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Dr. T. J. Sanders

VOL. VIII.

OCTOBER, 1897.

No. 2.



OTTERBEIN ÆGIS

OTTERBEIN UNIVERSITY

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Notice.

All subscribers knowing themselves to be indebted to the ÆGIS will please remit the amount to the subscription agent as soon as possible. This will be an accommodation to us and a relief to you. It will save us writing and relieve you of a dun.

Read.

Don't fail to read the thesis of L. A. Bennert, presented for the degree of A. B., June, '97, which appears in this edition. The article is concise and deserves a close reading by every one interested in scientific investigation. F. S. Minshall, '96, will contribute five papers to the ÆGIS during

the year, on the following subjects: "The Flora of Africa," "The Fauna of Africa," "Africa in the Twentieth Century," "Life in West Africa," and "Africa as a Field of Labor." These articles will be interesting and instructive, as Rev. Minshall is an excellent writer. We invite students and alumni to contribute articles to the ÆGIS.

Our Advertisers.

We call the attention of our readers to those who have advertised in the columns of the ÆGIS. When you wish to purchase, go to these firms and by so doing you will save money. These firms are honorable and will treat you well.

Sunday Excursions.

Sunday excursions may seem to be just and cheap outings, but upon serious reflection we are inclined to condemn them as unjust. True there are those who would not go at any other time, not because they are financially cramped but because they don't want to lose the time. There is, however, another side to this question. Many people would be only to glad to take advantage of these excursions on any other day, but they deem it wrong to travel thus on the holy day and hence remain at home. Cheap rates of travel should not be limited to Sundays, but if given at all should be to accommodate not only the thoughtless but the thoughtful.

A Wrong Impression.

Many students are under the impression that they must decide before entering college what they will follow after completing their course of study. This is a mistaken idea and in the majority of cases this problem should not be solved until

they have laid a broad foundation and found out the work for which they are especially fitted. The reason some college graduates make failures in life is because they have not wisely selected their life's work. It is a crime against parents to insist that their child adopt a certain profession just because that work is the parents' ideal, whether or not the child is fitted for that work. The purpose of education is to develop a freedom of mind and this can be done only by a systematic course of study. Not until a student is free to act and think for himself is he competent to chose his vocation.

Library Reading. It seems necessary to call attention to a grave mistake that many and most of the students are making. The college library seems to be a lifeless, useless thing. This should never be, the library rooms should be thronged with daily readers. No student can afford to waste any time that he could possibly spend in the library. Text-books are not the only books, but only a few of the least valuable ones. Nor are the recitation rooms the only places to find out something. Go to the library and read something that you don't study every day. Of course you do not have to go, but do something once that you don't have to do, and it will do you good. The library is the store-room where you can buy what all the great men have thought and done, from Adam down to now, and the price is just a little time and effort for each student.

Place of the Dead Languages. The place that the dead languages should hold in a college curriculum is a question much discussed at the present time. Is a long study of Latin and Greek worth the price? These languages are of use only in the higher professions, and in case one intends to teach them. More than this it may be said that they afford training for the memory, if studied properly. They help the memory just as long as the memory is

relied upon. If this is not the case they are a detriment. It is true that they give a good knowledge of the English, and a knowledge of the English is what is wanted and needed in nearly every case. Then why study the dead languages through long weary years to acquire a knowledge of the English, why not do what is better, study the English for itself? It will never pay to spend time in acquiring something that you will never use. Why know a half dozen languages and cannot use or support yourself in one? English is the best language on earth, has the widest use, the swiftest growth. If you want to know the history and customs of the early Greeks and Romans, get an English account or translation and read it, and don't waste your time in the laborious translation of the Greek and Roman. The time is soon coming when the English language will hold the four-year course and the Latin and Greek one. Some spend years in the acquisition of a dead language when they cannot talk plain, every-day English. The question is not what language do you speak, but what can you do in it? Then leave the German for the Germans, the Greek for the Greeks, the Latin for the Romans, for the English is the best and nicest language and reaches the most people. If we don't want the English first instead of the Greek and Latin, why don't we translate our Greek into French, we study it, too? Let us study what will do us the most good, and that will do us the most good that we can use the most in which we can talk and think the best.

SPECIAL.

The Otterbein Quartette has decided to accept engagements for concerts during the holiday season. They guarantee an entertainment of high order. Anyone wishing to communicate with the Quartette should address the ÆGIS immediately.

A SHORT TREATISE ON THE CELL AND CELL THEORY.

LEWIS A. BENNERT, '97.

DURING the present century many theories have been evolved purporting to explain and to account for the whole secret of organic development. Numerous eyes have anxiously and patiently turned the searching light of the best microscopes alike upon protozoans, the crayfish, earth worm, blood-cells, pollen-grains and parenchymal tissue with the hope of arriving at a theory that will prove itself sufficient to account for all the mysteries connected with organic development.

In 1838 Schleiden and in 1839 Schwann set forth the doctrine or theory that through cell formation we can adequately account for all organic development and it seems very evident from what is known at present that all physiological, morphological or biological problems in general not as yet satisfactorily explained will find solution at the final analysis in the cell.

The cell theory points us to very definite units as the primal elements of organization thus affording us what is held to be a very rational basis for the investigation of all the phenomena connected with life. The cell has been regarded as a unit of both form and function and as such it has been the subject of much painstaking and patient research, it has been hunted up and down through every grade of organization, it has been searched inside and out, experimented upon and studied in its many relations. Theories of heredity and variation have been built upon it and it was really through the cell theory that the structure of both plants and animals was first brought under one point of view by revealing a common plan of organization.

The cell researches for the past twenty years have been somewhat varied and apparently heterogeneous, but the essential phenomena are not at variance but unmistakably attest the validity and adequacy of the theory. The term "cell" is not a proper word for it implies that

the "cell" is a hollow chamber surrounded by walls. The word was first used by some botanists of the seventeenth century, who in trying to describe certain plant tissues when viewed in section coined the word cell because of the resemblance of the tissue to honeycomb. But while the word cell is really a misnomer yet the word has been and is so universally used that we feel assured it will perish only with the English language. Schleiden sets forth the cell doctrine which he limited to plants in the following words: "Each cell leads a double life; an independent whole, pertaining to its own development alone; and another incidental in so far as it has become an integral part of a plant." Schwann says that "Each cell is within certain limits an individual, an independent whole. The vital phenomena of one are repeated, entirely or part in all the rest. These individuals, however, are not ranged side by side as a mere aggregate, but so operate together in a manner unknown to us as to produce a harmonious whole. The whole organism subsists only by means of the reciprocal action of the single elementary parts." In the "double life," this "harmonious whole," this "reciprocal action," of "elementary parts," this "operating in an unknown manner," we see the cell theory, the "unknown principle of correlation" which has inaugurated a new era in the evolution of physiology and pathology by revealing that all the various functions of the body in health and disease are nothing more than the outward expression of cell activity. Speaking morphologically every organism consists of cells and speaking physiologically every organism maintains itself by the "reciprocal action" of the cells.

An organism made up of many cells differs from one of a single cell. The organism having many cells has two structures, a structure of its individual parts or cells and a structure formed by the union of these parts. So also any organism is supposed to have at least two distinct organizations, the organization of the cells and the organization formed by the union of these organized cells. In the egg-cell or one

cell form we have an elementary organism, in the two-cell stage, two elementary organisms, forming together an organism of a totally different order based on a new organization. In the one-cell forms all the vital functions are performed by a single cell but in all multi cellular types whether plants or animals the various vital functions are distributed by a physiological division of labor among different groups of cells especially devoted to the performance of specific functions. Thus we see that the cell is not only the unit of structure but it is also the unit of function. If we have for our consideration the secret of the contraction of the iris or the heart we have to study the muscle-cell, if we would know how the liver secretes bile or the parotid gland secretes saliva we must study the gland-cell and so in the nerve or ganglion-cell resides all the mysteries connected with mind, that is in so far as we try to account for its action with special reference to particular organs. By this arrangement while one part devotes itself to one kind of action and yields benefits to all the rest, all the rest jointly performing their special actions yield benefits to it in exchange.

We may safely conclude that structure is at the basis of all vital phenomena. But while the cell is to be regarded as the unit of both form and function yet we have long known that the cell cannot be taken as the ultimate unit of life for the cell is organized, which means that it is made up of a number of organic units of a lower order which are different and are arranged in the cells much like the cells are arranged in an organism. Every notable and worthy effort to account especially for heredity has been the means of bringing into service primary elements in comparison with which even the cells themselves appear to be complex organisms. For the names of these smallest parts Nageli employed the term "micellae;" Herbert Spenser, "physiological units;" Weisman, "biophores;" Darwin, "gemmules;" Weisner, "plosomes." Thus the tree or dog may be called an organism or apparatus, which is composed of organs, the organs in turn are made up of tissues, tissues

are resolved into cells; cells into nucleus, centrosome and so on; nucleus into chromosomes; the chromosome according to Weisman's terminology into "ids;" the "id" into "determinant;" the "determinant" into "biophores" and the "biophore" into "molecules." All growth, assimilation and reproduction must have their seat in these, the most fundamental elements. They make up all living matter, are the bearers of heredity and the real builders of the organism. Neither is their action and control limited by cell boundaries, for the cell walls are found to be perforated, through which perforations the continuity of these final elements is made possible. We are ready to say now that an organism embracing one cell and that of two or more cells is not one of dependence upon the number of cells. According to the best authority we can state that the secret of organization, form and differentiation is not to be found in the number of cells, nor the number of nuclei, nor cell division, nor cell-formation but in the ultimate elements of living matter.

I shall now speak of the cell more in detail. The cell may be defined to be a mass of protoplasm containing a nucleus, or another definition that anticipates explanation is that it is cytoplasm plus nuclear matter. The normal form for the cell would approximately be spherical but this form is modified by the active movements of the cell substance, by unequal growth and by the pressure of the adjoining parts. Protoplasm or as referred to by zoologists, sarcode which has been appropriately designated by Huxley "the physical basis of life," is a viscid, tenacious, translucent, semi-fluid substance resembling both in appearance and composition the albumen of an unboiled egg. But it is readily and fundamentally distinguished from egg-albumen and any other form of dead matter by two attributes which are vital. (1) Its power of increase by assimilating what it converts into the likeness of itself nutrient material obtained from without. (2) Its power of spontaneous movement which shows itself in extraordinary varieties of action,

sometimes slow, sometimes rapid, sometimes wavelike and continuous and sometimes rhythmic with well-defined intervals of rest. Protoplasm whether dead or living has a great power to absorb water, but living protoplasm will remain unstained if steeped in any solution containing coloring matter, while dead protoplasm will be thoroughly pervaded with any staining substance with which it may come in contact. Besides the living protoplasm the cell contains embedded in its contents some food granules, drops of oil and water, pigment bodies and excretory matters. These lifeless bodies which have been designated metaplasm sustain no active relation to the workings of the cell and are either to be considered as reserve food material or waste products. The membrane commonly called the cell-wall by which the cell is surrounded is generally a lifeless product of the protoplasm, sometimes however, the cell-wall arises from a direct transformation of the protoplasm in which case it generally retains its power of growth. The cell-wall of the plant-cell is composed as long as the cell is in a living state of the substance known as cellulose, but this substance is very frequently impregnated with other substances such as silica, lignin, etc. In animals the cell wall is not developed as much as in plants, inorganic deposits of silica and carbonate of lime are found in the cell-membrane sometimes.

Physically considered the cell-wall consists of very small particles, micellae as termed by Nägeli, surrounded by water. The protoplasm of the cell is differentiated into two marked and distinct parts, the cell-body or cytoplasm which makes up the principal mass of the cell and a small portion the nucleus or nucleoplasm which lies in the cell body. A third element, the centrosome which is present in most if not all the cells is especially concerned in the process of cell-division. The cell body and nucleus are pervaded by a common structural basis but there is a well defined chemical contrast between the nucleus and the cell-body, the former containing a

substance known as nucleid while the latter has no such substance but is especially rich in proteids. Some zoologists and botanists regard protoplasm as essentially a liquid or a mixture of liquids, but the majority of investigators so far as I have been able to learn are not agreed to this and resolve the protoplasm of both nucleus and cell-body into two kinds, first the more solid of the protoplasm is designated the "reticulum" or "threadwork," while the more liquid is called the "ground substance." The solid portion is held to be the most active. The reticulum or threadwork assumes various forms and according to some authorities has embedded in its meshes living particles which form an essential structural feature of the solid portion. These small particles have been termed microsomes. As the nucleus has come to be held the controlling center of cell-activity and thus as a primary factor has much to do with the growth, development and transmission of peculiarities from cell to cell and from generation to generation, I shall speak somewhat in detail of its structure. The nucleus presents two phases for examination which are widely different, the "resting state" is characteristic of the nucleus in ordinary condition, the other is characteristic of the nucleus only in the process of cell-division about which I shall speak later. The typical form of the nucleus is spherical but this may be modified so that the form is very irregular or it may be broken up into groups of several lobes or it may be formed into an irregular ring with perforations. The following structural elements characterize the cell in "resting state:" A well defined delicate membrane known as the nuclear membrane that gives to the nucleus a sharp outline can be readily distinguished from the surrounding cytoplasm. But the most essential part of the nucleus is the nuclear reticulum which is a net work and made up of two very different constituents. One is a nuclear substance known as chromatin which is sometimes arranged in a nearly continuous network and

sometimes in detached particles, known as granules. This chromatin plays a great part in the economy of cell life and work. The other part of the nucleus is a substance which surrounds and supports the chromatin and known as linin. One or more round or irregular bodies may or may not be found suspended in the network of the nucleus. To these bodies the name nucleoli has been given. The nucleoli are at least of two kinds, the true nucleoli or plasmosomes and the net knots or karyosomes. The nucleus sometimes has in addition to the nucleoli the centrosome. The ground substance of the nucleus is a clear saplike substance which occupies the interspaces of the reticulated portion. The substances that enter into the composition of the nucleus are rich in phosphorus and albumen. A mass of protoplasm devoid of a nucleus cannot grow, for it cannot assimilate nutritive material so it sooner or later dies. The cytoplasm is usually resolved into two well defined belts, the inner being known as the endoplasm is a medullary substance in which is found the nucleus, and the other which is the outer belt is known as the exoplasm from which the cell-membrane and modifications of the cell-membrane take their origin. The centrosome to which I incidentally referred before has caused a great deal of speculation and has given rise to many hypotheses, but we have come to know something of its nature and the part it plays in the economy of animal and vegetable machinery. It is very minute and as a rule lies outside of though near the nucleus in the centrosphere which is a localized modification of the reticular portion of the cytoplasm. The centrosome is an organ for cell division. The great question of cell division has long been productive of theories which have been put forth purporting to account for the way in which the division of the cell is made. The first theories made the process a much simpler one than it is held to be to-day. It was first thought that the division began with the division of the

nucleolus, was continued by simple constriction and division of nucleus and was completed by the division of the cell-body and membrane. To-day there are two ways accepted in which cell division takes place, the one is accompanied by a very elaborate and complicated transformation of the centrosome and nucleus to which has been given the name "karyokinesis," in "direct division" or "mitosis," the other more nearly conforms to the theory first hit upon and is known to-day as the "akinetik," "direct division" or "amitosis," but the last process is in reality a rare and exceptional one and I shall not for lack of space treat of it. The indirect process readily resolves itself into stages that can be made use of in description. In the first stage may be grouped the preparatory changes, in the second comes the essential step in the division of the nucleus, in the third the nuclear material is distributed and in the fourth the entire cell divides and what are known as daughter cells are formed. As the cell approaches division there is a marked change in the substance of the nucleus, the chromatin takes the form of a thread which is known as a spireme, in a short time this spireme breaks up into a number of parts which are known as chromosomes. After this transformation takes place the liquid part of the nucleus becomes continuous with the surrounding cytoplasm. "Every species of plant or animal has a fixed and characteristic number of chromosomes, which regularly recurs in the division of all its cells; and in all forms arising by sexual reproduction the number is even."

The number is said to be sixteen in man. While this transformation of chromatin is taking place a very complex structure known as the amphiaster is found occupying the place of the nucleus. The parts of this amphiaster are the spindle at each end of which is a cluster of rays known as an aster and at the center of each aster is found a centrosome. During the formation of the amphiaster, the broken parts of the spireme, the chromosomes arrange

themselves into a belt at the mid point of the spindle and form what is called the equatorial plate. When all the transformations of which I have made mention have taken place there arises what is known as the mitotic figure which on the whole is just preparatory in character. The next stage is the most significant and fundamental of all cell division, for it is in this stage that the chromosomes which are at this time found in the equatorial plate split throughout their entire lengths into two exactly equivalent halves, thus what are to be the daughter-nuclei receive from the mother nucleus equal portion of the chromatin. The next stage is marked by the moving of these daughter chromosomes to the opposite end of the spindle, each group of the daughter chromosomes being crowded into a mass near the center of the aster to be reconstructed later into a nucleus and in the final stage of this indirect division the entire structure divides into two parts so that the original little asters, each one of them has half of the spindle, half of the chromosomes and has its centrosome, the whole after a little development is ready to be called a new cell. The centrosome with its little corpuscle surrounded by its sphere does not disappear at the close of cell-division but remains as a distinct cell-organ sometimes really within the nucleus but more often at the side of the nucleus in the cytoplasm, and it appears that the first impulse to cell division is given by the centrosome because it is through the centrosome that the amphiaster is formed thus Wilson says: "The centrosome is an independent, permanent cell organ, which, exactly like the chromatic elements, is transmitted by division to the daughter cells. The centrosome represents the dynamic center of the cell." These are the essential phenomena for both animals and plants, still there are some modifications which in order that they might be made plain would require much description in detail. As to just how the centrosome is to be regarded as the dynamic center is as yet wrapped in uncertainty, but

there are at least two theories put forth, which, while they are somewhat at variance are in the main quite similar. The one which has been received with most favor is the theory known as the one of "Fibrillar Contractility." The theory in substance is this, that the movements that accompany cell-division have their immediate cause in the contractility of the protoplasmic fibrillae and their arrangement into asters and rays makes a kind of muscular system.

The centrosome is the first of all the organs of the cell to divide and after its division the grouping of the contractile elements into two systems, each having its own center, takes place. The cells which go to make up the entire anatomy of all multi-cellular forms of all animal life are divided into two kinds. To employ Weisman's terminology the two kinds of cells into which any organism is resolved are the somatic which constitute the tissues of all the organs and the germ cells which give rise to new individuals by detachment from the body.

Both of these kinds of cells have a common origin in the parent germ cell. The male germ cell, the spermatozoon of the higher types of life comprises as a rule only a single nucleus and a centrosome with sufficient cytoplasm for the development of one or more cilia which serve as organs of locomotion, the female germ cell or ovum is much larger than the male and contains a quantity of cytoplasm with much nutritive material. These germ cells differ not only in size and shape but also in their internal structure. Both spermatozoa and ova take their origin from cells known as primordial germ cells. When a spermatozoon comes in contact with an ovum the process of fertilization takes place in which two independent lines of descent are blended into one and the inauguration of a new cycle of cell division takes place. Among the unicellular plants and animals, fertilization is effected by means of conjugation which is a process by which two or more individuals fuse together, or it

may be that the union is only a temporary one in which case there is an exchange of nuclear matter after which they separate. But in all the higher forms of life fertilization consists in the permanent fusion of two germ cells one of paternal and one of maternal origin. "In every known an essential phenomenon of fertilization is the union of a sperm-nucleus, of paternal origin, with an egg-nucleus, of maternal origin, to form the primary nucleus of the embryo. This nucleus known as the cleavage or segmentation nucleus, gives rise by division to all the nuclei of the body and hence every nucleus of the child may contain nuclear substance derived from both parents."

There are many ways by which the union of germ-cells is effected but all forms of fertilization resulting therefrom involves a conjugation of cells by a process that is just the opposite or converse of cell division. In the lowest forms of life conjugation takes place between corresponding elements, nucleus uniting with nucleus, cell-body with cell-body, and so on, but as we rise in the scale of being the germ-cells diverge more and more. For the body in embryo the mother furnishes the major part of cytoplasm which is to be regarded as the pre-requisite for all growth and differentiation, both parents furnish the chromatin and the father furnishes the centrosome which being regarded the dynamic center of the cells causes the machinery of mitotic division to be organized so that when the process of cell-division takes place each part will receive its quota of the common heritage of chromatin. All animals and plants have a limit of growth, but the causes by which cell-division is incited and by which its cessation is determined are as yet imperfectly comprehended and we are safe in saying that they will ever remain so for they are enwrapped so mysteriously in the principles of life that they baffle all of man's feeble attempts at explanation. This much we know that cell-division takes place much more rapidly in the early stages of life whether plant or animal and diminishes more and more as the

limit of growth is approached. The size of the body whether plant or animal, depends not upon the size of the cells but upon the number of the cells. Measurements of the cells from the epidermis, the kidney, the liver and many other tissues show that the cells of the dwarfs are as large as those of the giants.

When the limit of growth is attained an equilibrium is established, some of the cells cease to divide such as the nerve-cells, others divide only under special conditions, such as muscle-cells, gland-cells and corrective tissue cells, still others divide throughout life. Wilson says "The limit of size at which this state of equilibrium is attained is an hereditary character which in many cases shows an obvious relation to the environment and has therefore probably been determined and is maintained by a natural selection."

On the supposition that the germ is a single cell similar in most respects to any kind of tissue-cell of which the body is composed, one of the greatest questions that looms up in biological science is the way in which a single cell can and does carry the heritage of the species and how in the course of time, the germ gives use to a snail, a rabbit or a man.

The mystery as to how the adult characteristics lie latent in the germ-cell has not as yet been solved, but this much is certain that the marvelous formative energy of the germ comes not from any impressions received from without but is internally inherited from the parental life of which it was originally a part. It was at one time thought that the germ contains a pre-delineated embryo but it is now known development which is brought about by cell division is accompanied by a differentiation peculiar to the inherent qualities of the cell, whereby the cells gradually assume diverse forms and functions and so accomplish a physiological division of labor.

Specialists have not as yet clearly made out the innermost structure of the germ-cells, so all theories of inheritance advanced to-day do not rest upon the solid ground of real matter of fact, but have for their setting hypotheses

which are plausible but at the same time are largely speculative. The discussions of inheritance revolve about two central hypotheses which have given rise to two theories: (1) Germinal Localization and (2) Idioplasm of Nägeli. In the germinal localization theory it maintained that although the embryo is not pre-formed in the germ, it must nevertheless be pre-determined in the sense that the egg contains definite areas, or at least definite substances predestined for the formation of corresponding parts in the embryonic body.

Nägeli regarded heredity as inherent in a definite physical basis and believing in such brought forward the "Idioplasm theory," in which he considers inheritance effected by the transmission, not of a cell, but of a particular substance, which he calls idioplasm contained within the cell. It was early determined that this idioplasm was not cytoplasm, however it was at one time thought that it was in the shape of a network extending through both nucleus and cytoplasm, but the most recent and trustworthy investigations have made the idioplasm and chromatin identical. If this be true we can see how important a factor chromatin is, not only in the respects made mention of before in this paper, but also in the theory of inheritance.

"The nucleus contains the physical basis of inheritance and chromatin its chief, or rather, essential constituent is the idioplasm postulated in Nägeli's theory."

The smallest parts of a cell to which I referred once before were called "gemmules" by Darwin, who assumed that the gemmules arose in the body, were thrown off as germs by the individual tissue-cells, were transported to the germ-cells and there accumulated as in a reservoir, so by what is known as pangenesis we can see how Darwin accounted for the transmission of acquired characters. The theory of development and inheritance brought forward by Roux and later elaborated by Weismann is the one most accepted to-day. He builds his theory upon the hypothesis that the chromatin is a colony or congeric of invis-

ible self-propogative vital units or "biophores" somewhat like Darwin's "gemmules," each of which has the power of determining the development of a particular quality. Weismann conceives these units as aggregated to four units of a higher order known as "determinants," which in turn are grouped to form "ids," the latter being identified with the chromatin granules. The 'ids' are finally associated in linear groups to form chromosomes. Since the biophores are qualitatively different, it follows that the same has to be true of the higher units formed by their aggregation. Hence, each chromosome has a distinct and definite character of its own representing a particular group of hereditary qualities.

In the construction of many of the theories of heredity, the transmission of acquired character is based on the supposition that micro organisms are transmitted. A splendid article supporting this view can be found in *Science Progress*, Vol. V. p. 324.

ARBITRATION VERSUS WAR.

R. J. HEAD, '01.

[An Oration Delivered June, 1897.]

WAR is a tragic incongruity. It is discordant to the ear of the age. It is incompatible with the better feelings and purposes of human nature. It is diametrically opposed to prosperity, progress and civilization. Its willful destruction of property, its expenditure of infinite treasure, and its wholesale murder have become intolerable. Humanity longs for peace and rest.

This is not strange when we think what war means. It means ages of tyranny. From the cradling of the race to the present time, mankind has been subject to the oppression of war. There have been lulls in the storm, it is true, but only that it might break forth more violently. Wars and rumors of wars, battles lost and won, defeat and victory, nations made and unmade, slavery, devastation and slaughter, crowd the pages of history.

War means standing armies, millions of consumers but not producers. Civilians are not only robbed of the soldiers' contributions to society and civilization, but are heavily taxed to keep them.

War means the rupture of the arteries of commercial life, the wasting of the life-blood of nations, the destruction of prosperous intercourse. Recall the Continental Wars by Napoleon and the War of the Rebellion; and then inquire if war fosters commerce and prosperity.

War means the development of the baser passions of human nature. It develops cruelty. Think of Andersonville prison, of the bare, bleeding, feet of the Revolutionary soldiers, of the Black Hole of Calcutta; and then ask if war is not cruel. Go to the battlefield. Listen to the cries for water from lips parched with wound-fever; bend low, and from dying lips hear the whispering of some dear name; raise your eyes lest you see the precious blood gushing from brave hearts; and then ask if war is merciful. See the extinction of the Red Man; look at the blockade of Crete; witness the cold-blooded slaughter of men, women and children in Cuba; and then inquire if war is just.

War means the fostering of licentiousness, the degradation of woman. Turn to Cuba and discover there that the pure wives and stainless daughters of noble patriots are suffering indescribable tortures from human beasts. Helpless, stung to the quick, their chaste and delicate natures writhe in agony from the brutal outrages. Go to Armenia. Go to Greece. Discover there that lovely women, fair as a summer's morn and pure as the snow of heaven, are enduring unspeakable indignities from the devilish Turk; and then ask if war fosters chastity and elevates womanhood.

War means the cultivation of blood-lust, disregard for life, the most precious of all gifts. Armed to the teeth and knowing his enemy to be similarly fortified, the soldier feels that he must fight to kill or otherwise be killed. He, therefore, becomes hardened and strives to preserve his own life by the destruction of another's.

War means the setting back of the dial of progress, the hindrance of all good and the transmission to posterity, of national hatred, jealousy and burdensome debts. Observe France and Germany, England and the United States.

War means glorious victories—disastrous defeats, thousands of desolated homes and broken hearts, and rivers of blood and floods of tears.

Can we wonder that humanity prays with all its heart?

O peace, sweet angel of peace, desire of all nations, friend of progress and promoter of civilization, come thou and spread thy wings; free this suffering race from this diabolical curse; foster thou the blessings of truth and right; bid all discords to cease among nations; and give this oppressed world rest and true prosperity.

Thus does man hope and pray for universal peace. He has dreamed of this Utopia for centuries. Ages have come and ages have gone but they have never banished this hope from his mind. This has kept him from despair. He has sought it with incredible zeal. He has planned for it with beating heart and expectant breast. He has waited for it with confident assurance and untiring patience. Will he be disappointed? Have these hopes been aroused only to be blasted? Must all his dreams be shattered? Is there no relief to the awful tragedies of war?

Yes, some relief has been found, a substitute has been discovered. Amid the sway of brutal force, even in the dense gloom of paganism, in the dark ages of Christianity and in the more enlightened Nineteenth Century, rays of light, peace, goodwill are seen streaming from the Sun of Arbitration. As oil poured upon troubled waters, as a harbor in a tempest, and as a light in a dark place, arbitration has again and again been a true friend in time of need. Its past achievements are many and great and guarantee its success in the future. Its prospects are bright and cheering. From all sides comes the demand for its services. Gradually but surely it will obtain sovereign sway.

We live in a peculiar age. Science has oblit-

erated space, overcome differences of language, and connected all countries as one empire. Commerce has broken down many international barriers, and through love for the dollar made all classes interested in one another, and developed new industries and enterprises in all parts of the world. Religion has abolished numerous prejudices, kindled among men a kindly regard for each other, and brought about a community of thought and feeling unknown before. No country is therefore isolated. The welfare of one is the welfare of all, and a calamity to one is a calamity to all. Thus, though dark clouds lurk here and there, the signs are propitious.

Railroads, telegraphs, telephones, and steamships are great promoters of peace, prosperity and civilization. Connecting as they do, different nationalities by common ties and interests, they tend to make men forget their differences in the promotion of a common cause.

The public school and college, instructing and training their tens of thousands for good, intelligent, useful lives, are naturally opposed to war. The higher the enlightenment of a people, the higher its enjoyment; and the higher the enjoyment the more precious will life become; and the greater the regard for life, the less will be the desire to lay it down. All hail then to the noble work of the school. It makes good citizens and good citizens make good states. What country has paid more for education and less for war than the United States? None!

The influence of woman is decidedly against the power of might and unmistakably in favor of that of right. She who has wept, prayed and mourned; she who has provided the husbands and sons for the slaughter; she who has paid the price and reaped the bitter fruits of war without a murmur,—no longer sits in silence. Her voice denounces war. Her loving and tender ministrations on the battlefield condemn it. Her infinite sacrifices demand its abolition.

A world-wide press is a keen foe to war and a good friend to peace. It brings the news of

defeat and victory from the battlefield. Its vivid descriptions of the horrors of the campaign, its graphic narration of the hardships and disasters of defeat, its suggestive word-pictures of the homeless and desolate, and its published list of the missing, killed, and wounded,—all serve to create a loathing for the monster war.

The enlightenment of the masses and increased regard for life declare the time is here when the voice of humanity must be substituted for the roaring of the cannon. War is essentially anti-Christian, brutal and murderous. Arbitration is Christian, humane and life preserving. War is the synonym of evil, the negation of good. Arbitration is the representation of sincerity, the symbol of honesty, of sound principle, and of righteous administration. The record of both is before the world. What its judgment is, may be seen from the increased sacredness of life and the humanizing of war itself. The rights of neutrals are conserved, the lives and property of non-belligerents are protected, the "Red Cross" is permitted upon almost every battlefield, and weapons causing needless suffering have been abandoned. War itself is tottering.

Public Opinion, that mighty power, molding even the times and predetermining the great epochs of history, frowns upon and condemns the frightful carnage of war. If a plebiscite were taken from the Baltic to the Mediterranean, from the Ural Mountains to the Atlantic Ocean, from the Gulf of Mexico to Hudson Bay, and from the Atlantic to the Pacific upon the question, War or Arbitration,—the vote would be overwhelmingly in favor of arbitration. Public Opinion has no armies upon the field, no ships of war upon the sea; yet rulers and officers of state obey its mandates. Eighteen months ago when war as a wild beast was about to kill and devour kindred peoples, Public Opinion as the champion of arbitration, and as one having authority, indignantly commanded, Back, ye dogs of war! Back, ye hosts of hell! Back, ye murderers of innocents! Cowed and ashamed they went back.

The many cases in which war has been condemned, peace upheld, and rules formulated for international arbitration, show that arbitration is reaching its destiny. This has been done:—

By efficient law associations. One of the most notable of these, the Bar Association of New York, outlined a plan of arbitration in 1896.

By influential peace societies scattered throughout many countries. Ninety-four of these societies exist, forty in Europe, fifty-four in America.

By representative parliaments. In 1887, a memorial by two hundred and thirty-three members of the House of Commons was addressed to the United States setting forth the advantages of friendly settlements of disputes. In 1890, the American Congress invited all countries to join it in arbitrating difficulties. To this the House of Commons favorably replied in 1893, immediately followed by other representative assemblies.

By international conferences. The Pan-American Conference, in 1890, condemned "war as cruel, fruitless and dangerous;" and by devising a plan of arbitration dedicated two great continents to peace.

By interparliamentary unions. Such an association was formed in Paris in 1889 for the sole purpose of the preservation of peace and the abolition of war.

The number of successful cases of arbitration and treaties embodying this feature, prove war unnecessary and arbitration a most worthy substitute. In forty-two years forty-five wars were averted. Cases in which even the honor of the countries was said to be involved, have been successfully settled. The "Jay Treaty" and the "Alabama Case" are in point.

Treaties embodying arbitration exist between the United States and Mexico; also between England, Portugal, and the Congo Free State. In 1895, the Belgian Senate concluded four such treaties in *one* day.

Thus, with the interests of commerce, with the moral and educational force of the school,

with the reforming influence of woman, with the enlightenment of a progressive age, with the increased preciousness of life, with the mighty power of Public Opinion, and the glorious fruits already gathered from arbitration, all against war,—rulers now love to proclaim peace as their policy, apologize for going to war, and declare in favor of arbitration. The final triumph of arbitration is thus assured.

The United States has been and is the natural leader in arbitration. First to devise rules for the battlefield, first to claim the rights of neutrals, and the greatest participator in arbitration, she has led the van. Situated two thousand miles away from any great armed power, with inexhaustible resources, and with a national guard of ten millions, she is secure. Of standing armies and floating navies she has little need.

O America, favored of God, impregnable in thy unarmed situation, unconquerable in the loyalty of thy people, and secure in the principles of right and the undying traditions of thy founders,—go on, lead on, until complete victory shall be won.

ATHLETIC.

Reply to Oberlin.

IN a recent number of the Oberlin Review the Otterbein football team was slanderously misrepresented. The statement was made that the Otterbein team confessed that they were bluffing. That statement is maliciously false. Never in the history of this institution has such a charge been made against its athletic teams. Our teams have always put up the pure article and have never before been accused of resorting to the low method of hanging bluffs. At no time in the Oberlin game was Otterbein afraid of Oberlin's scoring. And not until the end of time and the legal calling of the game did Otterbein quit the field. Oberlin did not make the required five yards once in the first half, always losing the ball on downs. The statement was also made that they carried the ball over for a touchdown by

two bucks. Yes they did, but it was after the game had been called and not an Otterbein man opposed the two good bucks. They know as well as anybody that that was a childish piece of business and should be beneath the dignity of any college team of Ohio.

Otterbein 20, Kenyon 0.

For the second time in as many years has Kenyon gone down before the sturdy sons of Otterbein. Her colors are no longer flippant on the breeze of victory. She can look way back upon a series of victories and be glad, but she must turn her back to the present. The game was clean but one-sided from the start. Otterbein's interference was strong, Kenyon's was somewhat slow. Otterbein's plays were open and quick, Kenyon's slow and massed. There was only one thing wanting, and badly wanting, too, and that was enthusiasm among the O. U. rooters. This is the first necessity to a successful football team. Nothing so quickens, enlivens and inspires a player to exert every nerve as encouragement from his fellow students on the side lines. This spirit surely can not be on the wane in O. U. Let every student come out and let him not act as if he were ashamed to own the team; that it is his duty to support. With united efforts we can win our games; with this indifference we must lose them all as we deserve to do.

Otterbein 22, Wittenberg 0.

Otterbein defeated Wittenberg Saturday, Oct. 16, in one of the prettiest games ever seen on the Otterbein gridiron. The Wittenberg team was somewhat heavier, but lacked in team work. This can no doubt be accounted for by the trouble they have been having with their coach, which has partly hindered the team from doing its best work. Wittenberg played a clean, gentlemanly game and played it hard, too, from first to last. If they continue to play the same aggressive game that they played here, they will win most of their games. They have a great deal better team than Kenyon. Wittenberg's team was not partly employees, but a strictly college team. This

speaks well for any college in the way of purity in its athletics. A team of this kind can be supported whether it wins or loses. Otterbein has not yet forgotten the treatment they received at Springfield last Thanksgiving Day. Although defeated they were set up like lords, banqueted and enjoyed the kindnesses of one of the best club-houses in Springfield.

Otterbein 12, O. S. U. 12.

Otterbein and O. S. U. played a tie game on the latter's grounds on last Saturday. O. S. U. is the first team that has scored against Otterbein this season. The game was slow throughout. O. S. U. made their gains through Otterbein's line. Otterbein made theirs around the O. S. U. line. The field was dusty and to this is due to some extent the slowness of the game. Both sides repeatedly lost the balls on downs. The only thing to be regretted is the tie score, and if possible another game should be played.

CIVIL LAW.

E. G. LLOYD, '98.

NATURE provides the seeds of thought that grow and bloom into richest fruitage. Primitive man could not see the relation of nature to himself, nor could he read her highest laws. The earliest savage could not see the relation of savage to savage. But down with the race, through countless years has come the idea of the natural rights of man. But only in recent years have developed the civil relations of man to man.

In all the relations of cloud and star to night and day, of wind and rain to earth and sky, of planet to planet and nature to God, man saw his relation to his fellowman. He saw that that relation made demands of him and of each and all the rest. Each saw that his happiness depended upon the happiness of the rest. He saw that he didn't want his neighbor to meddle with his business, and that he had no business to meddle with his neighbor's. He saw that his personal rights and property must be pro-

tected. He saw that it was necessary to make certain requirements of others, and he saw that it was no use to demand of others what he wouldn't do himself.

These requirements necessary to govern all the doings of men with men, and men with state, and state with government, were called civil laws. At first these so-called laws were nothing more than unwritten obligations and common privileges that would have been granted by the meanest savages. The love of being free that springs eternal in every human breast, made the savage bold to do his will regardless of what it was. And what he did he accorded to all. For the most part they were the common rights and natural privileges that men would have known and granted before they ever heard of law.

At first the rights were natural and personal, man had a right to live and own his flock and wife, and wander over all the earth. These were sacredly guarded and preserved though priest and prophet and patriarch and preacher to Jew and Gentile. But civil law is not the product of an idea of an idle savage or of ignorant people but of a conquering, controlling nation. The lowest savage has scarcely more use for civil law than the meanest beast. He has no sense of right and wrong, he does not think or act, he cannot rule himself, he knows no joy or sorrow, feels no pain nor pity, mere existence brings him to the level of the brute, he has no friends nor foes, no reverence nor respect, he is always idle and indolent.

Civil law is the natural product of civilization. The necessary product of all the experience of the past. It follows power and wealth and wisdom. It came after spear and sword and fine soldiery.

Rome first taught the nations how to fight, then laid aside the sword and forever taught them how to rule. Our civil law is the product of the spear of the Roman, the courage of the Saxon, the freedom of the Tueton and the good sense of the descending English. The first civil tragedy took place in the garden of Eden. It was between husband and wife.

The husband gave the wife the law in the case, but the wife wanted to be wise and tasted the wrong fruit. Adam told her not to but she did, and it was all over. They slid down from the bowery banks of beautiful Eden and hid in a cane-brake, where they have been tilling the soil and sweating from earnest toil ever since.

That was the first civil obligation of woman to man, the husband's first demand of wife. But civil demand went along with man from the garden of abundance to the parched prairie of thistles and rag weeds. But since that time civil law has been the mightiest civilizing influence in the world. Without it human advancement would be impossible. It is the foundation of our political institutions, the basis of our progress and greatness. It cares for the farmer, it protects the carpenter, it aids the manufacturer, it makes the business of the lawyer, it is a friend to all mankind.

The civil law of any nation makes its intelligence, its power in the world. It makes home and friends possible; it gives personal freedom, and makes sure the personal right to the products of earnest toil; it makes one person as good as another; it makes each respect the rights of the others. It is the guide that guides our daily actions, that makes men keep faithful to their lawful obligations, promises and their words. It is the rightful guardian of each person and his deeds. It keeps men as good as religion can make them. It is the great teacher and master, judge and vindicator. Some men would naturally rather do wrong than right, but they behave because they must. Civil law encourages and merits the right, discourages and demerits the wrong. It makes marriage lawful, lasting and good.

Men always want to be wise and happy, and for the most part to keep out of jail. Civil law tells them what to do to keep out, and what to do to get in. It curbs and curses the vile and vicious. It gives life to hope and happiness, the brightest stars that gleam in the human soul. Our civil law is good and grand, but its unequal enforcement is inconsistent and unjust. The designing mind, the real planner

of the wrong, the guilty person, is too seldom found. Burr too often goes free, while Blennerhasset pays the penalty. Civil law is the greatest humanizer in our world to day.

ALUMNAL NOTES.

J. M. Martin, '96, is superintendent of schools at Timberville, Va.

Rev. D. N. Scott, '94, is attending Union Biblical Seminary this year.

C. E. Byrer, '97, is attending Bexley Hall Divinity school, at Gambier, O.

Miss Laura Ingalls, '97, is teaching in the public schools of Brink Haven, O.

Rev. G. D. Needy, '94, is pastor of the United Brethren church at Eugene, Ore.

Rev. R. A. Longman, '96, is pastor of the United Brethren church at Springboro, O.

Miss Mary Murrel, '97, visited with friends here for a few days, remaining over Sunday, Oct. 10.

S. C. Markley, '95, is completing the third year in the medical course at Cincinnati University.

W. B. Gantz, '95, is at McCormick Theological Seminary, Chicago, Ill. He will complete the course this year.

T. G. McFadden, '94, is taking a post-graduate course in chemistry at Ohio State University, Columbus, O.

Rev. B. L. Seneff, '94, ex president of Westfield College, is now pastor of the United Brethren church at Greensburg, Pa.

Rev. J. I. L. Resler, '76, is pastor of the United Brethren church at Johnstown, Pa., where he succeeds Rev. L. F. John, '83.

Mr. and Mrs. L. M. Fall, '83-'85, recently visited with friends at Dayton, O. Mr. Fall is a successful lawyer at Hutchinson, Kan., and is serving his second term as county attorney.

Rev. J. A. Barnes, '94, graduate of Princeton Theological Seminary last spring, is pastor of the Presbyterian church at Amanda, O.

Rev. J. A. Kumler, D. D., '62, is chancellor of the Illinois Wesleyan University, Bloomington, Ill., one of the largest colleges of that state.

Rev. W. O. Tobey, '66, was in Westerville October 15 and 16, visiting at the home of Prof. J. E. Guitner, '60. Mr. Tobey was on his way home from the Presbyterian Synod, which met at East Liverpool, O.

Rev. R. W. Kohr, '94, and wife recently spent a few days visiting at Westerville, O. Mr. Kohr graduated from Lane Theological Seminary last year and is now pastor of the Presbyterian church at Sedalia, O.

W. M. Beardshear, '76, president of Iowa State Agricultural College, has been appointed by President McKinley a member of the National Board of Indian Commissioners. He recently attended a meeting of the board at Lake Mohonk, N. Y.

Rev. L. F. John, '83, our new college pastor, arrived in Westerville on Thursday, Oct. 14, and entered upon his work the following Sunday. Mr. John should have the hearty support of the student body, and we wish him a pleasant and successful pastorate.

J. W. Clemmer, M. D., '74, was married to Miss Lida D. Beauman at the Norwich, Columbus, O., on Tuesday, Oct. 12. The ceremony was performed by Prof. W. J. Zuck, '78, at 8:30 a. m., after which Dr. and Mrs. Clemmer departed for an extended trip through the east. Dr. Clemmer is one of the most prominent physicians of Columbus, and is a loyal alumnus of Otterbein. The ÆGIS extends congratulations.

T. H. Bradrick, '94, was married to Miss A. Blanche Cornell at 5 p. m., Tuesday, Oct. 26, at the Methodist Episcopal church of Westerville, O. The ceremony was performed by

Rev. T. H. Bradrick, father of the groom, assisted by Rev. W. D. Cherrington, D. D., of Delaware, O. A large number of friends and relatives were present. Mr. Bradrick is secretary of the Young Men's Christian Association at Crawfordsville, Ind., where he is conducting a successful work. Mr. and Mrs. Bradrick departed Tuesday evening for Crawfordsville, where they will be at home after Nov. 17. The best wishes of the ÆGIS go with them.

LOCALS.

Miss Ola Rogers has returned to school.

Effie Moyer was obliged to go home because of ill health.

Bertha Smith has been called home because of her mother's illness.

Otterbein receives a fine and progressive gentleman in Ivan Rudisill.

During the time of transferring pastors President Sanders preached a great sermon on "Truth."

Shirey suggests that if a fellow takes your girl to go and take one of his old lain away ones in retaliation.

Prof. Hildebrand, formerly director of music in Shenandoah Institute, was recently the guest of the Virginia boys.

If your business is to break hearts, take scalps, etc., you have come to the wrong place. Otterbein students never fall in love.

Burtner and Baker say if we tell that old last year's girl joke, which no one knows, that they will be guilty of homicide. They would be justifiable in suicide on that.

Miss Rose B. Fouts and Mr. W. E. Bingham, of Chicago, were united in marriage on October 6 at high noon. The ceremony was performed by Rev. W. O. Fries at the home of the bride's parents in Westerville. Both Mr. and Mrs. Bingham were formerly students in

Otterbein and are well known to many now in college. They will make their home in Chicago, where Mr. Bingham is engaged in business.

Several Bible classes have been organized and work in this line is being given careful attention. They are under the supervision of the Y. M. and Y. W. C. A.

Don't snarl too much, you exhibit your kinship. And remember a still tongue is not always the sign of a wise head. The fool often is quiet simply because he has nothing to say.

Otterbein lately supported a "whiskerette club;" but it disbanded because of ineligibility of the charter members. Tobey's burnside alone remain as members of a once "united band."

The Seniors took advantage of a rainy day and went for hickorynuts. They were rained upon greatly to the "Preps" delight. The elements do not obey them though they are Seniors.

Miss Luella Fouts began her work in physical culture October 1. Miss Fouts has before successfully directed the physical culture department here and her work is well known. A large number are taking the work.

Shirey and Burtner say they can't preach on empty stomachs. They think it is too much to walk to Central College, preach, get no dinner, walk home and not even get the collection. Let all theologues take warning.

By mistake of the printer the following was omitted in last issue of the ÆGIS: W. S. White, '99, and Miss Octavia Batton, of Westchester, were married Sept. 5, and after a few days' visit with friends came to Otterbein. The groom well and favorably known to all students of O. U., has no peculiar theory either of matrimony or education. Concerning matrimony he evidently has faith and he believes in co-education as is easily seen. He had difficulty in concentrating his mind on study with

his treasure so far away, for Scripture says "Where your treasure is there will your heart be also." Mr. White is pursuing his course in college and Mrs. White is studying music in the conservatory.

Rev. L. F. John, who is now college pastor, graduated from Otterbein in '83. He understands the student life. He comes to fill the vacancy made by the resignation of Rev. Fries who is now at Van Buren. His broad culture makes it eminently fitting that he has been sent to Otterbein.

Most of the homesick are only lovesick. It matters not how deeply you feel the divine experience do not wait upon the campus for your inspiration's society to adjourn, while she walks the street with a handsomer man. You may be as sharp as needles, but if you don't do some coaching you can do no good in love.

The Art Department is enjoying an epoch this term. Enthusiasm is the word to use in naming the attitude of its students. This year there will be graduates from this department. For her talent Miss Sevier merits the respect of all and for her genius for enlivening this department is deserving of our highest commendation.

The faculty are on the warpath. The boys insist on going to the college on Thursday evening for their "flames." It is not necessary for the faculty to furnish a room and heat it for the maddened fellows, neither is there any necessity for the fellows to make a big noise. It is necessary that they go and get their girls. One mother in town said that when Billy had to quit going to society for Mariah she (the girl) must quit society for she could not go home alone. Some of the girls are used to going home alone and they do not care. Others never had such ill-fortune, so have not their courage keyed up nor their pride keyed down so much as to risk it alone. It would be sad if the faculty would suspend the fellows for many of the best fellows are in the affair.

On the other hand think of the burden which would be imposed upon the few remaining. The old custom must remain, so long as love exists in the young heart. Selah!

We now have the Columbus Post-Press—daily edition—on our exchange. The Press is a good and reliable paper, giving the latest news in a concise manner.

The gridiron will be a great attraction Saturday, 30th, when the Denison team will meet Otterbein. It is hoped that a good turnout will be on the sidelines.

The Freshmen are great this year. No class has equaled it. Its membership consists of the married, old bachelors, old maids and those who wouldn't marry if they could and those who couldn't if they would. They range from 6 feet 4 inches in height to 4 feet 10 inches in short. Weigh from 102 pounds to 210. All wear larger sized hats than shoes, and know more than they imagine they do. To hear them yell "beats all." They have most classic yells and so many. Just encore them. Their repartee is great.

It seems necessary to keep constantly reminding the alumni and students of their duty in the way of financial support to the football team. Otterbein has the best team this year that she has ever had and is receiving the poorest financial support that a team has ever received. Money is necessary to the success of a football team as well as for most anything else. Bring your college to public notice by supporting its football team. While the team has not lost a game this season under its financial embarrassment yet it is coming to very narrow straits. Every loyal alumnus and student that loves to see the tan and cardinal triumph will rally to the support of her athletic team. The alumni are now appealed to in the time of need, as they always have been when a demand of this kind has been necessary. And we cannot but believe that each and all will cheerfully take a part now, as in the past. We can't be helped too soon.

EXCHANGES.

A senior student of philosophy was recently heard to remark: "In the bright halcyon of youth there is no such word as Kant."—Marietta Olio.

Ten hours of study, eight of sleep, two of exercise and four devoted to meals and social duties is what President Elliott, of Harvard, recommends to students.

Through the medium of the ÆGIS the student may have free access to the daily doings of our nation. We shall endeavor to get the very best periodicals on our exchange table.

It is not by regretting what is irreparable that true work is done, but by making the best of what we are and what we have at the present moment. It is not by complaining that we have not the right tools for our purpose, but by using well the tools we actually have in our possession.—College Days.

Yale heads the list in the production of college presidents with 92. Out of 35 college graduates in the House of Representatives, she and the University of Michigan claim nine each, while Harvard follows with seven, and Columbia and the University of Pennsylvania each with three.—The Buff and Blue.

We are highly pleased in having upon our exchange table, "The Phagocyte," a publication of the Ohio Medical University. It is a nicely covered paper, having twenty-six pages of solid reading matter. It is a paper that would be a profitable addition to every reading room, both for its information along medicinal and surgical lines, and for its unique form.

We must also speak in kindly terms of our old friend, the "Hiram College Advance." The October number does not seem to do justice to the institution it represents. In our opinion it devotes too much time to "locals" and "personals" and not enough to literary work. Two or three good literary productions on some live topics, would much improve the paper.



Cleveland, Akron and Columbus RAILWAY

SCHEDULE.

IN EFFECT JULY 5, 1897.

SOUTH BOUND

Cent. Time.	2		28		38		8	
	A	M	P	M	P	M	A	M
Cleveland L.	*8 50	*8 00	†1 40	-----	-----	-----	-----	-----
Euclid Ave	9 00	8 12	1 50	-----	-----	-----	-----	-----
Newburg ..	9 13	8 25	2 03	-----	-----	-----	-----	-----
Hudson ..	9 45	9 05	2 35	-----	-----	-----	-----	-----
Cuyahoga F	9 58	9 19	2 48	-----	-----	-----	-----	-----
Akron	10 10	9 33	3 00	-----	-----	-----	-----	-----
Barberton ..	10 24	9 50	3 16	-----	-----	-----	-----	-----
Warwick ..	10 39	10 07	3 32	-----	-----	-----	-----	-----
Orrville { A	11 00	10 28	3 56	-----	-----	A M	-----	-----
{ L	11 03	10 33	4 01	-----	-----	*6 00	-----	-----
Holmesville	11 33	†11 04	4 32	-----	-----	6 30	-----	-----
Millersburg	11 44	11 16	4 43	-----	-----	6 41	-----	-----
Killbuck ..	11 56	11 29	4 55	-----	-----	6 53	-----	-----
Brink H'v'n	12 23	11 56	5 25	-----	-----	7 21	-----	-----
Danville ..	12 31	†12 06	5 35	-----	-----	7 30	-----	-----
Gambler ..	12 45	12 25	5 55	-----	-----	7 49	-----	-----
Mt. Ver { Ar	1 00	12 40	6 10	-----	-----	8 05	-----	-----
{ Lv	†1 05	†12 45	6 15	-----	-----	8 10	-----	-----
Mt. Liberty	1 21	---	6 34	-----	-----	8 21	-----	-----
Centerburg	1 29	1 12	6 42	-----	-----	8 39	-----	-----
Sunbury ..	1 44	†1 34	7 00	-----	-----	9 00	-----	-----
Salena	1 49	†1 39	7 05	-----	-----	9 05	-----	-----
Westerville	2 02	1 52	7 18	-----	-----	9 18	-----	-----
Columbus A	*2 25	2 15	†7 45	-----	-----	9 45	-----	-----
	P M	A M	P M	-----	-----	A M	-----	-----
Cincinnati.	*6 00	6 40	-----	-----	-----	-----	-----	-----
	P M	A M	-----	-----	-----	-----	-----	-----

NORTH BOUND

Cent. Time.	3		27		35		7	
	A	M	P	M	A	M	P	M
Cincinnati.	*8 00	*8 00	-----	-----	-----	-----	P M	-----
Columbus L.	Noon	Night	A M	-----	-----	P M	-----	-----
Westerville.	*11 30	*12 35	†6 00	-----	-----	†3 30	-----	-----
Salena	11 55	1 06	6 27	-----	-----	3 58	-----	-----
Sunbury ..	12 08	†1 21	6 40	-----	-----	4 11	-----	-----
Centerburg	12 13	†1 26	6 44	-----	-----	4 16	-----	-----
Mt. Liberty	12 31	1 51	7 04	-----	-----	4 38	-----	-----
Mt. Ver { Ar	12 39	†2 01	7 12	-----	-----	4 47	-----	-----
{ Lv	12 55	2 20	7 28	-----	-----	5 05	-----	-----
Gambler ..	1 00	†2 25	7 33	-----	-----	5 15	-----	-----
Danville ..	1 11	2 40	7 47	-----	-----	5 30	-----	-----
Brink H'v'n	1 29	†2 59	8 00	-----	-----	5 59	-----	-----
Killbuck ..	1 38	3 09	8 12	-----	-----	6 11	-----	-----
Millersburg	2 09	3 41	8 42	-----	-----	6 56	-----	-----
Holmesville	2 21	3 55	8 53	-----	-----	7 17	-----	-----
Orrville { A	2 31	†4 06	9 08	-----	-----	7 32	-----	-----
{ L	3 05	4 45	9 37	-----	-----	8 30	-----	-----
Warwick ..	3 10	4 55	9 42	-----	-----	P M	-----	-----
Barberton ..	3 30	5 18	10 02	-----	-----	-----	-----	-----
Akron	3 46	5 37	10 17	-----	-----	-----	-----	-----
Cuyahoga F	4 05	†6 05	†10 36	-----	-----	-----	-----	-----
Hudson	4 17	6 17	10 48	-----	-----	-----	-----	-----
Newburg ..	4 30	6 30	11 02	-----	-----	-----	-----	-----
Euclid Ave.	5 05	7 05	11 42	-----	-----	-----	-----	-----
Cleveland.	5 16	7 16	11 57	-----	-----	-----	-----	-----
	*5 30	*7 30	†12 10	-----	-----	-----	-----	-----
	P M	A M	P M	-----	-----	-----	-----	-----

* Runs Daily. † Daily except Sunday. ‡ Flag Stop | Meals. L Lunch.

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