



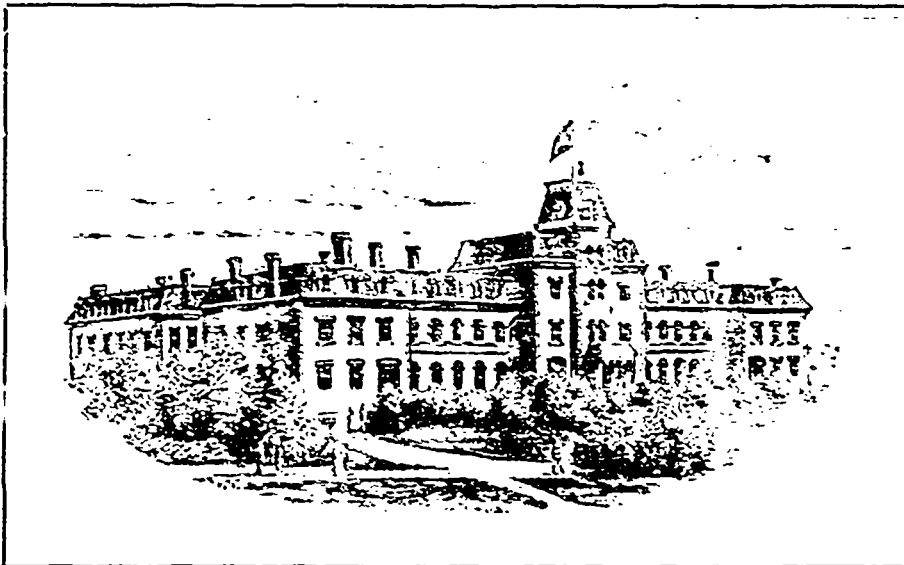
THE
O.A.C.
Review
 DECEMBER, 1898.

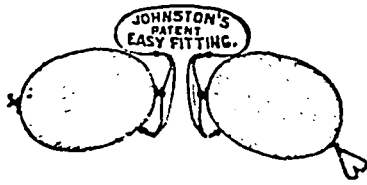
Christmas Number.

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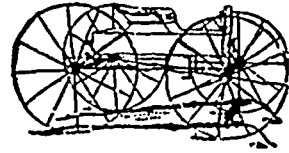
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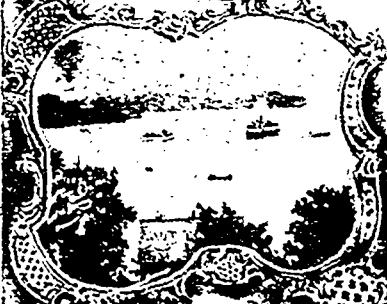


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Vol. X.

ONTARIO AGRICULTURAL COLLEGE, GUELPH, DECEMBER, 1898.

No. 3

Editorial.

THE friends of the Experimental Union who were not in attendance at its meetings will be pleased to know that this year's Re-union was a splendid success. The attendance was excellent, there being many of the old boys back, as well as a large number of interested visitors, mostly farmers who know the value of the information to be derived from these meetings.

The officers of the Union are well satisfied with the present membership. They report having more paid-up members on the roll already than they had altogether last year, which speaks well for the future of the institution. They are also well pleased with the various meetings, such a lively interest having been taken in them, and so much valuable and practical information having been elicited from the various speakers. In short the Union is progressing wonderfully and can look to a future full of bright promise.

THIS being the Christmas number of our paper, the staff has endeavored to make it especially attractive to our readers. Prof. J. B. Reynolds, our popular lecturer on Physical Science and English, has been secured as a contributor to our columns; also Prof. W. Lochhead, head of the Biological Department, who is filling the position left vacant by the death of our esteemed Prof. Panton, very satisfactorily. To their articles we would draw your special attention.

AT the last session of the Union a matter of business was introduced which should hold an interest for all friends of the College Literary Society as well as those of the Union. Since the room formerly used for the meetings of the Experimental Union is to be fitted up at once as an agricultural museum, it will be necessary for

another suitable meeting-place to be found. At present no such hall or room exists. It has been proposed that a hall be erected in conjunction with the new library and museum building, large enough to seat about three hundred and fifty, and at the same time suitable for the use of the Literary Society. Definite arrangements have been made to present the need for such a convenience to the Minister of Agriculture, and to urge the Government to act promptly in the matter. It cannot be claimed that such a hall is an absolute necessity for the existence of the Literary Society, because that Society is now in operation; but it can be claimed that for the very best results to be gained from its work such a hall is most certainly necessary. At present the meetings are held in the gymnasium, which is the only place at all suitable for the purpose. But everyone who has tried it knows how difficult it is to speak, sing, recite or read to a comparatively small audience in the gymnasium. We think all will agree that the Literary Society is one of the most useful organizations carried on by the student body, and as such should have every advantage possible that can be afforded. We believe that our ex-students are in a position to help on the good work to some extent. Could not each one of them use his influence with his representative in the Legislature, urging him to throw the weight of his voice and vote in the balance to favor a very worthy object? The experiment should be worth the trying.

ON account of the new regulation concerning postage on newspapers, our mailing list for next month is undergoing a general revision. It will greatly oblige the Secretary if subscribers will inform him if their copies are not coming to hand. He will then be able to rectify mistakes at once, and avoid further trouble.

Primitive Man.

BY PROF. LOCHHEAD.

THIS paper has been prepared with the object of showing the severe struggles during long periods of time through which the human race has passed in reaching its present high civilization, when advanced methods of agriculture are in operation, and science is contributing daily to man's onward progress. This *looking backward* to get a glimpse of the past may not be altogether unprofitable even to readers of the O.A.C. Review. The subject, however, is so wide that it is impossible to give here more than a summary or outline of the history of man. It must be remembered that beyond the point where modern investigations have found certain evidences of man's existence, it is our privilege to speculate as to his condition of existence, and no person has a right to dogmatize. The statements made in this paper may very properly be questioned in many instances, and others substituted if they appear to be too speculative and jar our better feelings. It will be noticed that most of the speculations are quotations from authors whose opinions are not always those of the present writer. They are inserted here for what they are worth. Let no person's views be changed by their introduction in this paper.

The early history of man has been more carefully worked out in Europe than in any other portion of the world, although increasing evidences reach us yearly from the East.

When Cæsar invaded Britain he found a race of tall, fair people with blue eyes and round heads, generally known as Celts, or as Ancient Britons in our school histories. The Romans were greatly impressed with the stature of these Celts, and their ferocity in battle tested the oft-quoted valor of Cæsar's Tenth Legion. They lived in "hut circles" or "pit dwellings," and buried their dead in round barrows. The Celts belonged to the same family as the Belgæ and the Aquitanians of the continent, and all these races belonged to the Aryan family. It was once supposed that these Aryan races had emigrated in successive waves from the great central table-lands of Asia—the Celts among the first, followed by the Teutones, finally by the

Slavs—but the theory has been abandoned in favor of the theory that these races were but isolated members of a great community living in the region between the Baltic and the Urals in Europe, and that the Asiatic-Sanskritic race had emigrated *eastward*. It is not within the scope of this paper to adduce arguments in favor of the latter theory, but those who are interested in the subject of the "Aryan Question" may find abundance of material in Taylor's *The Origin of the Aryans*.

Interesting as a study of the Celts may be I must pass on to a race which was in Britain long before the Celts. This race is known as the Iberian or the Euskarian, whose descendants are still found in Western Ireland, Scotland, Wales, and in the Pyrenees as the Basques. These people were short and thick-set of stature, with very dark, swarthy complexion, and had long, narrow skulls. Their burial places are also long and narrow, and from these abundant remains of skeletons, weapons, domestic utensils, and ornaments have been taken. No traces of metal have been found in their barrows, which exist in nearly every part of Northwestern Europe as far east as Germany. Their implements are of stone and polished, and, according to Danish Antiquari, are called Neolithic to distinguish them from a ruder form which were not polished, called the Paleolithic. The animal remains found along with the Neolithic implements are the Irish elk, wild ox and wild boar.

The implements used by these Neolithic black folk are turned up in large quantities by the plow and harrow, or exposed on hill sides by rain. The most common implements are stone *Celts* or chisels, stone picks, perforated axes, stone adzes, scrapers, saws, grinding stones, borers, awls, drills and knives, all of which were undoubtedly used in their every-day work. There are also stone daggers, javelins, lance and arrow-heads used in war or in the chase.

On account of their present scattered abodes in the British Isles, and the prevalence of implements throughout the country, it is more than probable that these Neolithic folk were a widespread people and were partially exterminated, partially absorbed and partially driven back in-

to the inaccessible portions of the country by the stalwart, strong *Celtic* invaders.

Among the Neolithic people are now placed the Lake-dwellers of Central Europe and the British Isles. These people had their dwellings on both natural and artificial islands in lakes, and very often on piles driven into the lake a few hundred yards from shore. Recent discoveries made in Switzerland and other places reveal the fact that a large population lived in this aquatic fashion in Central Europe and the British Isles. They lived in villages and the charred remains at Lake Neuchatel tell us that it took some forty or fifty thousand piles to make a small village. Planks were fastened on the piles with pegs to make a platform, on which were built the huts, each large enough to contain one family. "They were made of woven twigs plastered with clay, the roof being thatched. Between each dwelling were placed the cattle pens, sheep folds, and pig sties, a gangway being built between the village and the shore for the use of the cattle when driven to pasture and for general access to mainland." In many of the villages of the Lake-dwellers stone is the only substance used for weapons; in some, however, mixed remains of stone, copper, bronze, and iron were found, and the conclusion is forced upon us that the Lake-dwellers passed gradually from the usage of stone to that of copper, bronze, and iron. "We can trace them during a period which must cover many centuries, at first clad only in skins, then learning to weave mats from the bark of trees, and finally from flax. We find them at first in possession only of the ox, and successively domesticating the goat, sheep, pig, and last of all, the horse. We can see them acquiring by degrees considerable proficiency in agriculture, and passing gradually from the age of stone to the age of bronze, and from the age of bronze to that of iron." These people are now considered the ancestors of the Celtic race. From the fact that the Swiss pile-dwellings were inhabited continuously till the Roman period, when we know that the country was inhabited by a Celtic-speaking people, taken together with the resemblance of the Helvetic skull to that of the Romans, and the round barrow people of Britain, there can be little doubt that we are

dealing with a civilization which must be classed as Aryan.

A remarkable series of shore heaps are found in various parts of the world. These heaps are of two kinds, (1) accumulations of rudely worked flints, and were probably workshops, (2) refuse heaps known as *kitchen-middings* in Denmark. The latter are "mounds of various size, sometimes 1,000 feet long, and 200 to 300 feet wide, and are composed of castaway refuse, myriads of oyster and other shells, bones of the stag, roe deer, dog, wild duck, and human implements of stone, bone and wood." Some of these kitchen-middings are inland, from which fact we learn that a long period must have elapsed since the time of their formation. Moreover, the oyster has practically disappeared from Baltic waters owing to its brackish nature. "This shows that Denmark was formerly more intersected with fiords, at any rate there was freer communication between the Baltic and the Atlantic."

The skulls of these people were dolichocephalic, *i.e.* long and narrow like those of the Iberians in the British Isles and elsewhere, and unlike those of the Lake-dwellers and Celts, which were brachycephalic or round. "The stone implements found in the kitchen-middings are more archaic in character than those from the Swiss lake-dwellings; indeed they are considered by some authorities to form a transition between the old and new stone periods. The people had not yet reached the agricultural or even the pastoral stage—they were solely fishermen and hunters, the only domesticated animal they possessed being the dog, whereas even in the oldest of the Swiss lake-dwellings the people, though still subsisting largely on the products of the chase, had domesticated the ox, if not also the sheep and the goat."

During the Neolithic period four races occupied Europe:—

1. The *Kitchen-midden* type, regarded as the ancestors of the Scandinavians, North Germans, and Anglo-Saxons.
2. The *Iberians*, who practised cannibalism and offered human sacrifices—descendants in Corsica, Spain and North Africa.

3. The *Ligurians* of Northern Italy and Switzerland.

4. The *Celts*.

These races occupied Europe when it had the same configuration as at present. The ice-age was past and England was separated from Europe, but underlying great drift deposits, buried deeply in valleys not filled up are found rudely chipped flints undoubtedly the work of man. Many remains have been found in the floors of caves, covered by layers of earth and stalagmite, associated with bones of rhinoceros, and mammoth, which have been long extinct, even the Neolithic remains are never found with the bones of these animals.

The remains of these early or Paleolithic people are few in kind, being chiefly roughly chipped flints, used as arrow-heads or knives, spear-heads, saws, bone-awls, and harpoons, but no pottery, all of which are to be found in caves. Undoubtedly these savage folk lived in caves as shelters and subsisted on the products of the chase. They were *mighty hunters*, for the mammoth, woolly-haired rhinoceros, and other huge beasts were their quarry. Their clothing, if any, would consist of the skins of the hunted animals. As these cave-men had no pottery, they must have cooked their meat in savage fashion, *i.e.* either by putting it on a rough spit, or direct on glowing ashes or red-hot stones.

From the study of certain skulls and skeletons which have been found, "Paleolithic man was powerfully built, although of short or stunted stature, probably about five feet, like the Fuegians and Bushmen. Broad-legged with curved thigh bones, his walk was shambling, as that of a gorilla, or of bandy-legged persons. His long skull had a low, receding forehead with overhanging brows, furnished with bushy hair; the nose was flat, the nostrils large; the ears somewhat pointed; jaw heavy, chin retreating and very small. The skin was probably copper-colored and largely covered with long, straight hair." "Mentally the 'ape and tiger' were but little subdued in him. His feelings were rarely under control; the impulse of the moment ruled his life. Cunning he was, because he had to live by his wits; to kill and probably eat his

foes if he would not be killed and eaten by them. The constant struggle for existence against the immense animals involved the constant exercise of his senses: hence the sharpening of sight and hearing so that he could see and hear things to which the civilized man, dulled by artificial aid and by less need for alertness, is both deaf and blind."

Paleolithic man lived during the Glacial period—when the northern portion of the world was covered by one or more slowly moving glaciers. Britain was then a part of the continent; there were no straits of Dover, no English Channel and probably no German Ocean, but their beds occupied by a large river with the Elbe, Rhine, Thames, Humber, and Seine as tributaries.

Geologists are not agreed as to the length of time since the Glacial period. Estimates vary all the way from 80,000 to 10,000 years.

Some idea of the great antiquity of the Paleolithic people may be formed by the study of Kent's Cavern in southern England. The following deposits were found on the floor of this cave, and are arranged in order beginning with the highest:

1. Blocks of limestone, which had fallen from the roof.
2. Black muddy mould, about 7 inches thick, composed of decayed vegetable matter.
3. A floor of stalagmite, 3 inches to 5 feet thick.
4. A layer of charred wood, 4 inches thick.
5. Light red loam, with bones of mammoth and flints.
6. A floor of stalagmite, 12 feet thick in some places.
7. A sandy breccia deposit, in which were found a worked fossil tooth and blunt implements.

The Somme River in France furnishes another instance where the remains of these Paleolithic people were found in very old terraces.

Several skulls have been disinterred from their resting places. Three of these have been the subject of much controversy: (1) Engis skull, found in a cave on the banks of the river Meuse in Belgium, was associated with bones of the mammoth and other extinct animals. This skull is decidedly Caucasian in type; (2) Spy

skull and skeleton discovered in 1886, which were decidedly ape-like; and (3) Neanderthal skull found in 1857 was described by Huxley as ape-like.

The cold of the Glacial period very likely exterminated the Paleolithic people in Britain. In France there appear to be two distinct divisions, the Mammoth and the Reindeer.

The opinion is gaining ground that the Kitchen-midden people were descendants of the Paleolithic folk.

The affinities of the Iberians are distinctly Egyptian; the Egyptian civilization was derived from the Babylonian which, even as far back as 5,000 or 6,000 years B.C., had reached a high stage of civilization.

As to the origin of the Paleolithic race nothing is known with certainty. There must, however, have been still earlier races, but these too must be placed among the list of *things unknown*. "When and where the *Homo Sapiens* originated is still among the disputed questions, but the trend of opinion appears to be towards an evolution from some *ape-like* creature. It must be borne in mind that evolutionists do not claim that man is a lineal descendant of his nearest relation, (anatomically) the ape. Man is neither the offspring, nor the brother of the apes; he is a sort of cousin more than once removed, and the answer to the oft-repeated question: Where is the missing link between them? is, there is no missing link; there never has been one. As with the likeness and differences between the apes themselves, so with those between apes and man. The likenesses are explained by descent from a common ancestry; the difference has slowly arisen in subtle ways. The apes are semi-erect in posture. Man alone has acquired the wholly upright position which has set his fore-limbs entirely free to act as organs for handling, grasping and throwing things, and when we contrast trunk or claw with the human hand, we see what a mighty agent this has been in the development of brain. Obviously, the attainment of the erect posture involved various changes in the structure of man's body, as the thickening of the leg bones, the flattening of the feet, the curve of the spine, and the altered position of the skull as balanced on it. In all

this there was the making of man. His two-footed and upright posture involved exchange of the tree life of his ancestors for life on the ground, which brought him into new relations with his surroundings, and, finally, in the ceaseless struggle for life which he had to wage, gave him the mastery over foes and the wide earth itself. That the wholly erect posture was acquired late, speaking relatively, in man's development from an ape-like ancestry is shown, among other ways, in the crawling of infants for some time after birth, which shows the quadrupedal instinct, and in the preference we all have for sitting down."

The short, fragmentary account which I have given of a long story ought to give us some idea of the protracted struggle which man has carried on with his environment. The flakes of the old stone folks are but the work of prentice hands, which have gradually become more adept in the fashioning of better implements as centuries rolled by, until we see the finished work of the expert workman of the present day. The intermediate stages of improvement were of long duration ere man became the "foremost in the files of time."

Ethnology.

BY PROF. J. B. REYNOLDS.

POPE has said, "The proper study of mankind is man," and in fact no more engrossing theme can be found than that of the origin, rise, and progress of the human race. The material of the history lies on all sides. It lies beneath us in the rocks and soils, and scattered over the surface of the earth. It may be found in the shape of man's head, the color of the skin, and in the language that he employs. The tools man uses, and the habits and customs that surround his daily life, all reveal not only the present condition, but the history of past ages of the race of which he is a unit. The Indian arrow-heads and tomahawks that abound through certain sections of this country, reveal unmistakably the characteristic habits and degree of culture of the races that inhabited this continent. The folk-lore, signs, portraits, petty superstitions that may be heard on every hand

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DECEMBER, 1898.

Ethnology—continued.

point back to an earlier period in the credulous childhood of the race. The savage and brutal instincts of many children, and their subsequent taming at the hands of the family or the society, are but an epitome of the history of the race in its march from savagery to the milder manners of civilization. The desire for a roving career, and an incapacity for a settled occupation and place of abode, whether it occurs in the traveller or the professional tramp, are possibly in many instances atavism, pointing back to a time when the race was altogether nomadic. The fondness of cultured and tenderly-nurtured young ladies for witnessing Rugby football is more a relic of savagery than it is the triumph of the aesthetic tastes of a later culture. The almost universal fondness for hunting and fishing is also an instance of the stubborn persistence of habits formed by our remote ancestors when, with harpoon and spear, they subsisted entirely upon the spoils of the forest and the sea.

One of the problems confronting the ethnologist is the phenomenon of color. What natural causes have been at work to produce such varieties in shades and colors as characterize the various races? It has been supposed that the black skin of the Negro and the red skin of the Indian are but different degrees of sunburn, resulting from the continued residence of the race in tropical climates. This theory, however, does not meet with general approval, and the opposite

conjecture has been put forward, namely, that the whole race were originally black, and the white races have been albinoized by residence in Europe during the Ice Age. Certain it is that Europe and the part of Africa which was once contiguous to Europe, before the sinking of the bed of the Mediterranean, that is Libya and the north of Egypt, is the home of the white race. Certain it is also that relics of human existence have been found in Europe belonging to an age when the temperature was much lower than it is at present. These men, with their rude stone implements, were the contemporaries of the woolly-haired rhinoceros, and other animals, whose equipment argued a rigorous climate. So, if this theory is true, our ancestors have been subjected to the same whitening process as the polar bear. And the various shades that characterize the Egyptian, the Abyssinian, and the north Asiatic peoples, indicate the extent to which the frost, snow, and ice of by-gone ages have operated upon their ancestors. Freckles are held by this theory to be the remnants of a dark skin.

The occupations of pre-historic man were hunting and fishing. Their implements were of the rudest, made of chipped stone. So much the geology of England and France reveals. How widely different in time are the civilizations of Europe and America! When the white man came to North America, he found the natives hunting and fishing, and their implements were of stone—analagous to the pre-historic age of Europe. In all civilizations the first advance in point of occupation was from hunting and fishing to the raising and herding of cattle and sheep. This occupation characterized the patriarchal age of Job and Abraham. So far as natural causes can be evoked to explain these changes, the increase of population, the gradual softening of manners through social influences, and above all, the assumption of family obligations, led to the adoption of the more peaceful and lucrative occupation of the shepherd, to the abrogation of the destructive, wasteful, and savage occupation of hunting. It is unlikely that family ties were assumed or acknowledged during the hunting age. In this primitive period women and children were supposed to have been

the common property of the horde, with the land and waters, and the game found therein. With a more settled occupation came the claiming of private property in the form of flocks and herds, the amassing of wealth, and the desire to recognize and claim children who might enjoy the fruits of this labor.

Next, after herding, came agriculture, and then manufactures. Analogous with agriculture is mining, a very early occupation. Tin was mined in Britain during the Bronze age in Europe. The superiority of agriculture over hunting is shown by the proportions of the population that can subsist by these respective occupations. Barely two millions of Indians, it is estimated, inhabited the whole of North America. More than three hundred millions inhabit a smaller area in Europe. From a biological, if not a moral view-point, the invasion of America and Africa by civilized races was more than justifiable: it was inevitable.

A very remarkable and significant fact in connection with the study of Ethnology is the stubborn fixity of type that persists throughout history. Six thousand years ago, certain races were recognized and classified by Egyptian and Chaldean sages. The form, color and shape of the head of the ancient Egyptian are preserved for us by the Egyptian Artists. The same type persists to-day in the valley of the Nile. The ancient Egyptian language has succumbed to the encroachments of Mohammedanism, but the physical type remains in all its primitive peculiarities. This is in spite of the fact that for thousands of years the Egyptians have lived side by side with the black Nubians. In England there are two types, the smaller dark Celt and the larger, blond Saxon. Although these two races have for hundreds of years been fused together as a nation, speaking the same language, inter-mixing and inter-marrying, no new type or race has been produced. "Mixture of blood does not produce a new race. The characteristic features of the various races of mankind had been so indelibly impressed upon them before the dawn of history that the fusion of the two races has never been known to give birth to a new race. The mixture of Negroes and Europeans in America results after two or three gen-

erations, in sterility. When this is not the case the children revert to the type of one or other of the parents, generally of the one who for some reason or other represents the stronger and more enduring race." This is proven by the mixed races of England, employing the same speech, and by the adoption by Jews of the language of the people among whom they mix, while at the same time they preserve their national peculiarities. Philologists have argued that because the people of Europe and the people of Bengal speak languages springing from a common stock, they must necessarily be of the same race. The common origin of their languages proves nothing more than that at one time these races were geographically contiguous.

Two conclusions may be drawn from this fact. One is, the remote antiquity to which we must refer the origin of the various races of mankind. Their several traits had been fixed once for all at a time when human nature was more plastic than it is at present, and when the conditions by which the first men were surrounded had a more powerful influence upon them than they have upon ourselves. Moreover, these conditions must have been in action during a long period of time. During the historical period man comes before us as an eminently migratory animal, a restless wanderer, who exchanges the snows of Siberia for the sun of India, or the deserts of Arabia for the temperate shores of the Mediterranean. But in the age when the races of mankind were marked off one from the other, his restless instinct must still have been curbed. The ancestors of the several races of mankind must have been content to remain within the limits of the geographical area in which they found themselves. When at last they were prepared to leave it, their special features had been already impressed upon them with an indelible stamp.

The second conclusion is that diversity of race must be older than diversity of language. The distinctions of language do not follow the distinctions of race, and, whereas it is impossible to change one's race, there is no difficulty in changing one's language. Language, in fact, belongs to the second stage in man's existence, when he had become what Aristotle calls

"a social animal," and was settled in communities, not to the first stage in which the great distinctions of race first grew up.

That there was such an earlier stage is proved by the possession of those common characteristics which, in spite of racial diversities, make all the world kin. We are all cast in the same mould, we are all of one blood. Our wants and infirmities, our desires and hopes, our feelings and emotions, are the same, to whatever race we belong. There is no race of mankind, however barbarous, which does not possess an articulate language, which does not know how to produce fire, or defend itself by artificial weapons, or which has not some sense of religion. We have only to educate the most degraded of human races to find that the gulf which seemed to exist between them and ourselves, was due only to different habits and tradition.

Great as may be the diversity between race and race under the microscope of the ethnologist, the unity which underlies it is greater still.

Much of the above is based upon a very interesting little book by Prof. Sayce. One or two of the paragraphs are almost verbal quotations.

Some Features of the Union.

ONCE more success has been the crowning feature of the Ontario Agricultural and Experimental Union. Our only regret is that more were not present to hear the excellent reports of the past year's work. It has been said that next best to hearing a thing is to read it. As, however, very full reports have been published in a number of our daily papers, it has been deemed advisable to depart somewhat from the rule of previous years and give here only a brief summary of a few of the most important features of the meeting.

To many, perhaps, the musical part of the first session was of chief interest. This, however, was only temporary; the excellent addresses of Prof. Curtis and Mrs. Rorer having a deeper and more permanent effect. Prof. Curtis spoke for some length on "Agriculture as a Branch of Public Instruction." He said that the greatest danger of our educational system was

not that we would give too much education, but rather that we would educate unwisely. In our public and high schools we taught practically everything except agriculture, the business in which three-fifths of the population are distinctly engaged, and nine-tenths directly or indirectly dependent on for their living. It had come to be recognized that thoroughness in training for agriculture is one of the most essential things under the present conditions. The demand was growing for young men with a practical and scientific knowledge of farming, to take charge of large farms. Agricultural colleges were doing good work for agricultural education, but these colleges were inaccessible to the great body of farmers. The colleges could never reach the masses. The farmers were peculiarly dependent upon the common schools, and there unquestionably was where agricultural instruction should begin.

Mrs. Rorer was to have given an address upon "Rational Dietary to produce the best Physical and Mental Results," but as the hour was growing late, she simply made a few brief and humorous remarks on her subject. At the second session, however, Mrs. Rorer spoke very ably on "Cooking as an Art." First, however, in reference to her subject of the night before, she clearly pointed out the fact that a great deal of sickness is caused by the improper preparation of food. Ignorance of a knowledge of the chemistry of some of our most common foods, as potatoes, meat, etc., often leads to a waste of their most valuable constituents, as well as to the loading of our stomachs with much that is entirely unnecessary. Turning to her subject, Mrs. Rorer then insisted upon some sort of practical training for women. Men were trained for generations, but the women were allowed to go along in any sort of a hap-hazard way. The women were never taught that cooking was elevating, that it was really artistic and scientific work. Farmers wives looked upon it as a drudgery.

Educate the women. She hoped the time would come when women, with equal training to the men would be turned out from the O.A.C. It was not necessary that they be taught to plow.

but to make the best use of what was grown by plowing. Why not pay as much attention to the human being as to animals? Their food was carefully weighed and given as a balanced ration. In like manner, women should be taught to put together the various kinds of food that go to make up the frame-work of man.

In the third session began what was really the most important feature of the Union, viz., the report of the results of the various farm crops tested throughout the Province. Mr. Zavitz first pointed out the growth of the work as manifested by the increased number of experimenters during the past year. He also referred to the satisfactory results obtained at the home station. He then turned to the various crops under experiment and in a very clear and concise manner, took up each one separately, giving the average results of each variety. The following is a list of the best all-round variety in each class:

Leguminous crops for green fodder,	Grass, pe as
Mixed grains	Cats 1½ bu, peas 1 bu
Millet	Japanese Panicle
Grasses	Tall Oat Grass
Clovers	Mammoth Red
Buckwheat	Silver Hull
Spring Wheat	Rio Grande
Barley	Mandscheuri
Oats	Siberian
Peas	Early Britain
Beans	White Wonder
Carrots	Pearce's Half-long White
Swede Turnips	Hartley Bronze Top
Fall Turnips	Purple Top Mammoth
Corn	Mastodon Dent
Potatoes	American Wonder
Winter Wheat	Dawson's Golden Chaff

Fertilizers with Corn	Nitrate of Potash
Fertilizers with Mangels	Nitrate of Soda

These are important, as they are the average of results from all over the province. What we need to do is to experiment more on our farms; let us then avail ourselves of the excellent opportunity which the Union affords us as members.

Another feature of the Union, yet in its infancy, but which promises to be very successful

in the future, is the department of soil physics. If the droughts of the past few summers are to continue, it is time we were beginning to study the mechanical conditions of our soils, especially that we may learn to conserve moisture.

Prof. Harrison's report on Ontario Weeds showed what a strong foothold these pests have obtained in our soils. It also opened up a lively discussion on the subject, the result of which was that a resolution was passed to the effect that the Minister of Education be urged to introduce into the curriculum of the public and high schools of the province, a study of weeds and weed seeds.

Athletic Notes.

Although we suffered defeat subsequent to our brilliant victory at the beginning of the season, and the teams with whom we had arranged matches defaulted to us, the spirit that makes students like Rugby was still active, especially in the breasts of the aspiring freshmen. The present freshmen class believe that football and study go together. They challenged the second and third years to play a friendly game, and on Saturday afternoon, Nov. 19, the game was played, the weather being all that could be desired.

The freshmen expected to give, and their opponents were not unprepared to receive, a severe defeat, but "The best laid schemes o' mice an' men gang aft a glee." The seniors won the toss and decided to kick with the wind. From kick-off, Marshall received the ball and returned, senior forwards following up hard and holding the gain. After a series of scrimmages and a few short runs, Mallory got over for a try from near the touch-line. Price missed a difficult goal. From centre the ball was again returned, freshmen interferred, seniors dodged, and in a few minutes Douglas was forced to ronge.

Friends of the second and third years felt too sorry for the freshmen to do any cheering, while friends of the losers were too homesick to do so. The only sound was a long-drawn, shrill cry from the ladies' seat: "First year! First year!" and the harder the game went against the favorites the more vigorous was her cheering.

Soon the play was brought perilously near the yet unpassed goal-time, but Willmott relieved finely and, despite the repeated rushes of their lusty forwards, the score stood 15-0 against the first year when half-time was called.

First year men then arranged to win out in the last half. Second and third year men were counselled to kill time and keep the ball low. However, it was soon apparent that the juniors had received more stimulus from the water-pail than had their seniors, for in a few minutes, with the wind in their favor, they massed forward and from the mix-up McElroy got over for a try, which Clark was unable to convert. Retaliation was in order and soon the score stood 16-4. Another brilliant rush and another point for the favorites. Soon the ball was within a few yards of where the juniors could score, and some wild scrimmaging ensued. Referee Harrison was unheeded, surrounded and sandwiched between the two teams, because he had the ball, and the only way to work it over was to take him with it; but the seniors massed together, Jimmy Hollis pushed on the scrim, and finally, after a good ten minutes had been spoiled, the score was changed to 16-6. No more scoring was done.

The teams were as follows: First year—back, Douglas; halves, A. B. Clarke, Suckling, Hains; quarter, Greenfield (Capt.); scrim., Bain, Cote, Hare; wings, Brooks, McElroy, Switzer, Gardner, McKimmon, Carlyle, Norcross. Second and third year team—back, Willmott; halves, Putnam, Marshall (capt.), Price; scrim., Hutton, Lewis, Peters; quarter, Hollis; wings, Mallory, T. Jarvis, Linklater, Wilkinson, Brokovski, Burnette, Goble.

The winners owed their victory largely to the splendid following up by the forwards when the halves kicked. Mr. Putnam would soon make a good Rugby half, as he is an Association forward, and Price's coolness never forsakes him. Probably it was fortunate for the more dignified ones that the early snow prevented the playing of the return game, for it is certain that the scores would not again have been so uneven.

On Thanksgiving Day the Toronto West End V.M.C.A. team came up to play the Guelph

team on our campus. However, when the referee arrived, it was found that the Guelph team were six men short. Semple, Price, Law, Clark, Willmott and Greenfield came to their aid, and in a thirty-minute game the visitors were easily defeated by a score of 3-0.

Only two entries were made from the College in the Cross Country Races held in Guelph on Thanksgiving Day. They were Mr. E. R. Lewis, who took the walking race, and Mr. C. Mortureux, who ran in the cross country run. Though we would have liked to have had a larger number of the boys compete, still the two who entered did good work when we take into consideration the class of athletes they had to compete against. Mr. Lewis took second place in the walking race, following the winner closely throughout, and making a record for himself for the ten miles of 1.35.55.

In the cross country run, Mr. Mortureux finished third, time 1.08.25. This course was through fields in all conditions, and the ground hard frozen, making the race a very difficult one, indeed.

By Our College Reporter.

The following are the most important books that have been added to the College Library during the month: Novy, Physiological Chemistry; Cooke, Shipley and Reed, The Cambridge Natural History, Mollusks, etc.; Fleming, How to study Shakespeare; Williams, Chemistry of Cooking; Atkinson, Elementary Botany; Vines, Elementary Botany; Gabel, Specielle Organographie; Scudder, North American Orthoptera; Ballou, Equine Anatomy and Physiology; Mandel, Handbook of the Biochemical Laboratory; Koch, Jahresbericht über die Fortschritte in der Lehre von den Gährungsorganismen, Vol. 6; Straus, La Tuberculose et son Bacille; British Bee Journal, Vols. 1 to 12, 14 and 15; H. q. e. Simon Dale.

Although an outward view of our institution at present gives but little indication of increasing facilities, yet the work of improvement is steadily advancing. The handsome cabinet which has just been set up in the Biological Depart-

ment furnishes convenient accommodation for our extensive herbarium, the lack of which has been so greatly felt in the past.

We understand that the fittings for the new agricultural museum are now almost completed and will be placed in position in the near future. This museum will be a unique and important addition to the equipment of the College. The interior will be so arranged as to illustrate the invaluable results of a great variety of agricultural experiments which have been conducted at the College during the past ten or twelve years, and should therefore prove of much educational value, not only to the students, but more especially to farmers and others who visit us during the winter months when it is not possible to examine the various crops as they are grown in the field.

The work of our Y. M. C. A. is progressing nicely. The weekly prayer meeting and Sunday afternoon Bible class are well attended and many of the students are taking a deep interest in Bible study. Occasional visits from prominent Y. M. C. A. workers help to keep us more closely in touch with the general work of the organization. On Thursday evening, Dec. 1st., our meeting was addressed by Mr. J. M. Waters, Travelling Secretary for the Canadian Colleges' Mission. He spoke especially of the work which is being done among the students in the city of Calcutta, where a splendid building has been purchased and fitted up similarly to the Y. M. C. A. buildings in our own Canadian towns and cities. On Tuesday evening, Dec. 15th, Mr. Harry Wade Hicks, Travelling Secretary for the International Y.M.C.A., gave an earnest and exceedingly interesting talk on method and application in Bible study, and emphasized the helpfulness of such study in daily life.

T. J. Hurley, '90, is farming in partnership with his father. T. J. believes in keeping good stock, and has been successful in getting a number of prizes at different fairs during the past season.

E. Lawrence Hunt, B.A., who was assistant Resident Master for several years, is now pastor of a church in Washington, D.C.

Personals.

The Ex. Union always brings a harvest to the personal editor of the Review, and this year shows a larger percentage of increase in this line than can be reported by Mr. Zavitz in varieties of grains and cereals. Although Lick, Monteith, Mason, Brodie, and some of the other "faithful ones" were not here, still a goodly number of the old boys were back and all seemed to be full of news regarding ex-students. The scramble for beds was as intense as at any time in the past. The personals collected will appear from time to time, as space in this number of the Review will not allow for more than a comparatively small number to be printed.

Watch next month's personals for items under head of *Marriages*. The writer could announce two or three now, but is forbidden to do so.

W. Rothwell, who is attending Albert College, expects to matriculate into Victoria College next spring. He intends to take the Arts course in that college.

A. B. Wilmot, '86, is a rising lawyer of Fredericton, N.B. It is said that he is even more eloquent than during his College days, but it costs more now to hear him talk.

B. E. Paterson, '86, is editor and proprietor of the daily and semi-weekly Press of Amherst, N. B. He recently sustained the loss of his wife after a married life of less than five years. Mrs. Paterson was a niece of the Hon. Thomas R. Black, of the Nova Scotia Government.

D. H. Leavens, '85, is farming near Belleville, and is specializing in poultry and fruit.

Mac. Robertson, '96, has been working in a cheese factory at Wellburn during the past season. He expects to go to St. Mary's soon to take a position in a creamery.

W. R. Graham, '90, who is known as an authority on poultry, made quite a large purchase of first-class birds at Toronto Exhibition.

D. Macpherson, '95, has a mining claim at Nelson, B.C. It is reported that he has "struck it rich."

H. Cameron, '81, is in the Klondike and is the owner of one of the best claims in the Eldorado.

E. A. Wells, '88, Sardis, B.C., of A. C. Wells & Sons, is successfully managing their valuable

farm, "Eden Bank," and is considered one of the foremost breeders of pure-bred stock in that Province.

G. E. Chadsey, '93, Sumas, B.C. has lately taken unto himself a better half in the person of Miss Alma Kipp, sister of A. Kipp, '93. Mr. Chadsey and his bride have gone to live on his farm near Chilliwack.

G. W. Morgan, '94, has entered into partnership with his father, and reports that there has been an excellent demand for Shorthorns this fall.

L. A. Merritt, '93, reports that the prospects for his line of farming, fruit growing, are very bright indeed. He built a fine residence last summer and was married in the fall.

A. D. Macfarlane, '84, Wallace, N.S., was recently returned at the head of the poll in the municipal elections of his native county, Cumberland, Nova Scotia. He is now manager of the extensive farming interests of his uncle, Hon. Senator Macfarlane.

J. S. Wallbridge, '93, who is running a creamery at Corbyville, recently made a shipment of 3,000 lbs. of butter, which was pronounced of first quality.

Local.

Water Brigade.

We are glad to hear that the residents of Lower Panton, always foremost in good ideas, have organized a brigade whose duty it is to render the floor and stairs of their ward fireproof by regular and scientific soaking. Practice, every night from 7 to 8, and from 10 to 11, Sundays included. Captain, Peg Leg; pitchers, Chumpy, Fatty, Sports; hydrants, Belzebub, Pete, Scotland. Note.—Hours of practice are subject to change without notice.

Will the student who has an odd long boot belonging to W. McLaren & Co., kindly return it?

Public school girls complain of a lack of courtesy among certain of our ladies' men. Who is to blame?

From a recent investigation, one of our professors has come to the conclusion that Guelph citizens have been supplied with an abundance of nutritious food for the past 20 years.

Charlie: "Say, Mac., has Prof. Day lectured much on Juroc-Jersey sheep this term?"

By the gods Crow! I *will* get even with you for that. Organic chemistry is an excellent aperitive before breakfast.

"Never mind," said Pete, when the *roaring* was over, "better a short life with lots of pumpkin pie than 200 years of wearying over boiled cabbage!"

Following the example of our predecessors, we beg to introduce to our readers the gentlemen of the third year by their poetical college names. The genealogy of this worthy body being very intricate, the presentation had to be delayed until this late day: Sleepy High, Asst. Resident Master, Lencoplast, Chore-boy alias Billy, Wonside Boardoticus alias *Snakes*, Pat Murphy alias *Barnum*, Chicken-rooster alias *Broiler*, Honey, Bermuda onion, Humate, and last, but not least, Iso-di-methyl-propyl-methane alias *Ladies' Man*.

Lower Panton makes an enormous consumption of coal oil. Somebody must be drinking it.

Pictures taken free, room 41, lower. Note—Gentlemen are advised to come early in the morning so as to get the instrument and the scenery fixed and ready for artistic work by 4 p.m.

It gives us great pleasure to announce to our readers that in the near future Berlin and the O. A. C. will be in more intimate connection with each other. Our milkman—but discretion forbids us to say anything more at the present moment.

Oh, that fine tail coat! Don't sit down on it, Wo—th!

"It is dinner time sir!" said Ikey.

For painless and rapid extraction of teeth, apply to Dr. Norcross. McGee will furnish recommendations.

How would you know a case of hog-spavin if you did not know it?

Now, Yankee 'tis the time to turn up your collar!

Why is a certain first year man like a codling moth?

Lewis says that a camera is a harder thing to manage than a 10 mile walk.

Ice cream skating rink on "B-g" Avenue; Manager, "Mac." Professor Ketchen created great attraction on the opening day by his world-famed "pitcher dance."

"By Jimmy!" said Red Top, looking under a cow's hind legs, "I would give that cow full marks for her dewlap, sure!"

Students of the O.A.C. wish to extend their heartiest thanks to the G.C.I. for the sample of ice cream which this worthy institution sent to the College on Thanksgiving day.

"There is nothing too good for an Irishman," said 'Ice,' as he filled his mouth with greenhouse dates. "Strange," said he, after chewing awhile, "Them dates don't taste natural at all!"

Sw—r to station master: "Please can I leave my trunk here over night when I go home at Xmas?"

Why does Taffy begin his dinner with his pie? Because he is afraid of the Crows.

Overheard from Botany class: Prof.—"What is a legume, Mr. Sullivan?" Sullivan—"A clover crop."

Extract from a first year essay on athletic supper: "Contrary to the laws of friendship, we were glad to see an old friend in the soup, viz., the oyster."

"The hot water is cold," said Pete, coming back from the tap with an indignant look, "and the worst of it is, there is none at all."

Horticulture class: Prof.—"What is the natural flower of Canada?" And the second year sang "The Maple Leaf."

Beaumont thinks that of all the modern appliances on the O.A.C. farm, the wheelbarrow is certainly the most convenient. "It is so handy for wheeling stuff from the cellar upstairs."

To see one's girl taken away by another fellow is hard, indeed; but when that fellow is B—ft, this is hard beyond description. O, Pat! your good looks and charming manners are as nothing compared to that bright red-top. Go and dye your hair auburn and then you may have a chance.

"A pompadour cut, please," said Peters as he sat down in the barber's chair.

"Certainly! Dear me! Have the rats been at your hair, sir?"

"No, but dem blooming 2nd year. S'pose 'twill be only half price, won't it?"

"Gentlemen, after this you will have either to leave the 2nd year outside, or else pay for the chairs."

"It appears to me," said the Professor of Agriculture to the first year, "that some of the members of this class are not weaned yet."

Says Waters: "Oh, I do wish I could write *shorthorn*; I would take my notes down *wholesale*."

It appears from Omaha's reports that "Gris" and "Ken" did not handle sheep altogether in the dark,—nor always at the end of a rope—while at the O.A.C.

Our Exchanges.

President Schurman, of Cornell University in his address delivered at the convocation of the present session sums up his advice to college men as follows: "As to health, the body is a machine; keep it in good condition. As to education, I would say, study hard. As to character, fear God and keep His commandments."

A new exchange, *The Clarion*, has reached us from Stanstead Wesleyan College, Stanstead, Quebec. Its columns are bright and interesting. From an article on "True Culture" we clip the following:

Cultivate the physical powers exclusively and you have an athlete or a savage; the moral only, and you have an enthusiast or a maniac; the intellectual only, and you have a diseased oddity, it may be a monster. It is only by wisely training all three together that the complete man can be formed.

We read with much interest an editorial in *Albert College Times*, entitled "Concentration in Study." In view of the approaching exams we deem it in order to reproduce it in part: "There may be a vast difference in the amount of attention given to our work when at study. It is very easy to allow one's attention to be diverted from the work in hand. The habit of dawdling over our books, if once acquired, grows upon us, and should therefore be avoided. When you study, concentrate all your energy upon the work before you. It is only by so doing that the greatest results can be accomplished."

A student recently asked the president of a college if he could not take a shorter course than that prescribed by the institution. "Oh yes," was the reply, "but that depends upon what you want to make of yourself. When God wants to make an oak he takes a hundred years; but when he wants to make a squash he takes six months."—*Ex.*

Little Willie had a mirror
And he licked the back all off.
Thinking in his childish error
It would cure the whooping cough.
At the funeral Willie's mother
Smartly said to Mrs. Brown,
"It was a chilly day for Willie
When the mercury went down."—*Ex.*

"I hate to take advantage of your weakness, but I've got to down you," said the boarder to his cup of tea.—*Ex.*

Evening on the Campus.

Behind a screen of western hills
The sunset color fades to night;
Along the arching corridors
Long shadows steal with footsteps light.
The banners of the day are furled;
Thro' darkening space the twilight creeps
And smooths the forehead of the world
Until he sleeps.

The oak trees closer draw their hoods;
A bird, belated, wings his dim,
Uncertain flight, and far above
A star looks down and laughs at him.
The sky and mountains melt in one;
Tall gum trees range their ranks around;
The white walk marks its length upon
The velvet ground.

From out the dark the chimney points
Like guiding finger to the skies;
Down drops the curtain of the night,
And all the plain in darkness lies.
When, as the College buildings seem
To lose their form in shapeless mass,
The lights shine out as poppies gleam
Amid the grass.

—*Cornell Era.*

New Perfumes.

A Bottle of our Holiday Perfume
would make a most acceptable gift
for your sister or mother at Xmas.

Large Stock and Low Prices at

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