest work may yet be given to the public.

Professor Bell was widely known as a pioneer Michigan educator, having held important teaching positions in Grand Rapids, Portland, and elsewhere. He was born in Watertown, N. Y., in 1832, living to reach his sixty-seventh year. He became a resident of Battle Creek, Mich., in 1867, led hither by the necessity of medical treatment at the well-known Battle Creek Sanitarium. When Battle Creek College opened in 1872 with twelve students, Professor Bell, with one associate teacher, stood at its head, and continued his active service until its faculty numbered at least a dozen instructors. He lived to see its attendance swell from twelve to more than one thousand annually. Many able men and women who are now responsibly connected with the educational system which has grown out of this beginning, attribute their success to the aspirations for thoroughness and excellence which were encouraged by the paternal interest of this pioneer teacher.

Professor Bell was perhaps best known to the educational public as the author of a series of practical text-books on English. This series has been reviewed in the EDUCATOR, and is being used not only in the public schools of Michigan but in many other schools and homes throughout the United States. It begins with a primer of English grammar and closes with a volume on English and American literature. A selection from the preface

of this volume, in Professor Bell's own words, furnishes an index to the character of the man.

The importance of studying our best literature can scarcely be overestimated. Language, like other fine arts, is more effectually acquired through example than by technical instruction alone. Models are as essential in composition as they are in painting or in sculpture. There should be no conscious copying, nor any attempt at imitation; but when approached earnestly and lovingly, there is an inspiration in the productions of genius; they rouse our latent energies, and quicken our moral and intellectual perceptions. . . .

The real study of literature is the becoming acquainted with such writings as are by their intrinsic worth valuable to all people in all times. Such is the Bible; and such are all writings whose tendency is to call into healthy action the nobler attributes of our nature, thus contributing to the building up of a beautiful and symmetrical manhood. . . .

This leads us to the paramount object of studying literature in schools; namely, the developing of so pure a taste that the learner will be able to discriminate at once between real literature and trash. The time will come for our pupils when they can not have parents, teachers, or friends by their side to tell them whether or not a book is good reading. They must learn to recognize for themselves the moral tendency, the literary character, the trend of influence, which constitute the inherent power for good or evil of any piece of writing. There is but one way for teachers to inculcate this, and that is by getting their pupils so thoroughly enamored with what is true and beautiful that they will instinctively turn away from everything of an opposite nature.

These sentiments expressed the philosophy which was exemplified in his own life, and the light and sweetness of it left their seal upon his character.

“Dead he lay among his books,
The peace of God was in his looks.”

CHURCH AND STATE EDUCATION.—II.

UNDER this title in the EDUCATOR for December the question was raised as to whether the time had fully come to discuss the fundamental principles of education in its relations to religion and civil government—the church and the state. This does not assume that the subject has never been discussed before; but there are certain modern phases of it that have certainly not yet received adequate consideration.

Some months ago the editor of the EDUCATOR addressed the following questions to presidents and professors of various American universities and colleges:—

1. In your opinion what is the exact distinction between *moral* and *religious* education?
2. What is the distinction between *morality* and *religiosity* as you think each may properly be taught in the public schools?

A number of answers were received, all of them courteous and concise. Some were apologetic for not attempting to answer the questions for lack of time, and some did not answer the questions at all; probably that was to be expected. But all the answers afforded evidence that the questions were regarded with some suspicion; and in nearly every case there was an appearance of seeking to evade a direct answer; that is, supposing the questions to have been definitely understood. Probably this also was to be expected, as university professors doubtless often need to stand on guard against being drawn into some compromising position, even by so modest a journal as the CHRISTIAN EDUCATOR. The questions were asked with some timidity, but in good faith and with an earnest desire to ascertain the opinions of those whom the public looks to as the leaders of educational thought. Perhaps later some of the most satisfactory answers received may be presented in the EDUCATOR for further consideration.

The fact that the leaders are generally reticent on the subject of these questions shows the delicacy of the issue; but it must certainly be regarded as an issue in the educational world when prominent educational journals are beginning to give expression to it; and every honest, careful-thinking teacher and parent must begin to feel his professional and personal obligation to define his own views and practise in reference to it. In a recent number of the *Michigan School Moderator* the editor thus epitomizes a portion of the president's address at the annual session of the Michigan State Teachers' Association:—

The educational ideal is crippled by separation of church and state. The religious and secular training are intertwined root and branch. There is no conflict between religion and science. The province of the new education is to restore the esthetic to its true place in the common schools. Manual training is also a coming factor in the schools. We must prepare for it and know how to correlate it. The time is nearly come when the principal theme on our programs [of the Association] will be manual training. God speed the day.

The EDUCATOR heartily agrees with the sentiment expressed in every sentence of this extract, except the first and possibly the fourth. If by "esthetic" is meant the proper artistic and philosophic balance between the various elements of complete education,—if it means the conjoint and symmetrical education of hand, head, and heart to their highest development for good,—then we heartily agree with that sentence also. We are

glad to see manual and religious education given this emphasis, especially as heretofore it has rested almost exclusively on the merely intellectual. And the EDUCATOR believes that the church, if it should rise to the full measure of its duty and ability, could give a complete and symmetrical education without the pecuniary aid or direction of the state. Perhaps the church will never do this fully; but *the state never can*, neither *without* the church nor *with any organic co-operation* from it. *The state can not atone for, or make up, any neglect of the duty that belongs to the church and the home.* In this sense we must scrupulously follow the words of Grant, "Keep the church and the state forever separate."

The church, speaking generally, is the domain of man's moral (ethical) and religious life, without which no education is symmetrical and complete. The state is the domain of man's social, civil, and physical life, without the cultivation of which it is equally impossible for education to be complete and symmetrical. The intellectual life is, of course, common to both of these domains. The state can deal, educationally or penally, only with man's *body* and his *outward acts*. It can furnish certain conditions, incentives, and processes designed for intellectual education; but it is *absolutely powerless* to compel a person to be educated without the co-operation of his own will. So, too, through its educational machinery it may suggest motives and influences to moral conduct; but it has no sanction by which to *enforce* such motives and requirements except *physical force*.

These are the natural and inevitable limitations of the state as against the individual. The function of the state is to *compel* men to be *civil* who *will not* to be *moral* and *religious*. So the state can never give the perfect kind of moral and religious education, will-training, that is needed by every individual. This can be given only by that Divine Spirit that is implied in the church and the home. Let the church do its work side by side with the state—not under it—yielding to physical force if necessary, but never forcing. Let the state work side by side with the church,—not under it,—never seeking to regulate or force the conscience of the individual, but giving him the fullest encouragement and freedom for physical, intellectual, and spiritual self-expression. Let the home initiate and supplement the work of both the state school and the church instruction. These are the conditions for the wisest, safest, completest education for true citizenship in this world and a better one hereafter.

BATTLE CREEK COLLEGE.

W. H. MCKEE.

EVER since its establishment, a quarter of a century ago, Battle Creek College has followed the customary educational methods in vogue among institutions of its grade in general, except that somewhat more attention has always been given to the study of the Bible than is the case elsewhere. The first quarter of the present school year has seen a radical innovation. The consecutive courses arranged to meet the requirements of admission to other institutions have been entirely abolished. No more degrees will be given. The College has become distinctively a missionary training-school. Every subject taught is referred to the Biblical basis upon which it rests. The sole purpose is to develop in its students as rapidly as possible the capacities which each may have to bring and pre-

sent to those who will receive it, the gospel of salvation from sin, want, and disease.

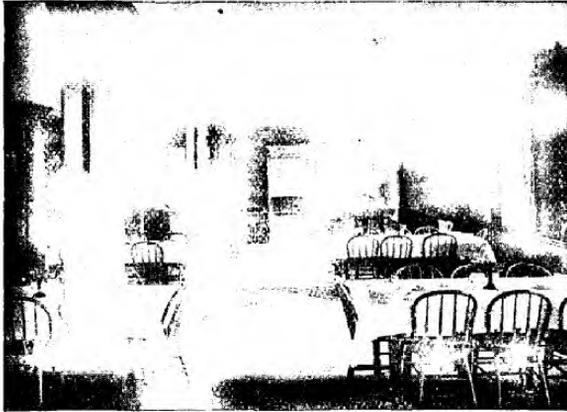
This involves in its practical application a new departure in education, which has no modern model. The subject of education, and educational methods, has occupied a greater share of attention for the past few years than ever before. Educational reform is strenuously called for everywhere; although it is rarely made very clear what that reform should be, or how it should be carried out. The ancient university methods which have been handed down more or less directly from medieval times, have been earnestly decried, and still they are in some measure followed.

Yet, although university methods may be criticized, very few of those who have passed successfully through a course of university training will deny its benefits, or refuse to acknowledge that the



great universities fulfil the purpose of their existence. The same thing may be said of all the higher grade of professional and technical schools, and of the public school system which leads up to them and to the universities.

If this be granted, and yet the modern educa-



THE DINING-ROOM.

tional system be still held subject to grave criticism, it only remains to believe that the purpose which this system has in view is somewhere seriously at fault. Yet this would not be acknowledged to be true by all. Indeed, from their own point of view, it would not be true for all; because education should fit its recipients for the occupations which they intend to follow. Four years in a theological school would scarcely be expected to fit a man to take command of a battle-ship or lead a charge at the head of a regiment of rough riders. Those who have such ambitions must study at the military or naval academies. So it is to be expected that those whose ambitions are selfish and finite should take their preparatory courses of study where the ends sought to be attained are finite and selfish. These are what the purposes of the popular schools and educational systems have always been.

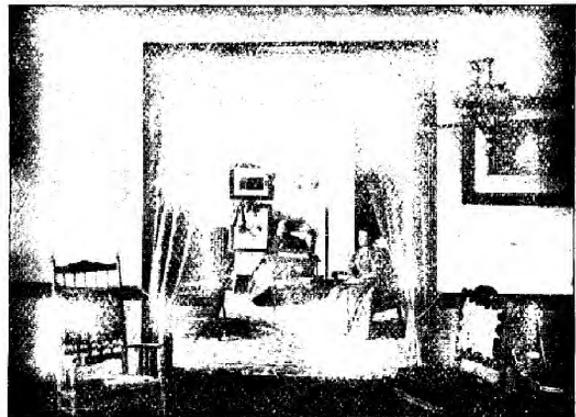
There is a contrast to this, however. It has found its exemplification alone in the "schools of the prophets," and the discipleship of John the Baptist and Jesus of Nazareth. The purposes of these schools were unselfish, and the ends sought infinite with an eternity of fruition.

Here, then, the contrast is made and the distinction drawn. The question then becomes whether the basis of education shall be upon the traditions of men or upon the creative and written word of God. Those who uphold the latter proposition take the ground that the Bible and created nature are unrivaled as an educating power; that in them

there is food for the deepest thought, and an incentive to the loftiest aspiration; that the written word contains the most instructive history that men possess, for it was indited by the divine hand, drawn from the fountain of eternal truth by omniscience, and preserved in purity by the power of omnipotence. It is therefore the repository of all necessary truth. It lights up the prehistoric past, of which man has lost the record, and dispels the mists his eyes can not penetrate; by it the foundations of the earth are laid bare, its frame dissected, and the manner of its building shown; here, only, the history of the race is expressed without fear and without favor. In this text-book the problems are solved of life and its duties, the future and its eternal destinies, which have occupied the minds of men from the beginning, and are considered, by those who know not this book, as unsolved and unsolvable.

Biblical principles are vital to human prosperity in all the relations of life. A knowledge of them is essential as a preliminary preparation for every occupation and situation in human experience. If the present purpose of this life is regeneration, the true object of education is to fit each individual for the attainment of this end,—to restore in the soul the true image of God. To accomplish this the chief study of man should not be man and his works, but God and his word.

Thus a knowledge of created things is obtained from the original source. The student does not study his text-book in order to understand his teacher, he goes direct to his teacher to be in-



A PARLOR.

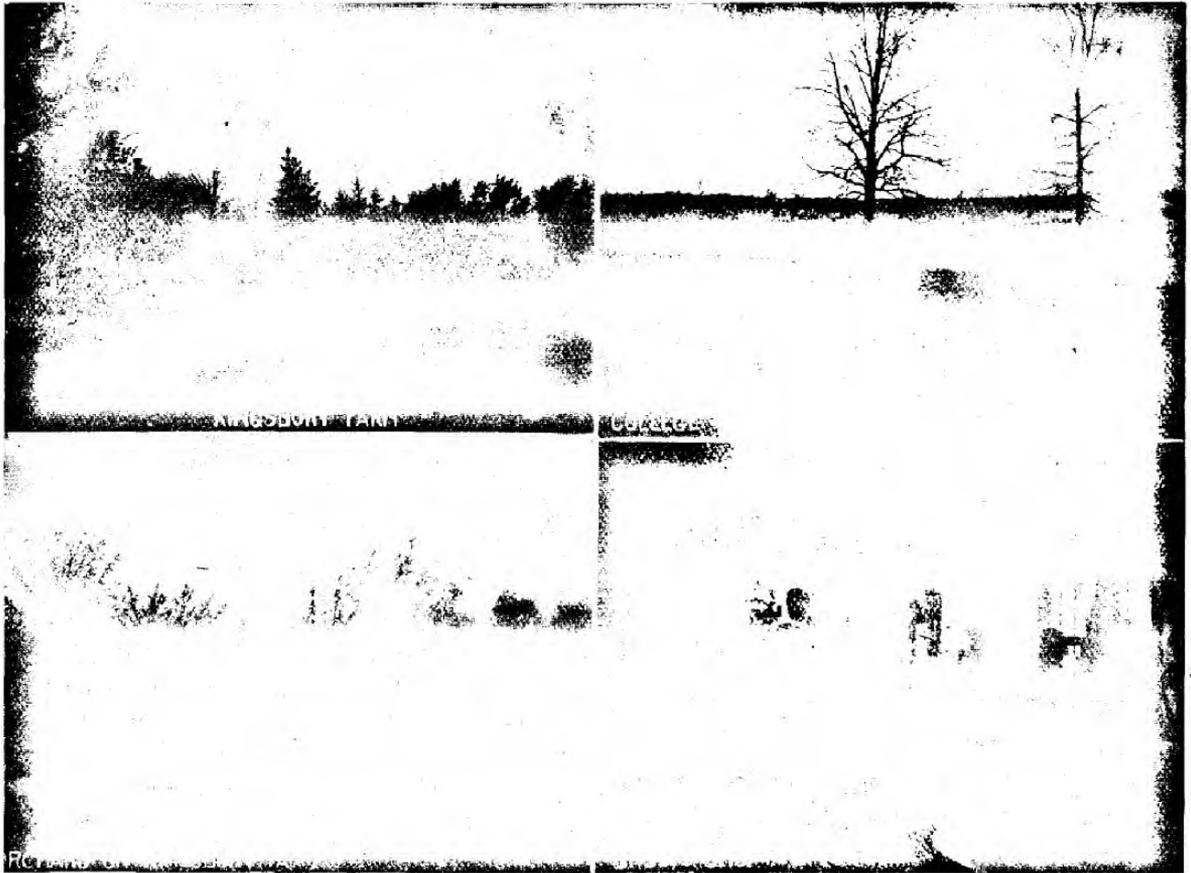
structed regarding the matter contained in his text-book. So, this true education is personal, and fits its recipient for the highest success,—that which is permanent and eternal; it gives a broad education, having a breadth as unlimited as eter-

nity, upon which it looks from every point of its ever-widening circle ; it is individual, for it provides for every individual need ; general, because it fits one to minister to all the necessities of needy and suffering mankind.

This is God's higher education ; it is the *highest* education, and is open alike to rich and poor, bond and free, Jew and Gentile—there are no privileged classes here—and no aristocracy of intellect. God's purpose in the divine plan of education is not to develop those capacities which shall to the

fear of the Lord. Only that education which is established upon this basis is free from deceptions, while no other so energizes the mind and strengthens the intellect. Those who study the words and works of Christ, and follow in his steps, will "not walk in darkness, but shall have the light of life."

He whose path is lighted by the "Light of the world," will fall into no error, but he will escape from all that is false and spurious, and receive into his mind and life only that which is true and genuine.



THE INDUSTRIAL DEPARTMENT.

greatest degree satisfy a spirit of pride, emulation, and competition,—a selfish and exclusive culture,—but it is to develop God-likeness in man.

By degrees the human mind adapts itself to those things upon which it is taught to dwell, and it is not long before the student whose attention is absorbed with error becomes a living example of the truth of the fact that "as a man thinketh in his heart, so is he."

On the other hand, training in the truth of God both develops the mind and imparts secular knowledge as well, for true education is founded in the

Thus as the mind of the student closely allies itself with the Source of all knowledge and wisdom, the greater is his intellectual as well as spiritual advancement. The essential education is in the knowledge of God. When this is acquired, the spirit and grace of God will use those faculties which have thus become amenable to their direction for the best purposes on earth, and directly in the primary lines from which they will be graduated into the wider uses of the immortal life.

The highest education ever granted to man was given in a three-years' course to a class of twelve

in the villages, and among the hills, and along the mountain paths of Palestine, nineteen hundred years ago. No accepted course in the schools of the rabbis could have produced such results as this training which the Great Teacher gave his chosen twelve.

The conditions are not radically different to-day, except in the lapse of time and the progress of the fulfilment of God's purposes toward man and the world. Yet to cut loose from traditional methods and establish a school upon the divine plan is something which man unaided and in his own wisdom alone can not do; there is too long a heredity of human error in both teacher and pupil to be met and overcome. Yet in the face of the realization of this, the attempt has been made to exemplify the divine plan of education.

The faculty and students of the college at Battle Creek, Mich., have committed themselves to the attainment of this lofty purpose, by the help of the Spirit of God. It is a great and notable effort. Earnest-minded educators will watch its progress with interest, and many with prayer.

IMPORTANCE OF SOCIAL CULTURE.

God created man a social being. Therefore he who neglects properly to cultivate his social nature, fails to perform a duty that the Creator has clearly indicated. Unfortunately, many people go to excess in their efforts to be social, and devote an undue amount of time and money to what are known as "social functions." In doing this they often resort to means of diversion that are positively wrong and demoralizing. Unfortunately, too, there are others, who, in order to avoid the follies, excesses, and social dissipations of those just described, give no attention whatever to sociability, and do their utmost to discourage it in their children and other people generally. Such persons naturally become cold, selfish, unfeeling, morose, and sour; and if ever, by chance, they are thrown into association with others, are ill at ease, and usually succeed in making every one else in the company uncomfortable also. Not only so, but they are, as a rule, discourteous, if not absolutely boorish.

Evidently, God is not pleased with the course pursued by either of these classes. Both go to an extreme, and neither makes a proper use of the talent God has given. He desires his creatures to improve socially just as much as he does that they should make advancement mentally, morally, and

spiritually. Indeed, he who neglects the proper cultivation of his social nature, can not become strong and well equipped mentally, morally, and spiritually. So also, if he goes to the other extreme, and devotes too much time and energy to social life, he will become stunted and dwarfed as to those other important elements of good human character.

Those who make it a part of their misconceived religious life to be cold, unsocial, and exclusive, evidently are unconscious of the fact that a very important part of a well-rounded education is adequate social culture. They seem to think that the giving over of an evening to a social entertainment or reception is a sheer waste of time; while the fact is that such an occasion, properly conducted, is one of the most elevating, improving, and refining experiences that those participating in it can have. Nowhere else can one obtain in so short a time better or more helpful knowledge of many-sided human nature, and nowhere else can he so easily acquire the much-to-be-desired ability to adapt himself to the peculiarities of other people, as in the well-conducted social circle. To every young man and woman about to enter upon the active duties of life, it is of the utmost importance that ample opportunity be afforded for the adequate training and development of the social nature. How important it is, then, that in our Christian educational work, sufficient attention be given to social culture, not that the young may "shine in society," but that they may the better glorify Him by whose sacred name they are called.

— *Youth's Instructor.*

THE more quiet and simple the life of the child, — the more free from artificial excitement, and the more in harmony with nature, — the more favorable is it to physical and mental vigor and to spiritual strength. — *E. G. White.*

EVERY child is a born worker. There never was a lazy child born on this earth. I wish to explain that: I do not mean a child when he is eight years old — when you have spoiled him. It is when he begins, and not after you have made him "sit still." "Sit still, and let me comb your hair — don't stir and make a muss. Sit still, and let me put on your cap and tie your shoes and put on your wraps." After a while these children will think they are a sort of a clothes-frame, or something of that kind — and they do sit still. — *Colonel Parker.*

MODERN EDUCATION AND THE GOSPEL.

W. W. PRESCOTT,
London. Eng.

The loftiest and most worthy ambition for any human being is that he may know God. Of such knowledge he may boast. "Thus saith the Lord, Let not the wise man glory in his wisdom, neither let the mighty man glory in his might, let not the rich man glory in his riches; but let him that glorieth glory in this, that he understandeth and knoweth me, that I am the Lord which exercise loving-kindness, judgment, and righteousness, in the earth: for in these things I delight, saith the Lord." Jer. 9:23, 24. But it is in and through the crucified Lord that this wisdom is revealed. "We preach Christ crucified, . . . the wisdom of God, . . . who of God is made unto us wisdom." And so it is written: "God forbid that I should glory, save in the cross of our Lord Jesus Christ." Thus it is evident that the knowledge upon which God himself places the highest estimate, and of which he permits man to boast, is knowledge of God as revealed to us through the cross of Christ.

But this involves that intimate union with the Lord, that personal acquaintance with him, which means salvation to us; for it is through knowledge of God that grace and peace are multiplied unto us, "according as his divine power hath given unto us all things that pertain unto life and godliness, through the knowledge of him." Thus it is God's power working upon and through the mind of man which brings salvation, and this is the gospel, which is "the power of God unto salvation." And so the experience of the gospel is set forth in these scriptures: "And this is life eternal, that they might know thee the only true God, and Jesus Christ, whom thou has sent." "Be not conformed to this world; but be ye transformed by the renewing of your mind." "And be renewed in the spirit of your mind." "And have put on the new man, which is renewed in knowledge after the image of him that created him." To attain to this experience, to be restored to that image of God in which man was at the first created, to have not simply some thoughts about God, but the mind filled with God's own thoughts, which are not our thoughts,—this is the highest development of which humanity is capable.

It follows, therefore, that the best education, in fact what might in all truth be called the only *real*

education, is that which makes God known to us in his true character as revealed through the cross of Jesus Christ. Here we deal with eternal realities. Here we are brought into the closest touch with the Infinite Mind. Here the finite mind of man is put to the utmost stretch in its effort to comprehend that which "passeth knowledge." Here the things which are seen are recognized as temporal, the highest uses of which are to make known to us the things not seen, which are eternal; and "everything which God has created is a little vocable from his grammar, by which he discloses his nature."

And the cross of Christ is not simply that instrument of death which was set up at Jerusalem more than eighteen hundred years ago; "unto us which are saved it is the power of God." The cross is Christ crucified; but Christ crucified is Christ risen from the dead, for "it was impossible that he should be holden" of death. Christ risen is the Living One who became dead, and behold he is "alive forevermore." The curse is death, and the curse is upon everything, and yet we see life manifested because Christ by his cross "hath abolished death, and hath brought life . . . to light through the gospel." Therefore the study of the cross, and what is revealed through it, is the study of the power of that life which overcomes death. And this is the power which we see on every side, upholding all things in spite of the curse,—the power of the gospel.

The truth which should be impressed upon the human mind from the earliest years is that "power belongeth unto God;" that in every revealing of power in the universe is given a view of God at work; and that thus he is making known his ways to the children of men, that they may believe in him for salvation. Thus the student, whether young or old, would be brought constantly face to face with God in his study, and he would experience the truth of the scripture which says, "But ask now the beasts, and they shall teach thee; and the fowls of the air, and they shall tell thee: or speak to the earth, and it shall teach thee; and the fishes of the sea shall declare unto thee. Who knoweth not in all these that the hand of the Lord hath wrought this? In whose hand is the life [margin] of every living thing, and the breath of all mankind." Job 12:7-10.

Thus the lesson is taught that everything which

God has made, including man himself, is entirely dependent upon the direct and constant working of the power of God. It is not because of any inherent power that the earth maintains its position in space, and continues its course around the sun with unerring precision; it is by no power of its own that it yields the annual harvests. These results are due to the direct working of the power of God. "He . . . hangeth the earth upon nothing." "He causeth the grass to grow for the cattle, and herb for the service of man; that he may bring forth food out of the earth." Matter has no inherent power which gives it form and permanence. The Creator of all things is the upholder of all. "Thou hast made . . . the earth, and all things that are therein, . . . and thou preservest them all." "All things have been created through him [Jesus Christ] and unto him; and he is before all things, and in him all things hold together."

In ancient times men saw in each different manifestation of the one power another god, and so they had "gods many and lords many." Instead of recognizing the true God at work in the things which he had made, they regarded the things themselves as gods, and thus "they exchanged the truth of God for a lie, and worshiped and served the creature [the created thing] rather than the Creator." This led to the substitution of an image of their own making even for that which God had made, which was simply putting into a visible form their own ideas of God, and deifying their own thought. And so when the children of Israel departed from the Lord at Sinai, "they made a calf in those days, and offered sacrifice unto the idol, and rejoiced in the works of their own hands." When they rejoiced in the works of their own hands instead of in the works of the Lord's hands, they shut out God from his rightful place and attempted to exalt themselves into the place of God. But this is recognized at once as heathenism and gross idolatry, "and even as they refused to have God in their knowledge, God gave them up unto a reprobate mind, to do those things which are not fitting."

In modern times the same principle has worked in a different guise. Instead of regarding each different manifestation of power or force as a god and then making an image as a visible object of worship, a name (a thought-image) has been presented before the mind, and this has shut out God from the thought. In how many class rooms are the motions of the heavenly bodies studied simply to teach the lesson that God "calleth them all by name; by the greatness of his might, and for that

he is strong in power, not one is lacking"? And this visible exhibition of his power is teaching the gospel of "the exceeding greatness of his power to usward who believe." It is intended to say to us continually, "He giveth power to the faint; and to them that have no might he increaseth strength." But all this is hidden from the mind by the word "gravitation." And in many minds this thought-image (this image-ination) just as effectually shuts out God from his rightful place in the mind, and prevents him from working with his creative power to renew the mind, as if it were a visible image which was substituted for the true God. To fill the mind with man's thought instead of God's thought is the very essence of idolatry. "The Lord knoweth the thoughts of the wise, that they are vain." It was when men knew God, but refused to glorify him as God, that they "became vain in their imaginations, and their foolish heart was darkened."

In the same way the name (or thought-image) "gravity" is brought before the student's mind in explaining the phenomena arising from the working of a power which draws to, and tends to hold everything upon, the surface of the earth. Instead of seeing and teaching in this revealing of God's power the fact made thus visible to all men, that with loving-kindness he has drawn us, and that in it God is proclaiming the gospel truth, "And I, if I be lifted up from the earth, will draw all men unto me," philosophers have covered all this with a name of their own invention.

Great artists write their names upon their pictures, and the greater the artist the more pleased is the owner of the picture to point out the name to admiring friends. So God has written his name, by the power of the cross of Christ, upon every blade of grass, upon every leaf of the forest, upon every stone of the mountain, upon every cloud of the sky, yea, upon everything which he has made, in order that "his eternal power and divinity" might be "clearly seen," "being perceived through the things that are made." Thus would he teach "the gospel of the glory of the blessed God," "the power of God unto salvation."

But the whole tendency of modern education has been to erase the name of God from his works, and so to hide the gospel of his eternal power "in the words which man's wisdom teacheth." The illustrations which we have used are simply two among the many. In every department of science and philosophy the same thing will be found, and this paganism, this essential heathenism and idolatry, is fast shutting out the real knowledge of the true

God from the minds of the present generation. It is no answer to this indictment to say that we are living in a most enlightened age. So long as Greek and Roman philosophy, art, and literature, the products of a purely heathen civilization, are made the standard and the test of all excellence, there will be no rising of the stream higher than the fountain. So long as the opinions of men, the deductions of a purely human science, "science falsely so called," whether ancient or modern, are accepted as final authority, and education consists to such a large degree in learning names and man-made theories, rather than in dealing with eternal truth, "the truth as it is in Jesus,"—so long will the human mind be in bondage "to the weak and beggarly rudiments." But the truth makes free, and God designs that through it every being, whom he has made in his image "shall be delivered from the bondage of corruption into the liberty of the glory of the children of God."

It is plain enough, therefore, that the one purpose in all true education should be to become acquainted with spiritual truth, spiritual and yet the most real thing in the world; to learn that the reality of all visible things is "the invisible God;" to understand from personal experience that gospel power which is seen in the things that are made, that it may work in us "according to the working whereby he is able even to subject all things unto himself," to know God. "For of him, and through him, and unto him, are all things. To him be the glory forever."

SCIENTIFIC STUDY.—V.

OTHO C. GODSMARK, M. D.

LIGHT.

(Continued.)

THE seven distinct colors obtained by spectrum analysis of the solar-light ray are but the different manifestations of vibration that come within the field of light. As was stated in the preceding article, the red ray is the lowest form of light, while the violet ray is the highest. By this we mean simply that the lowest number of vibrations per second that is recognized by the eye produces the red ray of light. If the number of vibrations per second be gradually increased, we find the red ray gradually blending into the next higher order of light,—the orange ray, this in turn will change to yellow, and this to the next in order, until we pass through all seven of the primary solar colors. After reaching the seventh, or violet ray, if we then continue to increase the vibrations

per second, we soon pass out of the field of light into the sphere of electricity; that is, the vibrations become so rapid that the eye no longer responds to their influence.

Light has a definite range of manifestation, similar to that which we found sound to occupy (see CHRISTIAN EDUCATOR, September number), and as the pitch of sound is raised by increasing the rapidity of vibration, so the pitch of light is raised by increasing the number of vibrations. And just as truly as in passing a certain point of rapidity we left the field of sound behind, so by increasing the vibrations to a certain point we pass beyond the field of light.

It is not well, or necessary, to encumber either the memory or this article with the number of vibrations required per second to produce each of the seven distinct colors of the solar spectrum; it is sufficient to say that the red ray represents about 481,536,000,000,000 vibrations per second, while the other extreme of light manifestation, the violet, is produced by about 722,304,000,000,000 vibrations per second. Beyond this point it ceases to be light, and we know it as electricity. While light affords an interesting field of study, yet we can give it only a passing glance here until we have carried our investigations of vibration farther, when we may return to this and other interesting topics, and consider them with their associated phenomena as fully as space and time permit.

As we increase or diminish the number of vibrations per second, we pass gradually from one ray to the next higher or lower. The change is not abrupt; but one color merges or blends beautifully into the next in order. The same is true in the field of sound, which may be illustrated in the following manner. With a violin, properly tuned and in position, carefully draw the bow over any of the open strings, say the D string. Now by pressing the same string with the forefinger in the proper place and again drawing the bow across the string we hear the tone known as E. What have we done?—Simply this; by pressing the string against the finger board we shortened the string sufficiently to increase the number of vibrations per second so that the next higher tone in the scale was produced. Now suppose we place the finger as low down on the same string as possible and while drawing the bow as before we gradually slide the finger up the string to that point where we first placed it to produce the tone E. We have now merged one tone into the other instead of passing directly from one tone to the other. This same

sliding up and down—raising and lowering the number of vibrations—may be seen in all phases of vibratory manifestation, whether they be in the range of sound, heat, or light.

With this brief, preparatory study of this one phase of light, we leave it to study the same phase of electricity; after which we shall return and consider the subjects already presented in the light of the simple principles here suggested, and which we believe will help both teacher and student to grasp many of the seemingly difficult, obscure, and contradictory statements of science.

EDUCATIONAL EXTENSION WORK.

DAVID PAULSON, M. D.

A VAST number of people have not had any educational advantages beyond those afforded by the common schools. It is only a small percentage who have either the means or the time to finish the high school, college, or university. This lack has to be made up in the fierce struggle of every-day life. One's environment is a constant educator, but unfortunately it is bound to be more or less circumscribed, and does not tend to produce the depth of thought and mind that is desirable. It is to supply this need, that many of the popular magazines and papers of the day have found so large a field. But even the majority of these contain instruction of a more or less weak and insipid character. The stories contain a sentimental vein, many of the articles are written in such a manner as to cater to the sensational, and that which is of solid merit is usually contained in only a small part of the journal.

During the last few years many of our colleges and other institutions of learning have inaugurated what has been known as "college extension" work, "home schools," and "schools of correspondence," and the success that some of them have reached has been truly phenomenal. But most of these efforts are based upon the study of history, language, and theoretical lines of a similar character. There has been a "long-felt want" on the part of many that a work should be undertaken to educate the masses in lines of actual usefulness for God and humanity, to teach them how to care for both body and soul, point out the common errors in diet, teach the relation between vicious habits and ill health, and other plain, practical subjects which are so intensely useful, particularly when health has been lost as a result of not knowing the very things that our common schools, and even our higher institutions of learning, touch with only the

tips of their fingers. The average student when he is graduated from the university knows a great deal more about Greek statuary than he knows how to make proper combinations of foods which will tend to produce such magnificent physiques as the Greeks had before they lapsed into the vicious, degenerate habits which ripened them for their doom.

To fill this need, the Sanitarium Training-School for Nurses, in Battle Creek, Mich., has recently inaugurated a School of Correspondence, through which it is hoped that hundreds of young men and women will, at their own firesides, soon be receiving some of the remarkable advantages that this institution offers in preparing young men and women not only for their own spiritual and physical development, but also to teach others to participate in the same blessings.

THE DISCIPLINE OF LIFE.

SOONER or later we find out that life is not a holiday but a discipline. Earlier or later we all discover that the world is not a playground; it is quite clear God means it for a school. The moment we forget that, the puzzle of life begins. We try to play in school; the Master does not mind that so much for its own sake, for he likes to see his children happy, but in our playing we neglect our lessons. We do not see how much there is to learn, and we do not care; but our Master cares. He has a perfectly overpowering and inexplicable solicitude for our education; and because he loves us, he comes into the school sometimes and speaks to us. He may speak very softly and gently, or very loudly. Sometimes a look is enough, and we understand it, like Peter, and go out at once, and weep bitterly. Sometimes the voice is like a thunderclap startling a summer night. But one thing we may be sure of—the task he sets us to is never measured by our delinquency.

The discipline may seem far less than our desert, or even to our eye ten times more. But it is not measured by these; it is measured by God's solicitude for our progress; measured solely by God's love; measured solely that the scholar may be better educated when he arrives at his Father. The discipline of life is a preparation for meeting the Father. When we arrive there "to behold his beauty," we must have the educated eye; and that must be trained here. We must become so pure in heart—and it needs much practise—that we shall "see God." That explains life—why God puts man in the crucible, and makes him pure by fire.—*Henry Drummond.*

BIBLE PSYCHOLOGY.—III.

BY THE EDITOR.

THE last preceding article closed with the question, "What is the soul and the spirit? Is the soul the life? Is the spirit the aggregate moral character?" Were I to answer these categorically I would say "Yes" to both questions. But these articles are designed to be investigative studies, not dogmatic pronouncements of individual opinion. They are interrogative rather than affirmative, except where the positive statements of Scripture can be produced. Even then the investigative attitude requires that we take heed *how* we hear, and whether we *correctly* understand what is written. But we may be sure that a reverent study of the Word, comparing scripture with scripture, will ultimately lead us into all that can be known of this important subject.

As to the soul of man, we have more direct and definite statements of Scripture than can be found concerning his body or spirit. This would seem to imply the fundamental importance of the soul in respect to the body and spirit, as the motive energy of being.

In Lev. 17: 11, 14, this reason is given for prohibiting the eating of blood: "For the life of the flesh is in the blood: and I have given it to you upon the altar to make atonement for your souls: for it is the blood that maketh atonement by reason of the life. For as to the life of all flesh, the blood thereof is with the life thereof." (R. V.) And in Eze. 18: 4 it is said, "The soul that sinneth, it shall die."

In both of these passages the same Hebrew word *nephesh* is used for the English words "soul" and "life," and the meaning of this word *nephesh* is the *vital principle* or essence. These passages would be not only intelligible, but most intelligible, if the word "life" were read in each instance where "soul" occurs; for the soul *is* the life that *is* in the blood. The life is not a material substance identical with the blood, but the blood is the vehicle in which life is carried to all the tissues of the flesh. As heat is carried in water, so life is carried in the blood; and the Scripture regards the blood as sacred because of the life it bears. Hence in all the sacrificial types, life is given for life *in the pouring out of the blood* which is the vehicle of life. The whole body and being is filled with life

when healthy blood circulates through it. If this circulation is stopped, vitality ceases — the "soul" dies, the life disappears.

To any who would ask, What, then, becomes of the doctrine of the soul's immortality? it might be sufficient to say that we are not now directly investigating the origin and authority of that doctrine. But it ought to be said, further, that nowhere in the Scripture is the word "immortality" coupled with the "soul" nor asserted or assumed of the soul. Until this statement can be modified or controverted from the showing of the Scriptures themselves, it would be superfluous to turn aside in its defense.

From a further consideration of the scriptures quoted above, it will be seen that the soul is charged with responsibility for moral action. But moral responsibility necessarily presupposes mental responsibility. Sin begins in the thought. The thinker is the sinner. So we must consider the soul as the power that thinks and wills in the brain, as it feels in the senses and acts in the muscles. The normal circulation of the blood in the brain "secretes" thought as truly as it secretes bile in the liver; that is, life in the brain produces thought, immaterial as we know it, but capable of expression only through material agencies. If the brain is paralyzed, the life-blood can not act through it normally, and consciousness ceases. Consciousness can not exist apart from brain action, nor brain action without life. Hence, conscious human life can not exist apart from the body and blood which are its temple and vehicle.

How is it, then, with infra-human life? Do the birds and beasts and fishes also have a soul-life nourished in the blood? — There is no exception brought to view in the Scriptures. As all these creatures have body, so they have a life animating the body. Birds, as well as other animals, were sacrificed, and each poured out its life with its blood as type of the great Sacrifice who "poured out his soul unto death." Isa. 53: 12. And as to fishes, we read in Rev. 16: 3 that "every living soul died in the sea."

These statements are sufficient to show that there is no distinction between man and beast in respect of possessing a soul, or life, resident in the blood. Each has a body, a soul, and a spirit — "the spirit of man" and "the spirit of the beast."

Ecl. 3:21. The definition of what this spirit is can not be undertaken within the limits of this article; but it may be here premised that the distinction between the soul and spirit of man and that of the beast lies chiefly in the superiority of man's bodily organism. If man had the form and brain of a serpent, his life and thought would doubtless be of the same order. The man of generous mental development is the man who possesses the greatest possibilities of a noble soul and spiritual development. The life is limited and modified by the tenement it animates and the conditions that surround it. Hence, again, the fundamental importance of physiology in education.

As a preface to the next article, attention is called to the fact that the chief distinction shown in the Scriptures between man and beasts is that he is held to moral accountability while they are not. He was given dominion over them. They were responsible to him; but for his thoughts, words, and acts, he is responsible directly to his Creator.

What is "the spirit of man"?

SCIENCE AND THE BIBLE.

THE tragedy of culture during the last quarter century has been the warfare between religion and science. It has caused doubts often deepening to despair, mental confusion, and sometimes moral collapse, and sophistry, insincerity, and mental dishonesty, and the havoc has been greatest at an age when young men and women are most in earnest and most in need of positive convictions.

This long travail of soul is, I believe, about to end. God is not a hypocrite, who says one thing in his Word and does another in his works. In nature, Bible lies concealed; and in Bible, nature stands revealed. The day of antagonism is ending. Science, especially in those branches that deal with life and with man, is reaffirming religion. Scripture is being re-revealed. And when these two chief culture forces of the world join in an eternal peace of God, what a wealth of energy will be freed for the higher uses of human regeneration!

All nature is one; the undevout microscopist, geologist, botanist, etc., as well as the undevout astronomer, is mad. Present study of the human soul finds God's primeval revelation, so long obscured, written there. A new way is opened through nature, up to nature's God.—*G. Stanley Hall, in Christian Endeavor World.*

The Reading Circle

[This subdepartment is maintained as a guide to independent or reading-circle study for parents and teachers. This year the work is based on Professor Hinsdale's "Jesus as a Teacher" and "Horace Mann and the Common School Revival in the United States." Both books are excellent.]

"HORACE MANN."

CHAPTER VI.—MASSACHUSETTS NORMAL SCHOOLS.

Topics.—Meaning of "Normal;" Abbé de La Salle; The German and the English Training-Schools; Rev. Charles Brooks and Dr. H. Julius; Edmond Dwight's Beneficence; Question of its Distribution; The First Three Schools; Opposition; The Act of 1842; First Principal of the Lexington School; His Successor; Governor Everett's Summary of the Objects of the Normal Schools; Mann's Confession of Faith in the Institutions;

CHAPTER VII.—REPORTS TO THE BOARD OF EDUCATION.

Topics.—The Extent of Their Educational Influence; First Report (1837).—Defects of the School System—Schoolhouses—Diversity of Books—Apathy of Patrons—The Supplementary Report. Second Report.—Evidences of Progress—Compensation of Committeemen—Teaching Reading. The Third Report.—Libraries. Fourth Report.—Multiplication of Districts—Union Schools—Registers. Fifth Report.—Practical Value of Education. Sixth Report.—Physiology in the Schools—Bookkeeping. Seventh Report.—European Observations—The "Word Method"—Need of a National System—Reformatory Education. Eighth Report.—General Improvement—Bible in the Schools. Ninth Report.—School Motives and Morals—The Pestalozzian Methods. Tenth Report.—History of the Massachusetts System—District Consolidation. Eleventh Report.—Replies to Mann's Circulars. Twelfth Report.—General Survey—Difficulties Overcome—Enlightenment, not Compulsion.

"JESUS AS A TEACHER."

CHAPTER X. HIS USE OF ACCOMMODATION.

Topics.—Dr. Lange's Comment; Dr. Neander's Statement; Intellectual Accommodation; Material Accommodation *vs.* Formal Accommodation; Accommodation to the Feelings.

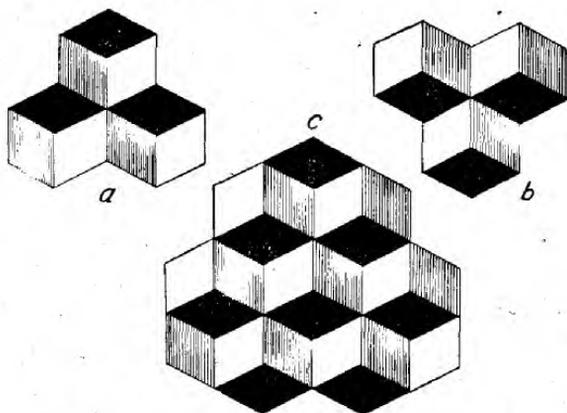
CHAPTERS XI, XII. HIS METHODS OF TEACHING.

Topics.—The Method of Didactic Discourse; The Didactic Dialogue; Questioning or Disputation; The Tribute Money; Gnomses and Proverbs; Oriental Philosophy; The Wisdom of Solomon; Hiram's Riddles; The Apocryphal Books; Home Atmosphere; The Beatitudes.

Quotations.—A "dropper" is a better instrument than a hose-pipe with which to fill a wine-glass. . . . Obedience is the organ of spiritual knowledge (*Robertson*). . . . We have not read an author till we have seen his object, whatever it may be, as he saw it (*Carlyle*). . . . Waiting upon the teaching of the Rabbi was eating the husks on which the swine fed. Waiting upon His teaching was sitting down at the feast that the prodigal's father spread.

THE MIND'S EYE.

UNDER this title, Professor Jastrow in the *Popular Science Monthly* shows how much we are accustomed to interpret what the eyes see by means of the mental images that are suggested to us. What we expect to see is the thing we see. The sense-object gives us the suggestion upon which the mind's creative act constructs the thought-object. The following figure illustrates this power of the mind's eye.



Are there six cubes in group *c*, or seven? It will depend on which number you look for. If you take group *a* as a guide, you will see six of such cubes in the larger group; while if your mind conceives the cubes suspended as in group *b*, you will as readily see seven in group *c*. When you have clearly seen both the six and the seven cubes in the large group, it is easy to see either at will. It is all "at sixes and sevens," according to the point of view. And what is thus true of intellectual conceptions is often true in morals. We are apt to see the things of life with a certain bias or prejudice that may greatly distort their real values.

THE ORIGIN OF THE ALPHABET.

WHEN students have learned the alphabet, and are old enough to begin thinking about the essential differences between spoken and written language, there always comes a time when they desire to look into the origin of writing and letters. This is the opportune time for giving the best information attainable. The following is a simplified statement

of what is given by the *Chicago Evening News* as the result of the latest investigations.

The Greek names of the letters of the alphabet are meaningless in Greek, and so must have been borrowed from an earlier source. Only recently has this been traced to the Hebrew and its kindred languages, through the Phœnician and Egyptian. "A" in Greek is called Alpha and in Hebrew Aleph, being the first letter in both cases. In Hebrew it means "bull," and even now the capital letter in English portrays the head and horns of that familiar beast when laid upon its side. But with a still older nation it is possible to carry the matter one more step toward the beginning of things; for with the Accadians, Hittites, and Sumerians, who preceded the Semitic Babylonians on the Mesopotamian plains, the word for bull is simply the sound of the letter, pronounced "au." "B" is Beta in Greek, and Beth in Hebrew, signifying house. In Hittite, house is "ab" or "ba," simply. "G" is Gamma or Gemel, and some have contended for its meaning camel. The sign formerly was a mere angle, like an "F" with the short cross stroke omitted, and from that it was named Gemel, crooked. And in the Hittite a crook is "ga."

"D," Delta or Daleth, is said to mean door; but though it may be possible to see a door in the triangular sign of the letter, it has the significance of pot, which is "du" in the older speech. For short "E" the Greeks had no name and the sound does not appear in the Semitic tongues at all. The Greeks called it "E" psilon—the latter word meaning short. In Sumerian and Carian "E" means house. "F" is the Greek Digamma, so called because it has the appearance of one Gamma placed on another. The Hebrews called it "vav," meaning book. This is probably the Hittite "vu."

"Z" comes next in Greek, in which it is called Zeta. In Hebrew the same sign is named Zain, and is said to stand for weapon. But the ancient symbol looks more like a number of weapons bound together than a single one. It is really the Hittite "za," a quiver. "Th," Theta in Greek, and Teth in the Semitic languages, is said to mean ball or globe. In Akkadian "o" means the sun. "I," Yod or Iota, is hand, and so hand means simply "i" in Akkadian. "L" is Lambda in Greek and Lamed in Hebrew, its sign being an inverted "V."

The Hittite word for yoke is "lu," and the Hebrew ox-goad is obviously connected with it.

"M" with its wavy form is Mu or Mim and is referred to an old word "mi," the sea or water. "N," which is Nu or Nun, is equivalent to a cuneiform symbol which shows a hand with a scepter, and stands for "nu" or "nun" lord or master. "O," Ain or O micron — little "o" — means eye, but goes back farther to the Cypriote "ya" or bright. "P," the Greek Pi, is probably an older word of much the same meaning as "ga," "bai," or "pai," a bend or turn. "R" Resh or Rho, is the ancient "ra," and means head in a number of languages. "S," Sigma or Shin, is the Hittite "shi," or tooth. The letter means biting, according to the Hebrew explanation.

There are some English letters not accounted for here; and these, which are in Greek and not in Hebrew, fill out the measure of the alphabet. Our "Y" is the Greek short U, or "U" psilon. In Hittite "u" means plant. Phi in Greek is probably "pu," or bud. Chi, which is a guttural sound like the German "ch," is written like the English "X." It means "sacred" in the oldest-known languages, and hence shows the exceedingly great age of the cross as a religious symbol. Psi, which is the English "ps," is the Cypriote "se," to give, and "O" mega, or great O, is the sign "u" in the Hittite.

NOTES ON ENGLISH.—NO. 5.

"GRADUATED."—It is not an infrequent thing to hear this word used as an intransitive verb, as, "He graduated from the high school." To graduate is to measure off, or classify, according to some standard. A "graduate" is a measured glass beaker used by the pharmacist or chemist, or it is a student who has passed the measure or standard of some educational institution by which, or from which, he "was graduated." The school graduates the student, not the student himself. To say that a certain student "graduated" in such or such a school, is as perverse as to say that he "educated" in that school.

"LA GRIPPE."—The prevalence of this disease at this season makes it very important that great care be taken to avoid exposure, and if exposed, to take immediate measures for vigorous treatment. The evil may be greatly mitigated by considering that the name of this ailment is of French origin. *Grippe* means a catarrhal influenza, and *la* is simply the French article *the* in its feminine form.

Hence, *La Grippe* is simply "the grip" in English. The malady is only aggravated by saying "*the La Grippe*." The grip is strong and definite enough in itself not to require the "double-header" article to lead it. Therefore say "*La Grippe*" or "the grippe," but not "*the La Grippe*."

PREPOSITIONS.—Prepositions are generally used best when they are not left at the end of a sentence. In the words of an old grammarian, "A preposition is a very bad word to end a sentence with." But there are instances where both the English idiom and common sense require the seeming preposition to stand last, as, "His absence was not accounted for." Here the word "for" could not with reason be placed anywhere else in the sentence. Perhaps it would be difficult to explain the word as a preposition, and some would be inclined to treat it as a sort of verbal enclitic particle. One dislikes to think of the English language as embarrassed by the necessity of such explanations, yet often they can not be avoided without entirely recasting the structure of the sentence. But it is certainly better to reconstruct such sentences as this, "He was a man who was accustomed to be looked up to;" or, "This practise will eventually be done away with."

HOW TO PRONOUNCE SPANISH NAMES EASILY.

THOSE who are ambitious to pronounce Spanish names correctly in the Spanish way can accomplish such pronunciation without much difficulty if they will remember to observe certain rules. Every letter in a Spanish word is sounded, and the accent in most words falls upon the last syllable. The letters are always pronounced in the same manner. *A* has the sound of the English *a* in *far*; *e* is sounded like a long *i* like *ee*, *o* as the second one in *hollow*, *u* like *oo* in *too*. Of the consonants, *h* is nearly silent, *c* is hard like the English *k*, except before *e* and *i*, when it has the sound of *th* in *think*, in the pure Castilian. In the Cuban-Spanish the sound is that of *s* in *sink*. *Z* has always the sound of *th*, and *d* is pronounced like the soft *th* in *they*. *Ch* has the sound of *ch* in *chess*; *ll* is liquid, as in *billiards*; *j* is a guttural *h*; *r* is rougher than in English, otherwise the same; *g* is sounded like an aspirated *h* before *e*, *j*, and *c*, and like the English *g* before the other vowels or a consonant. The other letters have the same sound as in English.—*Selected.*

THE FLAG SALUTE.

THE public schools are established to instruct the children in the rudiments of scientific knowledge. With patriotism, or any other sentiment, they have rightfully nothing to do. Every person, whether child or adult, has a right not to be patriotic if he so chooses, and he can not be molested in this or in the exercise of any other sentiment so long as he does no injury to the rights of others. This is true even conceding that the flag salute is an exhibition of true patriotism. But as a matter of fact, it is nothing of the kind. True patriotism is spontaneous, never forced. The children may be taught to repeat certain patriotic phrases, but this is very much like trying to make a patriot out of a parrot. Patriots are not made in that way.

Teach the children to respect the rights of one another and of all people; and teach them this by respecting their own rights. This will develop in them the principles of true manliness, and only as these principles are developed can there be any development of the patriotism that is of real worth to the state.—*American Sentinel*.

A WORK FOR ETERNITY.

It takes far less time and effort to spoil and mar the child's nature than to nourish and develop it in right directions. To suit our own convenience, because the little ones "are just children," we let the hours and opportunities slip by unheeded until it is too late more than to try to make amends for what we have already failed to do. Parents can not afford thus to make mistakes either through ignorance or carelessness, for as a great man of a past age has said: "If we work upon marble, it will perish; if we work upon brass, time will efface it; if we rear temples, they will crumble into dust; but if we work upon mortal minds, if we imbue them with principles, we engrave on those tablets something which will brighten to all eternity."—*Mrs. J. H. Kellogg, in the New Crusade*.

GRAND FORKS, N. DAK.,
Dec. 16, 1898.

To the Editor:

I did not seem to get much good from the EDUCATOR last year; but the study of the last two numbers has helped me very much. They seem to strike a line of thought that I wish every parent and teacher could be taught.
L. M. CROWTHER.

Queries for Students ?

[This is a standing subdepartment 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 school or individuals.]

1. Meaning of ? — Nirvana, esthetic, ethical, vogue, pronouncement, categorically, *nephesh*, infra-human, reprobation, ambiguity, "dubious allusions," "Burgher Schools," proletariat, *ex cathedra*, *femme*.

2. Who was ? — Quintilian, Agricola, Erasmus, Sturm, Fenelon, John Tyndall, the author of the couplet on page 122, of the term, "canned liberty," of "liberty hypodermically injected with thirteen-inch projectiles."

3. Pronounce — conversant, amenable, medieval, Palestine, discourteous, microscopist, advertisement, predestined.

4. Define — perennial, bracts, lenticels, therapeutics, complement, participle, gerund.

SOME RECENT INVENTIONS.

FURNACE doors can be easily opened without touching with the hands, by the use of a new improvement, a lever being pivoted on the floor to be stepped on at one end and lift the opposite end, raising an upright rod attached to the door to swing it open.

PASSENGERS on railroads are automatically registered by a new photographic apparatus, designed to be placed in the top of the car and having an automatic flash-light operator, which is discharged as a person steps on the platform to enter the car, exposing the film at the same time.

A "HORSELESS" fire-engine has been recently perfected. The motive agency is petroleum, and the machine has developed thirty horse-power. It throws about 500 gallons a minute, at a pressure of 150 pounds a square inch. The whole apparatus can be set in motion in a few seconds after an alarm, and travels at the rate of ten miles an hour.

ROSALINE is a vegetable compound so nearly resembling rubber in specific gravity and other qualities that it may be added in proportions of twenty to twenty-five per cent. to the genuine rubber without in any way affecting its tenacity, durability, and dielectric properties, nor be detected even by chemical analysis.

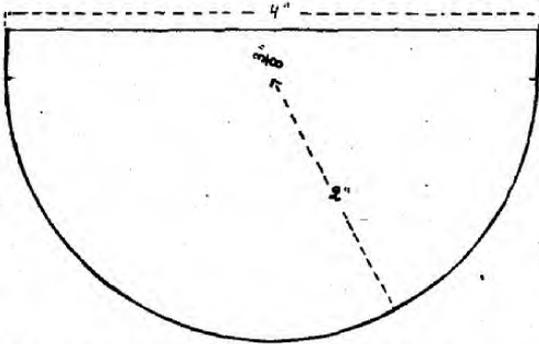
Conducted by A. J. BRISTOL, A. B.

EDUCATIONAL HAND-WORK.—NO. 7.

THE EDUCATOR is so replete with timely talk of the necessity of educating all the powers of the mind, that it seems hardly necessary for the man who "whittles" to add anything in this line; but it seems so frequently to have been ignored in the past, we trust you will suffer us a little.

Many times children are educated to think only of themselves; and then when parents and teachers afterward see the evil results, they wonder at the heedlessness of children in being so entirely oblivious to the needless pain they cause parents and friends. Already in this series we have given several models which a boy could make for others of the household than himself, and in the one for which drawings are given this month, we appeal again to the motive of doing for others.

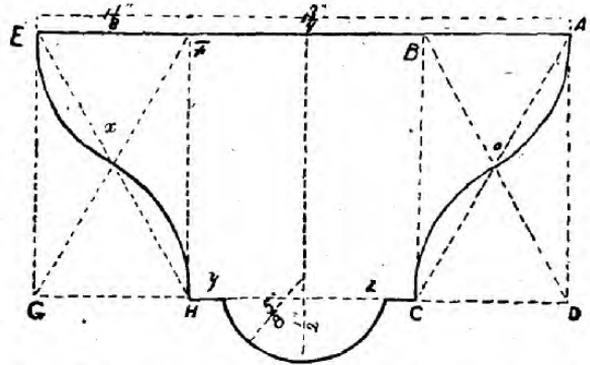
In Nos. 3 and 4 of this series, directions were given for cutting to convex and concave curves; but in strictly logical sequence, perhaps these exercises involving a combination of these curves should have preceded those in the last two articles; but it was our purpose to give variety enough that the work should not become drudgery. With these methods of ornamentation described, the active teacher can vary the models almost to any degree.



In making the exact drawings for these exercises, the teacher can prepare the way for children to interpret the three views of a mechanical drawing which are usually required of the draftsman. It will not be wise to have them make such drawings, as so many lines would confuse them at this stage; but in making the drawings for the little wall bracket, have them place the drawing for the shelf, corresponding to the technical top view or plan, directly above the drawing for the back, which in

turn will correspond to the front view, or elevation. To insure a definite conception of each part, then have them make the drawing of the bracket, which will exactly resemble the left half of the back piece, and should be placed to the right of this drawing.

The drawing for the shelf, being so simple, will need no explanation; but for the benefit of some who may not have had special training in drawing of this kind, and yet who may be following this series of articles, we will give quite minute descrip-

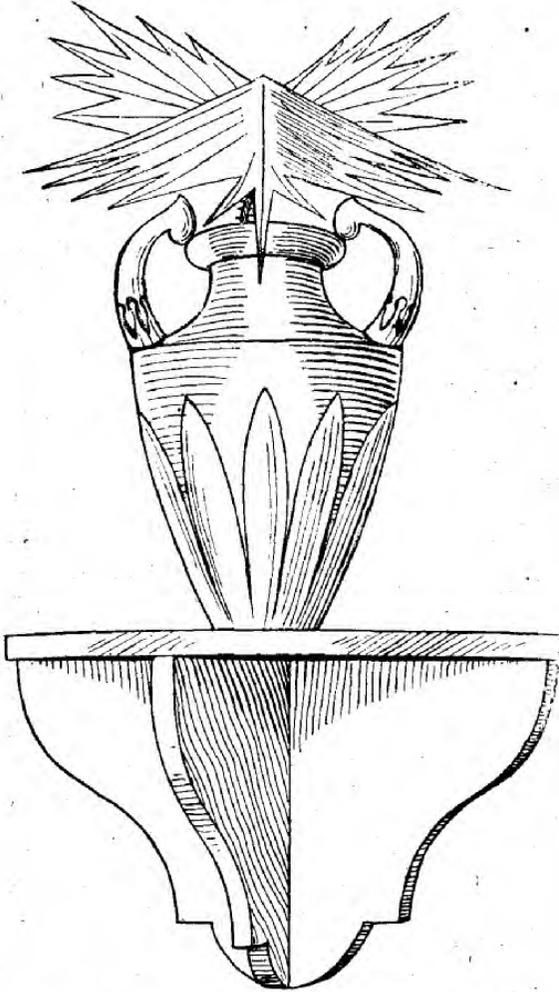


tion of the way it would be well to have the pupils proceed. First draw a straight line four inches long. From each end, measure back one and one-eighth inches, making points as at *B* and *F*. From these and at each end of the line draw lines at right angles to this line, and at least two inches long.

Now with a pair of compasses, set at one and one-eighth inches, and using the points *A* and *B* as centers, draw short arcs intersecting at the point *o*. Through this point draw the oblique lines from *A* and *B* till they meet the parallel lines at *C* and *D*. Repeat this on the other side, using *E* and *F* as starting-points. From the point *D*, through *C* and *H*, draw the line to *G*, and with the compasses set at one and one-eighth inches, and using, in turn, as centers, the points *B*, *D*, *F*, and *G*, draw the arcs *A* to *o*, *o* to *C*, *E* to *x*, and *x* to *H*.

With the compasses set at five eighths of an inch, place the point one-eighth inch above the line and midway between the points *C* and *H*, and draw the arc of the circle *y* to *z*, completing the drawing for the back with the straight line *A* to *E* four inches long. The bracket which supports the shelf is simply a reproduction of the left half of the back.

Having made the drawings upon paper, they should be reproduced on the wood, but it may be well to have the pupils use one of the sides of the back piece after whittling as a pattern from which to mark out the bracket on the wood.



As in the work described two months ago, the parts should be joined by both liquid glue and little brads.

EDUCATORS should understand how to guard the health of their students.

THE KEENE (TEX.) INDUSTRIAL SCHOOL,
Dec. 24, 1898.

To the Editor:

It affords me a great deal of pleasure to send you nearly thirty new subscriptions. I think the last two numbers of the EDUCATOR are of unusual value, although the paper has always been good. When the papers come, we expect to make use of them in our general exercises.
C. C. LEWIS, Prin.

SOME DEFINITIONS OF EDUCATION.

EDUCATION has been variously defined in different ages. The *Philadelphia Teacher* presents the following definitions arranged in historical order:—

Chinese: To impress traditional ideas and customs and to preserve the established order of society.

Ancient India: To preserve caste distinctions and to prepare for absorption into Nirvana.

Ancient Persia: Physical strength and moral rectitude.

Ancient Hebrews: To become faithful servants of Jehovah.

Sparta: To train soldiers.

Athens: A beautiful soul in a beautiful body.

Rome: To make a man fit to perform justly, skillfully, and magnanimously all the offices, both public and private, of peace and war.

Socrates: To dispel error and discover truth.

Plato: To give to body and soul all the beauty and all the perfection of which they are capable.

Aristotle: Attainment of happiness through perfect virtue.

Quintilian: To make orators.

Seneca: Not for school but for life.

Charlemagne: To make intelligent citizens.

The Monastic Schools: To foster the interests of the church.

The Burgher Schools: To train for the practical wants of life.

Agricola: The accumulation of knowledge.

Erasmus: To prepare for future duties.

Luther: More effective service in church and state.

Melanchthon: For service as citizen and subject.

Sturm: Piety, knowledge, eloquence.

Montaigne: To make men before specialists.

Rabelais: To form a complete man, skilled in art and industry.

Comenius: To attain eternal happiness in and with God.

Locke: Practical knowledge rather than mere learning, and a sound mind in a sound body.

Fenelon: To train for the duties of life.

Rollin: To train heart and intellect at one time.

Francke: To prepare for a life of usefulness and piety.

Rousseau: Complete living.

Pestalozzi: Natural, progressive, and systematic development of all the powers.

Froebel: To direct natural activities to useful ends.

WOMAN AND HOME.

WHAT do you think the beautiful word "wife" comes from? It is the great word in which the English and Latin languages conquered the French and Greek. I hope the French will some day get a word for it instead of that *femme*. But what do you think it comes from? The great value of the Saxon words is that they mean something. Wife means "weaver." You must either be house-wives or house-moths, remember that. In the deep sense, you must either weave men's fortunes and embroider them, or feed upon and bring them to decay. Wherever a true wife comes, home is always around her. The stars may be over her head, the glow-worm at her feet, but home is where she is, and for a noble woman it stretches far around her, better than houses ceiled with cedar or painted with vermilion — shedding its quiet light for those who else are homeless. This, I believe, is the woman's true place and power. — *Ruskin*.

THE HOME LIFE.

God gives to parents a great advantage — if they are wise enough to make the right use of it — by giving to them the almost exclusive training of their children for quite a number of years. During infancy and up to the age of four or five years, home is the child's world. Parental love can so wall it in that the child knows little or nothing of the evils of this wicked world. The parents may impress themselves on the plastic nature of the child as a firm seal leaves its impression on softened wax. They teach the child to walk, to speak, they teach it manners and morals; the child is in their hands at the present impressible period of life to do with as they will. During all the waking hours of the child they may teach it without the formality of direct instruction, for the young pupil is highly imitative, and that which it sees and hears, it will consciously or unconsciously pattern after. If it hears correct grammar, clean speech, kind words; if it hears prayer and is taught to pray; if it hears the Bible read and is taught to read it; if it sees in the lives of the parents the beauty of true piety; if the home life sustains whatsoever things are true, honest, just, pure, lovely, of good report, — the character of the child will by these good influences be shaped for good.

It is as though the unformed character were a receptive storage battery, and the home were a beneficent power-house where the child may be charged with motive power which will carry it forward on the line of virtue for years to come.

But, on the other hand, if the children, while young, hear in the home, slang, slipshod grammar, provincial pronunciation, blasphemy, sneers at the Bible and religion, dubious allusions and unclean stories, and if they see conduct in the parents which illustrates the vices rather than the virtues, it requires no Solomon to tell what the results will be.

The moral infection of home by parents, the pollution by them of that place which of all others has most power to determine the after-lives of their children, is awful, and none the less so that it is largely unintentional. Parents would not be so criminally careless as to make a cesspool of the household well, and they would not knowingly feed their children on typhoid germs, or bring the infection of smallpox, scarlet fever, or other serious disease into the home; but better far bring disease in any form into the home, or even death itself, than moral contagion, which may result in moral death.

Great crimes, such as murders, persecutions, massacres, are sad enough, but sadder still is the moral murder of the innocents, by their own parents, in tens of thousands of homes. It shows very clearly the blind folly and awful selfishness of sin; for most of these parents love their children, but they do not love them well enough to make the home what it should be, God's school, where he commits individual souls to be shaped hour by hour by those persons who should be most interested in their eternal welfare.

In many homes we see a family reprobation going on which shows only too clearly how evil is visited from the fathers unto the children. Many parents send their children forth, after fifteen or twenty years of unworthy home life, religion-proof, predestined by parental influence to a life of sin, reprobated to alienation from God, given over to worldliness and unbelief, led into the broad road which leads to destruction, by walking in the steps of their parents.

On the other hand a pure, Christian home, is of all schools this side of heaven the noblest and best.

It was a saying of George Herbert's mother, intended for the guidance of her sons, that "as our bodies take nourishment suitable to the meat on which we are fed, so do our souls as insensibly take in virtue or vice by the example or conversation of good or bad company." And did not George Herbert learn those virtues of mind, heart, and character which appeared conspicuously in his Christian work, and will appear for uncounted centuries in his poems, from his mother and the varied influences of his home life?

It is perhaps not too much to say that the moral environment of the home life is more powerfully determinative of character, that it does more to shape children in the direction of good or ill, than all other influences combined. "Live with wolves," says a Spanish proverb, "and you will learn to howl." Blessed are those children who by living in a Christian home learn to pray, to read and reverence God's word, to go to the house of God with their parents, to love God and keep his commandments.—*The Advance.*

TRICKS OF SPEECH.

Nothing is easier to acquire, nothing more difficult to lose, than a trick of speech and manner; and nothing is more universal. If we look around among our friends and acquaintances, we shall find scarcely one who has not his favorite word, his perpetual formula, his automatic action, his unmeaning gesture—all tricks, caught probably when young, and, by not being corrected then, next to impossible to abolish now.

Who does not know the familiar "I say" as the preface to every remark, and the still more familiar "you know" as the middle term of every sentence? Who, too, in these later times has not suffered from the infliction of "awful" and "jolly"—mile-stones in the path of speech, interspersed with even uglier and more obtrusive signs of folly and corrupt diction—mile-stones that are forever turning up, showing the successive distances to which good taste and true refinement recede in the race after slang. Then there are the people who perpetuate ejaculations; who say "Goodness!" as a mark of surprise, and "Good Gracious!" when surprise is mixed with a trifle of reprobation. Lower in the social scale come "My word!" "Patience!" "Did I ever!" and indifferently in all stations, "You don't say!" or in a voice of deprecation, "No!" and "Surely not!" To judge by voice and word, these ejaculatory people

are always in a state of surprise. They go through the world in unending astonishment, and their appeals to their "goodness," and that indeterminate quantity called "good gracious," are incessant.—*Selected.*

HEALTHY COWS.

So much has been said about tuberculosis in milch cows during the past few years that a good many families have become so prejudiced against the product, whether milk or butter, that they choose to deny themselves this valuable food rather than take any chance of bringing upon their families a disease that so far has been pronounced incurable. And rightly may they do so. If there is any one thing we should do it is to remember that our bodies are susceptible to germs, and a preventive is much better than a cure. Everybody who buys his milk or butter should insist upon knowing whether the herd that produced it was afflicted with this disease or not.

A healthy person, like a healthy animal, may drink milk taken from a tubercular cow all the days of his life and not be affected by its use. The probabilities are, however, that he will. One thing is true: If the milk is spilled on the floor (barn or house), table or table-cloth, and allowed to evaporate or "dry up," the germ continues to live just the same, only it passes from the liquid form into dust. If the dust remained undisturbed no harm could ever come from it. But the slightest breeze, will set the germs circulating through the room, and the occupants take them into the little cells of their lungs when breathing. Is it any wonder consumption is claimed by some to be hereditary?—*Elias F. Brown, in Agricultural Epitomist.*

SELF-RESPECT.

The germ of self-respect is inherent in the nature of every child, but it often requires thought and care on the part of parents and teachers to develop it. There is no surer way to cultivate the self-respect of a child than to follow Froebel's beautiful example, and show the child that you respect him. The child who feels that he is respected by others will be more likely to respect himself. The child who is constantly doubted, snubbed, and undervalued is likely to be lacking in self-respect.—*Mrs. J. H. Kellogg.*

BRANCHES OF SUGAR-MAPLE AS SEEN IN WINTER.

PROF. W. J. BEAL.

Michigan Agricultural College.¹

SOME persons think the only way to teach botany in winter is to give out lessons from a book, and expect the pupils to learn something from text and pictures. True, we can not collect roses from a Michigan garden in January, nor maple blossoms in February, but our trees and shrubs in their winter garb furnish excellent lessons profitably to employ pupils for many weeks of winter, and this all comes within the scope of botany, just as much as though we examined flowers in spring or summer.

Let each member of the class be supplied with a branch, a foot or two long, from a sugar-maple, and then spend some ten to twenty minutes or more quietly looking at the buds and bark with its scars and specks, and then tell what he has discovered, venturing to explain the object or meaning of some of the things he has seen. In a similar manner let each look over a branch of beech, and then point out the difference between the two kinds. After some earnest efforts in this direction, and questions have been

asked by the teacher, free use may be made of the following illustrations and suggestions.

The upper bud of a branch of maple (Fig. 1) contains a young stem and leaves ready to continue the main stem, while the buds along the side are the beginning of new branches. The upper or outer portion of each branch is nearly smooth and light brown in color, and scattered over the surface and slightly raised above it are numerous specks (lenticels) of a gray color, each having a little crack in the middle. Some of these specks are circular in outline, but most of them are much longer than broad, and extend up and down the branch. A little distance below the tip of the branch the bark is somewhat cracked, roughened, and of a gray color, and the specks are wider, but no longer than those seen on the upper portion.



FIG. 1.

Opening buds of trees may be obtained at any time during the winter by placing the lower end of the stem in water for a week or two while in the schoolroom. It will be seen in Fig. 2 that most of the bud scales have lengthened considerably, the light portion in the illustration representing the new growth, while the dark tips represent the portion of the scales exposed during winter.

Three to five scales are in line, one above the other, overlapping much like shingles on a roof, and there are four such vertical rows up and down, making the outside of the bud. The scales of any one of these rows "break joints" or interlock with the adjoining scales in other rows. The central portion of the figure at the top represents the young leaves, while at the base there is a bud on either side. On removing the scales we find the outer or lower ones the shortest, and inside of all are some tiny leaves packed closely together and covered with fine, soft hairs. The dry, firm texture of bud scales enables them to shed water and protect the delicate parts within. These scales, where broken off near each other, leave a number of delicate ridges or scars which we can see to better advantage by looking down the branch a little, until we find them represented as shown at *a* in Fig. 1.



FIG. 2.



FIG. 3.

Each bud at the end of a branch leaves a set of these scars every spring, and by this means we are able to determine the age of the branch from a certain point. These scars left by the bud scales of branches record to a certain extent the life-history of the tree. The bark of small, slow-growing branches retains these scars much longer than the bark of thrifty branches, because on those growing rapidly the bark soon breaks and partially destroys the scars.

Two opposite buds appear half-way round the stem or nearly so from the next pair above or below. This was found to be the arrangement of the bud scales; in fact, the bud scales are leaves modified for a certain purpose. Every one knows that trees

¹ The matter and illustrations of this lesson are used by permission from a series of Elementary Science Leaflets issued by the Experiment Station.

bear leaves in summer and these maples drop theirs in autumn. On searching for the scars where the leaves snapped off, they are sure to be found, each just below a bud, or at least they are found in no other places. The leaf-scars are much the shape of a new moon with the ends turning upward, and slightly projecting, are five little bunches as seen at *b* in Fig. 1.

A branch grows rapidly or slowly just in proportion to the number, size, and activity of the good leaves it carries.

By counting the sets of scars left by numerous crops of bud scales of the dwarf branch, of which Fig. 3 represents the tip, its age was found to be twenty-six years. This was a lower branch taken from the side of a tree much shaded by others of arger growth.

From the leaf-scars seen between each two sets of scale-scars, the dwarf branch appears to have carried each year only two to four small leaves, and those were near the apex.

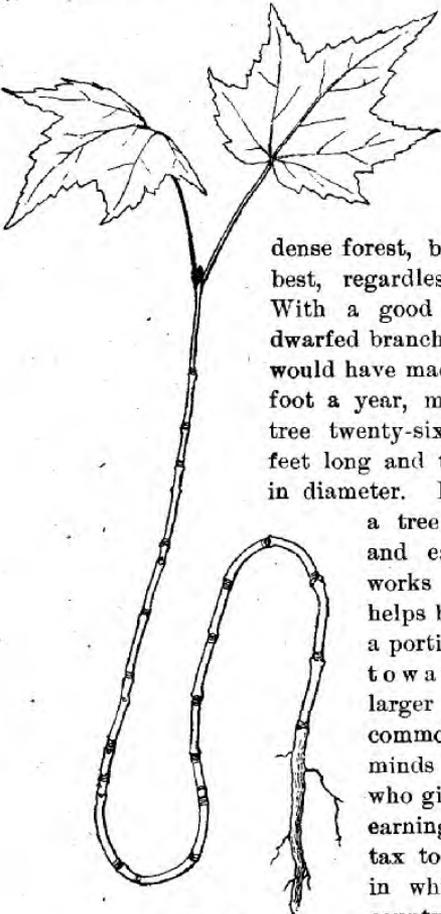


FIG. 4.

Figure 4 tells the story of a persevering little tree growing at a great disadvantage in a dense forest, but always doing its best, regardless of opportunity.

With a good chance, the old, dwarfed branch and the little tree would have made a growth of one foot a year, making a branch or tree twenty-six to twenty-seven feet long and two or three inches in diameter. In a certain sense a tree is a community, and each leaf not only works for the branch it helps build up, but turns a portion of its effort toward sustaining the larger branches and the common trunk. This reminds us of the person who gives a portion of his earnings in the form of a tax to support the town in which he lives, the county in which the town is located, and the State

of which the county is a portion. Each member of the class can find a branch

which corresponds to his own age or that of some friend, or he may associate the years of growth in the life of a branch or a tree with important events of his neighborhood, State, or every one of the class must have seen the doublewinged fruits, often called

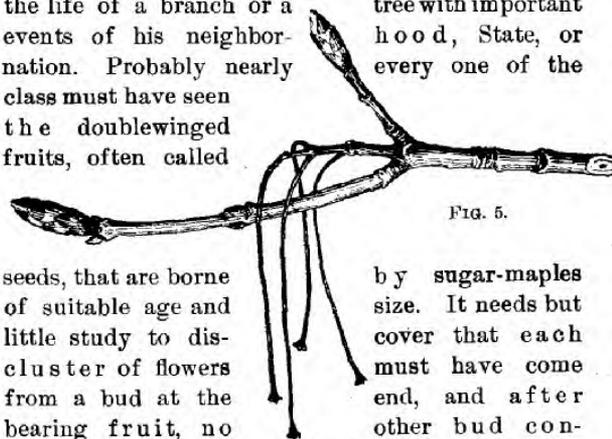


FIG. 5.

seeds, that are borne of suitable age and little study to discluster of flowers from a bud at the bearing fruit, no other bud continued the stem, but instead, a bud on each side became vigorous leaders for two branches, as in Fig. 5.

(Continued in the February number.)

PRUNING WITH THE THUMB.

We all know how we dislike to cut off large branches from fruit-trees. It is plain to any thinking person that if the undesirable branches could be discovered when they were very small, and prevented from becoming large, there would be no necessity for cutting off large ones. Now, this is just what we may do in many cases. By watching the young trees carefully, from time to time as the little shoots are starting that will make the branches, we may rub off with the thumb those that we see are destined, if left on, to be such as we will not want. Any shoots starting toward the center of the tree, or in any undesirable direction, may thus be prevented from going any farther. — *Home and Garden.*

No one is educated unless he is a perpetual student. If you ever stop studying, you will have no education. — *Colonel Parker.*

WALLA WALLA (WASH.) COLLEGE,
Dec. 17, 1898.

To the Editor:

We sent you a small club of twenty-five subscribers a short time ago. More later. Our Faculty are much pleased with the EDUCATOR. We also feel pleased with the pamphlet or bulletin idea, and shall watch the development of this with interest.

W. R. SUTHERLAND, Pres.

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

HUMAN PHYSIOLOGY.

RESPIRATION. — EXERCISE.

THE universal law of supply and demand is well exemplified in the human body. Indeed it is one of the most evident of nature's laws. Increase the demand, and a healthy stimulation of production follows. Use an organ properly, and by its very exercise it becomes stronger and more efficient. In other words, proper exercise always promotes growth, and is a very important factor in maintaining health and vigor.

Strength can be obtained in no other way than by exercise of the organ to be strengthened. The amount of oxygen that a gland or muscle can use depends upon its activity, rather than upon the supply of the gas. Oxygen stimulates and vitalizes every tissue and organ of the body in proportion to the work done by that tissue or organ. When we pause to consider the small amount of tidal air passing into and out of the lungs with each breath, we can scarcely realize the true capacity of the respiratory organs; for the tidal air amounts to only a tithe of the total capacity. Thus we see that nature has generously provided for any unusual exertion of the vital organs.

Exercise may be classified as active and passive. The latter is intended for invalids only, and is to be considered as a very important curative measure. It may be given in the form of passive Swedish movements, either manually or by the aid of specially prepared apparatus, in which case it is often called mechanical Swedish movements. Massage, or the skilful manipulation of the skin and muscles by a trained attendant, is still another variety of passive exercise, and is also a very efficient therapeutic remedy.

However, true exercise is active. Here the one that is to be benefited does the work. In passive exercise the one that gives the movements or massage, often receives by far the greatest benefit. It is by doing that we learn to do, and also obtain the strength for doing more.

To produce the best results, exercise should be systematic and regular. Haphazard exercise at

irregular intervals avails but little. It is too often violent, as if making up for lost time. To promote symmetrical growth, all muscles of the body must receive attention. Otherwise the development is unsymmetrical, and deformity is produced. This accounts largely for the great number of cases of spinal curvature. Of course, some of these are much more marked than others, and hence easily recognized. Flattening of the chest is another common deformity, which often leads to lung disease, and especially to pulmonary tuberculosis.

While it is unnecessary to prescribe any definite time for exercise, the forenoon is in most cases the ideal time. The breakfast is in the process of digestion and absorption, and the body is still vigorous from the night's rest. Early in the morning before breakfast, is also a favorable time for exercise for those who are strong and vigorous.

But the feeble, and those suffering from dyspepsia or some disorder of nutrition, should take only moderate and not long-continued exercise before the morning meal. Never take

severe exercise just before or within an hour after the meal, for the muscular activity would be likely to interfere with the digestive processes by withdrawing too much of

the blood from the abdominal organs. Light chores or leisurely walking would not be objectionable; indeed they might be beneficial.

Before taking severe exercise of any kind, it is necessary to ascertain the condition of the heart and lungs so that there will be no danger of injuring these important organs. If the heart is weak, the exercise should be carefully moderated so as not to weaken it still more, or possibly produce a rupture and instant death. The same precautions are also necessary for the lungs. While nothing is better than pure air and proper exercise to strengthen weak lungs or those already invaded by disease in its earlier stages, yet overdoing may involve serious consequences.

Outdoor exercise is always preferable when possible. Then nothing can prevent an abundance of pure, fresh air. Such exercise is invigorating and vitalizing, and makes itself felt in every tissue of the body. It is indeed a sort of house-cleaning for the body. But if compelled to remain indoors

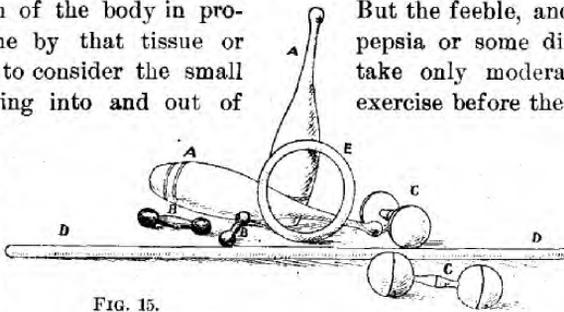


FIG. 15.

while taking physical exercise, one should secure an abundance of fresh air. Under such conditions there is little or no danger of taking cold.

Another important consideration in taking exercise, is the proper position of the body. Directions for the sitting and standing positions were given in the December number of the EDUCATOR, to which we would refer the reader. There must be no constraint of any kind, and all the muscles must be free to move in any direction. Corsets, belts, and constricting bands of all kinds, tight dresses, tight shoes, etc., are inconsistent with proper exercise. The greatest freedom should be secured to every part of the body.



FIG. 16.

Of all varieties of exercise, that which involves useful physical labor of some kind is the ideal, because it is the most natural. In other forms the work is wasted; *i. e.*, it brings no direct returns aside from the reciprocal benefit conferred upon the individual.

Nature's gymnasium is to be found in the fields or garden, in the wood yard, workshop, and kitchen. What gymnastic exercise can compare with swinging the ax of steel that cleaves the maple or fragrant oak for the kitchen range and sitting-room fireplace? Every muscle of the body is called into activity, and there is a thrill of health sent through every fiber and cell. Sawing wood, provided the proper position is maintained, is also an excellent means of exercise.

Standing properly, and even sitting, are mild forms of exercise. Proper positions are always active, and most of the muscles are called in action. But one of the best forms of exercise, as well as the most available, is walking. And yet a person may drag himself along in such a languid, lazy way that it will do him little or no good. That which is valuable always requires an effort. Cheap things are usually cheap in every respect. And so with exercise. The less effort put forth, the less compensation received. Walking that does not tire the muscles, is not walking, properly speaking. True, it may be locomotion, but even then, of an inferior kind. In walking, the correct poise of the body should constantly be maintained. The steps should be taken briskly, thus indicating that the moving object is really alive. There is little real exercise obtained if the muscles do not feel weary and sore after the walk. The step should be quick and light, and the weight carried on the balls of the feet. Many walk on their heels

and are very noisy. This is incorrect, as well as awkward. Place the ball of the foot down first, then the heel lightly. In running, the heels scarcely touch the ground at all. Running should always be indulged in moderately, and then only by those who are hearty and strong. Rowing and swimming are other useful forms of exercise. Swimming is especially good. Riding a bicycle is a good exercise if not carried to excess. Scorching and racing on wheel or foot is always harmful, and can not be too severely condemned. An unnatural strain is laid upon the vital organs, especially the heart, which leads to more or less harm, and often weakens the body for life.

Baseball, football, wrestling, boxing, etc., are undesirable forms of exercise, because through competition and a desire to outdo others, they often lead to excessive efforts, by which the body is weakened, and many times permanently injured. Such contests are absolutely unnecessary, for there are abundant means for securing exercise aside from questionable games.

In recent years gymnastics have received much more attention than formerly. This is a good indication. But gymnastics are even at the best a poor substitute for physical labor, being merely an imitation of some useful effort. They are perhaps most beneficial and effective in schools, sanitariums, asylums, and penal institutions, where there is little or no opportunity to obtain a good physical development. The gymnasium should be well ventilated, and abundantly furnished with light. A large amount of complicated apparatus is unnecessary, and when purchased is little used. Calis-

thenics and various gymnastic drills, with the use of Indian clubs, wands, iron and wooden dumbbells, rings, etc., are excellent, if properly carried out under a competent director. (Fig. 15.)



FIG. 17.

Swedish gymnastics require little or no apparatus, and can be taken in any home. The number of positions and movements is almost infinite. We can only mention a very few, such as the bendings, stretchings, and twistings. There are many more that may be taken by the trunk, head, or extremities, in any one of several thousand standing or sitting positions. For example, standing, forward-bending of the trunk. (Fig. 16.) Here the erect position of the trunk is maintained, the bending being confined to the thigh joints. The arms may

hang at the side, or better, be extended upward with palms facing and elbows straight, so that the arms are parallel and in line with the sides of the trunk. Trunk-twisting, with the pelvis rigid, is an excellent movement for the muscles of the back, and can be repeated six to ten times, first to the right, then to the left, and then alternating for an equal number of times. (Fig. 17.)

Gymnastic swimming is a splendid exercise for the muscles of the chest and arms. Take the correct standing position, placing the arms as illustrated in Fig. 18. Extend them forward quickly, so that the backs of the hands touch, then throw them back forcibly, making as great a circle as possible, and then return to the initial position. This exercise develops the chest and expands the lungs. It can be taken for five minutes or longer. Another way is to take it with the heels raised, which makes it more vigorous. If taken with the heels raised, the trunk in the forward-bend position (Fig. 15), and the head bent backward, it becomes still more effective, and will tire almost any one in the course of a few minutes.

Breathing exercises are very simple, and at the same time efficacious. Slow, deep breathing can be taken in any position. Breathe in the air slowly, filling the lower lobes of the lungs first, then the upper lobes, until their fullest capacity is reached. Then breathe out slowly. This can be done through the mouth, making the sound of *ah*. Repeat six to twelve times. Breathing is called explosive, if the breath is drawn in quickly, held an instant, and then forcibly and rapidly expelled. Such breathing calls into action the auxiliary muscles of both inspiration and expiration. It may be repeated ten to twenty times. Holding the breath is still another form of lung exercise. Take in a full, deep breath slowly, then hold from fifteen seconds up to a minute, but without undue straining, which might do harm. Then exhale either slowly or forcibly. This exercise may be modified by striking the chest with the fists, or palms of the hands, while holding the breath, which makes it more effective.

In taking any form of exercise, great care must be observed not to overdo and thus strain the body, and do mischief. Never compete with any one, or try to outdo another. Do your best, but always without overexertion. Untold harm has been done by trying to surpass some one else. Exercise then becomes dangerous excess, and instead of

benefiting and strengthening the body, more or less injury is done and the body weakened. Moderation is always necessary. Be temperate in all things, even in taking exercise, and thus receive the greatest good possible.

HEART BEATS ELECTRIC.

PROF. AUGUSTUS D. WALLER, F. R. S., physiologist of the Royal Institution of Great Britain, has made the following announcement:—

“I have been able to show by laboratory experiments that the human heart has an electromotive force, and electricity may be considered as being the cause of its beating. I have also traced the electric currents that are sent through the various parts of the body. In addition to muscular electricity, I can proceed a step farther, and show that an electric effect accompanies a natural discharge of nerve impulses. I have found that the galvanometer is a good indicator of physiological activity taking place in fatigue, or under exercise, or other influences, the electrical effect is an exact measure of the action of the muscles.

“It is by no means a slight advantage that the photographic record of each and every observation can be taken and preserved for future reference and be as authoritative a century hence as to-day. The nerve will record its own series of answers during any treatment to which you see fit to subject it. It can not give a false answer. So fine are the electric instruments that may be used that they can detect the difference in vibration of muscles and nerves. By this means fatigue may be detected while the nerve continues unimpaired, and vice versa. This introduces a new element in the diagnosis of disease.”

How the heart is run by electricity, and how the electric currents extend throughout the body is shown by a very simple experiment. The professor a few weeks ago took up a vial of cow's blood, into which he put two wires connected with an electric bell. He then added some oxygen to the blood, and behold, the bell began to ring! The oxygen, when it came into contact with the carbon contained in the blood, had generated an electric current, such as is produced in any of the chemical batteries used in telegraph and telephone offices. The blood which travels from the heart to the lungs contains large quantities of carbon. — *The Pathfinder*.

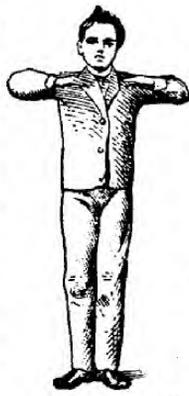


FIG. 18.

Servia has discovered that educational advantages, if applied indiscriminately to all classes, are not an unmixed blessing. Besides free education in the lower schools, the Servian government granted free attendance to the high schools and colleges. But the majority of young men who availed themselves of this privilege are unwilling to work with their hands, and as competition is great among the members of the learned professions, a dangerous "proletariat of the learned" has been created. A very large proportion of the individuals who thus become a burden to their relations are reported as intellectually incapable of using the knowledge imparted to them.— *The Literary Digest*.

The *Philippine Commission* recently appointed by President McKinley, consists of President J. G. Schurman, of Cornell University; Charles Denby, ex-Minister to China; and Dean C. Worcester, of the University of Michigan; together with Admiral Dewey and General Otis. The appointment of this commission gives encouragement that some careful consideration will precede the adoption of any definite policy toward the Filipinos. It is natural that they should expect to enjoy the liberty for which they have struggled, and that they should object to being bought and sold. The greatest responsibility that rests upon the United States is to protect them from foreign aggression. They can learn how to use liberty only by having the opportunity to use it. "Canned liberty," or liberty "hypodermically injected with thirteen-inch projectiles," is not the kind on which freemen can thrive either in Manila or America.

Deaths of Public Men are reported with lamentable frequency. Among the latest cases are those of Hon. Nelson Dingley, of Maine, Senator Morrill, of Vermont, and James Russell Young, the Librarian of Congress. Mr. Dingley was perhaps best known to the public as the author of "the Dingley Tariff" bill; but he is chiefly remembered by his associates for the exhaustive thoroughness with which he went to the bottom of every matter committed to him. His success was due, not to natural brilliancy, but to hard work. Senator Morrill had the distinction of being the oldest member of Congress, both in years and in length of service. As a statesman he took special interest in the founding

of land-grant agricultural colleges, and has, therefore, been called the "Father of Industrial Education in America."

Educational Reform is called for in every age and country. There is always room for improvement, especially in the direction of securing a better balance between the intellectual, moral, and physical elements in education. Attention has run too much to the mental, to the cramming of the head without the needed training for the hand and heart. Edmond Demolins, in a new book, sets forth the plans for a new educational system that is said to combine all the advantages of the present French, German, and English methods, without their defects. His views are certainly attractive:—

The schools must be established, not in the cities, but in the villages or on private estates. Each school must have several acres of land, a farm, domestic animals, and everything pertaining to an agricultural vocation. The school must be situated in proximity to woods, a river or a lake, and open fields. The teacher is to live with, and constantly watch over, the pupils, not in the spirit of an official, not for the purpose of restricting spontaneity and freedom, but in order to educate them in the full sense of the term. He is to participate in all their occupations and doings—in their studies as well as their recreations.

Some Recent Events.— Andrew Carnegie has offered to pay to the government of the United States the \$20,000,000 required to meet its treaty obligations, on the sole condition that the Philippine Islands shall be independent.— "Father" Chiquy, the noted anti-Catholic lecturer and writer, died at Montreal.— The number of murders committed in the United States during the last year was 7,840. The number of legal executions was only 109.— \$850,000,000 worth of farm products was exported from America last year, surpassing all previous records.— There are about 1,500,000 children in Roman Catholic schools in this country, 60,000 in New York City.— A potted carnation belonging to Mrs. Thos. W. Lawson, of Boston, Mass., was recently sold for \$30,000.— 200,000,000 pounds of tobacco is consumed in the United States every year.— Battle Creek, Mich., the ninth city in the State as regards population, is third in the amount of second-class mail-matter handled.— The Japanese cruiser, "Kasagi," the first war vessel built in America for any foreign power, was recently launched at Philadelphia.— Professor Ramsey and Dr. Morris Travers announce the discovery of a new element in air, which they have named *xenon*, after the analogy of *argon*.

THAT GRAMMAR TEST.

REFERRING to the "Grammar Test" which appeared on page 107 of the December EDUCATOR, we present the first and best answer so far received. It comes from Miss Eliza Warner, Quincy, Mich. To economize space we classify the thirty-two sentences into groups with reference to the reason Miss Warner assigns for the case used in each blank. The sentences are numbered as they were in our December issue, and the italicized words are the ones supplied to fill the blanks in the original test with a pronoun of the first or third person. These answers may thus be easily compared with the test exercise in our last number.

Miss Warner gives this familiar principle as applying in the sentences which we have arranged in the first group:—

I. "A pronoun used as the subject of a verb is in the nominative case."

1. Mary and *I* are going. 5. She is no wiser than you or *I*. 7. She was happy, and *I*, too. 15. All enjoyed themselves, *she* excepted. [?] 17. *We* boys are going to ride. 18. May John and *I* have the horse? 22. You sing better than *I*. 26. Mother said you and *I* might have a party. 31. They, as well as *we*, were invited.

II. "A pronoun used as an attribute complement is in the nominative case."

2. It was *he* they wanted. 12. He thought it was *he*. 19. Who is it? Only *I*. 21. Would you do this if you were *I*? 29. She knew that it was *I*.

III. "The principal word in a prepositional phrase is in the objective case."

3. Mother brought Jennie and *me* ["indirect object"] a kitten. 4. There was nobody there but *me*. 9. Between you and *me*, I have lost confidence in him. 16. Except *her*, nobody was forgotten. 24. Every one knew except you and *me*. 27. Father sends word for you and *me* to meet him at the train.

IV. "A pronoun used as the object complement is in the objective case."

8. You have often seen my cousin and *her* together. 10. Who is it you want, Nancy or *me*? 14. Let you and *me* go to-morrow. [?] 20. Will you let Alice and *me* sit together? [?] 30. Father will take my friend and *me* with him. 32. Please let Mary and *me* have a holiday. [?]

V. "A pronoun used as an explanatory modifier is in the same case as the word explained."

13. Which is the better player, Lucy or *I*? 25. How can you treat me so, *me* who have done so much for you?

VI. "The infinitive *to be* takes the same case after it as before it."

23. The truant was supposed to be *he*. 28. She knew it to be *her*.

VII. "When the assumed subject of a participle is a possessive, the attribute complement is in the nominative case."

6. Its being *I* should make no difference.

VIII. "Ambiguity is often prevented by placing the assumed subject of a participle in the possessive case."

11. Would you favor *my* studying Latin?

Comment.—We have "queried" a few of these sentences, not because we are sure they are wrong, but to open the way for a different suggestion. We are sure that some good authorities do not use the expression "subject of a participle," which occurs in the last two groups and seems to be implied in sentence 15, group I. *She* is evidently not the subject of any verb, but its nominative case may be readily explained as the principal word in the phrase absolute, *she being excepted*.

In group V a parallel construction occurs in sentences 14, 20, and 32. It does not seem proper to explain *me* as the object complement of *let*, as the meaning would not be complete to stop with *me*. It appears to us much more preferable to explain the objective case of *me* from the fact of its being the subject of the infinitive immediately following. It is a principle as old as Latin grammar that "the subject of an infinitive is in the objective case."

We make a final observation on sentences 6 and 11, groups VII and VIII respectively. If the position taken on this page in our December issue concerning words in *ing*, and which we defended from Swinton's grammar, is correct, then *being* and *studying* are not "participles" but verbal nouns, each being modified by a possessive. It is the *being* which really "should make no difference;" and it is the *studying* which is to be "favored" or not. Surely *its* and *my* are neither subject nor object of *anything*. If the EDUCATOR is wrong on this point, it is ready to be corrected.

On the whole, Miss Warner's set of answers is very creditable. We should be glad to see more that are equally good. The EDUCATOR will do all that is possible to encourage grammatical accuracy.

"A CRITICISM."

In response to our repeated invitation for any criticisms that might be offered on Dr. Godsmark's articles, Dr. L. A. Reed, of Jacksonville, Ill., sends a few observations to the EDUCATOR. They re-enforce, rather than controvert, Dr. Godsmark's statements. We are glad to present them to our readers in Dr. Reed's own words.

His [Dr. Godsmark's] conclusions are in harmony with the best scientific thought of the day, and I do not therefore see why he should be said to attack, or appear to attack "the fundamental principles of physics, as taught in the books." And for the same reason I do not see why he says this: "We are told in the books that the setting sun looks red or yellow because the rays being bent, we can see only the lower end of the spectrum." I find no such statement in standard text-books of physics. Let us compare a few statements.

"When the sun is near the horizon, its rays travel a greater distance in the air to reach the earth than when it is in the zenith; consequently there is a greater loss by *absorption* and reflection in the former case than in the latter. But the *yellow* and *red* rays suffer less *destruction*, proportionately, than the other colors; consequently, these colors predominate in the morning and evening." ("Elements of Physics," Gage, page 376. Appleton's Physics explains the phenomenon in much the same manner. "Appleton's School Physics," page 335.)

"The action of the particles upon the solar light increases with the atmospheric distances traversed by the sun's rays. The lower the sun, therefore, the greater the action. The shorter waves of the spectrum being more and more *withdrawn*, the tendency is to give the longer waves an enhanced predominance in the transmitted light. The tendency, in other words, of this light, as the rays traverse ever-increasing distances, is more and more toward red." ("Fragments of Science," John Tyndall, F. R. S., page 141. Written in 1868-69.)

"As the sun sinks toward the horizon, the atmospheric distances increase, and consequently the number of the scattering particles [of dust]. They *abstract* in succession the violet, the indigo, the blue, and even disturb the proportions of green. The transmitted light under such circumstances must pass from yellow through orange to red." ("Fragments of Science," Vol. 2, page 115. Sept. 16, 1870.)

These statements seem to me to be quite in harmony with the explanation of Dr. Godsmark:—

"When directly overhead, the rays of sunlight come to us through a comparatively thin stratum of atmosphere, and so meet with but a small amount of resistance. But when on the horizon, the rays of light are compelled to pass through a much more dense stratum of air, that lying near the earth's surface being laden with dust and moisture, all of which forms a resistance to the light rays; consequently those colors possessed of the least vigor become lost, or changed on the way, so that there remains a preponderance of the red, orange, or yellow rays, these being the more vigorous."

I am glad for these articles from the pen of Dr. Godsmark, for there is an element of the new in them, but

this newness must be looked for in his philosophy rather than in the scientific facts. Surely this is no quarrel with the text-books. There is enough false science to combat without bothering with a man of straw.

TO OUR FRIENDS.

THE inauguration of a correspondence department gives the EDUCATOR an easy and familiar medium for talking intimately with its friends. It is now nearly two years since the paper was founded, a period within which most publishers are able to determine whether a paper is likely to achieve financial success, or else go to the wall. The EDUCATOR has not yet passed beyond this "critical period," and it is proper that its friends should know how much depends upon their assistance. Perhaps each one can best estimate the value of such a journal to himself and others by answering these questions: Would you be willing to have the publication of the EDUCATOR discontinued? Is there any other educational magazine which would be a satisfactory substitute for it? If its continued publication depended only on your subscription and *one more* which you could get, would you allow it to fail?

We do not mean to intimate that the EDUCATOR is in this desperate situation, but any paper which does not depend upon selling its advertising space must have a well-sustained subscription list. If each reader should send in one subscription besides his own each year, no good paper or magazine would ever die. Do you not consider the EDUCATOR a *good* magazine — the best, if not the only one of its kind? Then what are you willing to do to stimulate its vigorous circulation?

We suggest that you take at least *one half-hour this week* in recommending the EDUCATOR to your neighbors and secure one or more new subscriptions for it. If you can do this freely in behalf of the paper, we shall thank you heartily and publicly. If you feel that you should be paid for your effort, we shall extend your own subscription four months for one new subscription taken by you, or renew the EDUCATOR to you one year for three new subscriptions sent by you. Study our special offers on the next page, and with the *Teachers' World* for \$1.00; but remember that this would pay for *two* subscriptions to the EDUCATOR alone, which would be quite as satisfactory to the publishers.

Please remember that we shall expect to hear from you *this week*; and the EDUCATOR will report results in the next number. Write and tell us what you think of the EDUCATOR.

PUBLISHERS' DEPARTMENT.

BOOK NOTICES.

WE have received Books One and Two of De Garmo's "LANGUAGE LESSONS." They are arranged in accordance with the natural method, and "provide for the pupil a language experience, instead of presupposing one that he does not have." A special feature of both books is an abundance of suggestive illustrations that tend to cultivate the pupil's constructive powers. Many of the composition exercises are adapted to easy correlation to the pupil's other lessons in science, number, and history. Together they constitute one of the best two-book series that has yet been produced for public-school use. Werner School Book Co., Chicago, New York, and Boston.

THE last edition of John Fisk's "History of the United States" is an excellent book. It follows the same method of presentation as that employed in his "Civil Government in the United States." The author's point of view is

set forth in these words: "In the teaching of history, the pupil's mind should not be treated as a mere lifeless receptacle for facts; the main thing is to arouse his interest and stimulate his faculties to healthful exercise. The best kind of grouping is that which brings out most clearly the true relations of cause and effect, for it gives to the narrative the flow of a natural stream." The book is handsomely illustrated, with an index and pronouncing vocabulary; 550 pages; Houghton, Mifflin & Co.

"SEED DISPERSAL" is a new book of 90 pages, issued by Ginn & Company. The author is Prof. W. J. Beal, of the Department of Botany and Forestry, Michigan Agricultural College. With such authorship it is needless to say that the work is interesting and reliable. It is very fully illustrated, and its simple, intimate style is such as to adapt it to the needs of students, as well as teachers, in the common schools.

"KEY-WORDS AND PHRASES OF THE NEW TESTAMENT" is the title of a new book by South G. Preston, who is writing an interesting series of articles in the *Religious Review of Reviews*. "Key-Words and Phrases" is a book, remarkable for its insight and research upon the symbolic meanings of the New Testament. Many of the phrases that have almost degenerated into pious cant in the mouths of superficial Christians, are shown to be radiant with significance that is discerned only by the ripe scholar and indefatigable student. Mr. Preston's ability as an expounder is fully illustrated in this book, which is to be followed by "The Psychology of the New Testament." Price, \$1.50; Barber & Smith, Nashville, Tenn.

THE *Training-School Advocate* is a new monthly issued by the Faculty of Battle Creek College. It is devoted to an exposition of the work of the college and its auxiliary schools. It presents a neat and attractive make-up.

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