

QUEEN'S
QUARTERLY.

VOL. IV.

JULY, 1896-APRIL, 1897.

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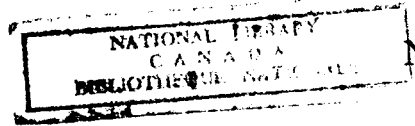
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QUEEN'S QUARTERLY

VOL. IV.

JULY, 1896.

No. 1.

All articles intended for publication, books for review, exchanges,—and all correspondence relating thereto—should be addressed to the editors, Box A, Queen's University, Kingston, Ontario.

EARLY ANGLICANISM IN KINGSTON.

THE interval with which our sketch is concerned extends from 1793 to 1844. With the former of these dates, the settlement of Upper Canada and the formation of St. George's, Kingston, began, and with the latter, that congregation ceased to stand alone and to represent all the life of the Church of England in this city. During the Revolutionary war, the present Province of Ontario may be said to have been uninhabited, but, when peace had been concluded by the treaty of Paris, signed on the 3rd of September, 1783, the great northward movement of the United Empire Loyalists began. A considerable number of refugees, it is true, had ere this found shelter in Nova Scotia and Quebec, but, the men who first peopled the banks of the Upper St. Lawrence, the Bay of Quinte, and the Niagara district, came over during the decade beginning with 1783. It is supposed that about 10,000 of these sturdy patriots found asylum in what is now the Province of Ontario. Religiously, however, a very small proportion of them were members of the Church of England.

The Hon. Richard Cartwright, who knew well whereof he affirmed, considered himself fully warranted in asserting, in a statement made in the year 1792, that in all the Province of Upper Canada, there were not one hundred families who had been educated in this persuasion. Again, writing from Kingston two years later, he estimated that only one-tenth of the people of the Province were Anglicans. The Rev. John Langhorn, also, who was missionary at Ernestown and parts adjacent, from 1787

to 1813, declared that four-fifths of the settlers on the Bay of Quinte, then one of the most thickly peopled parts of the Province, were of persuasions different from the Church of England. Many of the Loyalists were of Dutch descent, and these were mostly Presbyterians. No inconsiderable contingent were Quakers from Pennsylvania, while those of British origin were in many cases Methodists, and (in the Eastern Lake Erie district) Baptists. Nowhere, however, were the adherents of the Church of England so numerous, as at the military station, first known as Fort Frontenac. Here, in 1792, the first missionary reported thirty communicants, while at Toronto, in 1802, there were but ten. In truth, of the one hundred families credited to the Church of England in Upper Canada by Mr. Cartwright, no less than thirty were to be found at Kingston. So at least it appears from a letter written by the infant congregation to the S. P. G. in 1791. Some of these were Loyalist refugees. Some were soldiers of Sir John Johnston's battalion of the Royal regiment of New York, which had come from Oswego to Kingston during the summer of 1783, and a year later had been disbanded there; and, as the Fort seems to have been well garrisoned, the officers and soldiers together with the permanent inhabitants of what in 1784 was laid out as the Town Plot of Kingston, sufficed to form a considerable congregation.

During the summer of the year I have just mentioned (1784), there came to this promising settlement Dr. John Stuart, a man whom all Canadian Anglicans regard with reverent affection. Let me briefly sketch his history. He was born in 1740, at Harrisburg, Pennsylvania, where it is said the family mansion was still standing in 1836. His father, Andrew Stuart, was a worthy and attached Presbyterian, of good North of Ireland stock, and sent his son for education to Philadelphia. Here his religious convictions underwent so serious a change, that he determined to seek for ordination in the Church of England. Not, however, till the lapse of several years had convinced his father of the sincerity of his motives, and the tenderness of his filial consideration. To receive the laying on of the hands of a Bishop, involved, in those days, a journey across the Atlantic, but this he undertook, and in 1770 he was admitted to Holy Orders by Dr. Terrick, Bishop of London. Immediately there-

after, he returned to America and was appointed to Fort Hunter, an Indian mission, where fortifications and a chapel had been erected by Queen Anne in 1712. He preached his first sermon at Canajoharie, on Christmas Day. Fort Hunter was situated on the southern bank of the Mohawk river, at the point where the Schoharie enters it, or, if you choose, it was 38 miles north-west of Albany, or 4 miles east of Fonda, a modern station of the New York Central R. R. The stone church, which indeed resembled a fort more than a place of worship, is thus described in a contract for the building of the Fort. "Also a Chaple, in the midle of the Ffort of 24 foot square, one stoye ten foot high, with a garet over it, well covered with Boards, and shingled, and well flowrd. A Seller of 15 foot square under it, covered with Loggs, and then with Earth. The whole Chaple to be well floured." After long disuse as a place of worship, this historic building was demolished in 1820, to make way for the Erie Canal which passed through its centre. The parsonage, however, remains, and having been modernized, is still occupied. At Fort Hunter Dr. Stuart remained for eight years, faithfully and successfully ministering to his Indian congregation, as well as to the English and Dutch residents, and holding a fortnightly service at what is still known as Johnstown. With the aid of Brant, the well-known Indian Chief, he also translated a considerable part of the New Testament and of the Book of Common Prayer into the language of the Mohawks. But in the meantime the War of Independence began, and Dr. Stuart was as unflinchingly attached to the Royal Standards as his brothers, Andrew and Charles, were to the cause of the Revolution. He was therefore obliged to abandon his post, but not until the greater part of his Indian converts had joined the Royal forces. We are not specially concerned to enlarge upon the treatment which he afterwards received from the Revolutionists and which is incident upon times of war. Suffice it to say, that after having been obliged to suspend his ministerial functions for over two years he was at last permitted to remove to Canada, and reached St. John's in the Province of Quebec, on Oct. 9th, 1781. A few weeks later we find him at Montreal, where he opened a Public school with a considerable attendance, and acted as Deputy Chaplain to the 60th Regiment. He had also frequent opportunities

to visit the Indians at Lachine and elsewhere, for many of his converts like himself had found their way into Canada. Montreal, however, he felt was not his appropriate centre, and in February, 1784, he requested the appointment of Chaplain to the garrison of Kingston. Having received a favorable reply from the authorities as well as discretionary power from the S. P. G. to settle in any part of Canada, he resolved to remove to what was then the most important point in the Upper Province. But first he undertook a visitation of the great district which he was to oversee. Setting out from Montreal on June 2nd, he reached Niagara on the 18th, having visited all the new settlements of Loyalists on the way, and baptized all the children presented to him for that purpose. "On my return" (I now quote his own words) "having determined to visit every settlement of Loyalists, I came by way of Cataragui, remained there some days, baptized several children and buried one." He was however, unable to take up his permanent residence in Kingston till the summer of the following year, but in August, 1785, when he was in his forty-sixth year, he settled down to what was the chief work of his life. Kingston was then a town of about fifty houses, some of which he describes as very elegant, and immediately on his arrival there he established religious services in a large room in the garrison, and soon after an Academy for general education. The people he describes as a class "not the most favorable to morality and industry." Again, he speaks of the need of teaching them the first principles of religion and morality before persuading them to become actual members of the Church. He was, however, supported by a little band of loyal and earnest men, and in 1792, his communicants, as we have seen, numbered thirty-four. His stipend amounted to £150 (sterling), two-thirds of which was derived from the Crown and one-third from the S. P. G.

The first Vestry of which we have record, was held upon Easter Monday, April 25th, 1791, at which there were present, Dr. John Stuart, Richard Cartwright, Sr., Richard Cartwright, Jr., Capt. James Richardson, Joseph Anderson, and Christopher Georgen. Georgen and Richardson were appointed Wardens, and Archibald Thompson and Capt. William Atkinson, Vestrymen. The duties of the Clerk and Sexton were also defined. The latter was to "make fires and sweep the Church regularly, for which he

was to be paid one shilling per week during the season when it was necessary to have fires, and sixpence per week when no fire was necessary. He was also to furnish water for the christenings.' The little congregation, the majority of whom are described as depending upon manual labor for their subsistence, considered themselves taxed to the utmost in providing benches for the room in the barracks, raising the salary of the Clerk (\$18), enclosing the burial ground (\$27.60), providing a surplice (\$9.15), as well as a cloth and napkin for the decent administration of the Sacrament (\$4.15). Nevertheless the S. P. G. thought to lay upon them the duty of contributing to the salary of their Clergyman as well, and in July, 1790, addressed a remonstrance to them to that effect. They therefore felt it necessary to bestir themselves, and probably conceived that by taking steps to erect a church they would satisfy the Society of their activity. A subscription list was set in motion, and the fifty-four names which appeared upon it gave promises to the extent of about \$450, in sums varying from one dollar to forty. Richard Cartwright, Neil Maclean, Robert Macaulay, Joseph Herchmer, Michael Grass, Joseph Forsythe, Thomas Markland, Peter Smith, and David Brass, were among those who undertook the erection of this the second church in Upper Canada. The building decided upon was a weather-boarded structure forty feet long, thirty wide, and twelve high. The burial ground presently surrounding St. Paul's Church had been placed by the Crown in the custody of the Clergyman and Wardens, as early as 1784, although the patent was not issued until July 16th, 1827. That valuable block known as "G", and now bounded by King, Brock, Wellington, and Clarence Streets, was probably given at the same time, as the site of a church, although in this case also, the patent was delayed till January 19th, 1824, when the purposes of the grant were specified. Here, therefore, with a feeling of perfect security as to title, and upon a site, a little to the rear of the present Masonic Hall, building operations were begun in February, 1792, the contractor being Archibald Thompson. During the summer of this year, an epoch-making event took place at Kingston. The Province of Upper Canada had been formed in 1791, but Sir John Graves Simcoe, its first Governor, was not proclaimed until July 8th of the following year, and the proclama-

ation is said to have been made in the Protestant church at Kingston, and upon a Sunday. I find some difficulty in reconciling this statement with the fact that the church at the date mentioned, must have been very incomplete, and possibly the term "church" may be used to designate the building used as a church, viz: the room in the Barracks already mentioned. In, October, however, says Dr. Stuart, the building was glazed and plastered, and the interior furnishings were probably extemporized by the use of the benches already supplied for the Barracks. But, on the first of April, 1793, we read of a Vestry meeting held in "the Church," when Captain Robert Macaulay and Peter Smith were appointed its first Wardens, and Lieutenant James Robbins and James Russell, Vestrymen. Early in the following year a proper pulpit, desk, Communion table, pews, cupola, and bell were added, and the material equipment was completed. The source from whence the bell was procured, I am unable to discover, but it was cast in Bristol, England, by one John Baker, in 1690, and weighed no more than 60 lbs. Afterwards discarded by the congregation of St. George's for a worthier instrument, it was presented by the Archdeacon to the Rev. Job Deacon, of Adolphustown, and to-day it hangs in the tower of the pretty Memorial Church, lately erected there. Unfortunately, however, it is no more than a relic, for it is cracked and cannot be used. The completed structure cost about \$800, and the entire expense was borne by the congregation. On the 17th March, 1794, thirty-one pews were sold at prices varying from \$25.00 to \$6.50, being at the same time, subject to a rental of \$4.00 per annum. In the following August, the congregation received its first Episcopal visitation. Dr. Jacob Mountain, had, in 1793, been consecrated Bishop of the great district extending from Gaspe to Lake Huron. Facing westward in the following year, he reached Kingston at the date mentioned, and from him fifty-five persons received Confirmation there.

Even in these early days when one might suppose that the little flock would feel themselves but one united family, affairs did not always move without the occasional intrusion of that element, which in this age of disguising phraseology, we term "friction." At the Easter Vestry, April 6th, 1795, it was unanimously resolved that the ground-rent should cease, and that the

expenses of the church should be raised by assessment. But, on the following Monday, another Vestry was held for the purpose of upsetting the action of the former one. Oaths were administered, and then they tried it again. Captain Richardson, as was to be expected from a member of the garrison, stood to his colors, and voted "no," but the other three voted "yes," and so the pew-rent was restored for the ensuing year. Two years after the completion of the structure, it was found necessary to erect a gallery, the builders being Messrs. Wycott and Ellerbeck. A further enlargement was effected in 1802, which consisted of a lengthening of the building to the extent of 25 feet, and the erection of the second gallery, the cost of which enlargement was nearly \$800. From that time onward the building seems to have continued unchanged, until it was supplanted by the finer structure of 1827. Here then we may appropriately pause and endeavor to transport ourselves back to one of the first years of the century. Let us suppose it to be Easter Day, April 18th, 1802. King St. is mud almost to the ankles, and there are as yet no sidewalks, but it is Easter and we must go to church. The little bell which quite suffices for a town of 500 or 600 souls, has ceased ringing, and we may enter from the side, or the end, as we will. We are attracted by the stately, well-proportioned figure of Dr. Stuart, for he is full six feet 4 inches in height, (the "little gentleman" as his friends used to call him) and his reverent sympathetic voice is reading the opening address to worshippers. Just a little below him is Mr. John Cannon, who for the sum of \$44.00, and fees, discharges the duties of clerk, sexton, and bell-ringer. Of congregational responding, I am afraid there is none. Mr. John Cannon, who by the way is quite a consequential individual, is paid to respond. Why should the congregation interfere with his prerogative? And so, after each collect, we hear the sharp "A-a-men" of the clerk. The only musical instrument is a barrel organ of limited scope, and the congregation do not, and cannot complain that too many of the tunes are new. The Psalms usually sung are those of Tate and Brady, but the closing pages of the Prayer-Book contain a few Hymns for the chief Festivals, and one of these, we may conjecture, is sung upon Easter. If during the service we could, without impropriety, stand at the entrance to the chancel, and look down the nave,

we should probably see a congregation of between 100 and 200 persons, for, although Sunday is not *very* well observed in Kingston, and the noise of axes and hammers may be heard all day long, this one church does duty for all the inhabitants. Immediately in front of us then, are Mr. Richard Cartwright, and Mr. Christopher Hagarman. Beside Mr. Cartwright, is the diminutive figure of a young man of 24, but already his features give indications of that strength of will which gave him such marvellous determining power in the life of Canada, when in after years he became Bishop of Toronto. Across the aisle from Mr. Cartwright, is the military figure of Captain Richardson. On one side of the pulpit is the "Government pew," in which may probably be seen Commandant Spencer—at least, if he is as faithfully devoted to the duties of worship as his grandson, the efficient Clerical Secretary of the Diocese. On the other side of the pulpit, which seems to have been against the wall, and midway down the church, is the clergyman's pew. Across another narrow aisle we can discern the strong Flemish features of Lawrence Herchmer. Just behind him sits Mrs. Macaulay, still clad in the garb of widowhood, for Captain Robert Macaulay had died in the fall of 1800. To the left is Michael Grass, well-known to history, whose blood courses in the veins of our pains-taking Diocesan Treasurer. Captain Murney is there, and Jermyn Patrick, and many others are there, whose descendants are worshipping in St. George's to-day. Mr. John Corby and Lieutenant Robbins are the Wardens, and as the Holy Communion is to be celebrated, offerings are taken up (probably in long-handled boxes, or bags) to be devoted to the relief of the poor. The sermon is somewhat longer than that to which modern ears are accustomed, but it is imbued with the spirit of one who seldom clothed religion in its terrors, and whose word ever made for righteousness of living. The "Holy Table" is decently habited and the bending figure of the Rector administers the consecrated elements to thirty or forty communicants.

From this date onward there is little specially eventful to record, save the gradual upbuilding of the Church. Bishop Mountain's purpose was to pay triennial visits to every congregation in the vast Diocese, and confirmations were administered by him in Kingston in 1800, 1803, 1809, and onwards. Dr. Stuart

died on the 15th day of August, 1811, at the age of 71. All that the grave can claim of this honored servant of the Lord, lies in the burying-ground surrounding St. Paul's Church, and it is sheltered from the world's intrusion by a high and massive stone wall. A Vestry-meeting was held a fortnight later when it was ordered that the announcement of his death should be made to the Lieutenant-Governor and to the Bishop, and the hope was expressed that Rev. George O'Kill Stuart, then missionary at Toronto, might become his father's successor at Kingston. Here let me introduce all that I have to say concerning the first Dean of Ontario. He was born at Fort Hunter, June 29th, 1776, and educated at Schenectady, Windsor, N.S., and Harvard. In June, 1800, he was ordained by the Bishop of Quebec, and sent in the following year to Toronto as a missionary of the S. P. G. Here he remained eleven years, during which time the church, afterwards rifled by the Americans in the War of 1812, was built. He entered upon his duties in Kingston in the summer of that year; was made the Bishop of Quebec's "official" in Upper Canada, and later, Archdeacon of York. Upon the sub-division of that ecclesiastical district in 1827, he was appointed to the Archdeaconry of Kingston, a position he held until the establishment of the See of Ontario, of which he became the first Dean. He died in October, 1862, having attained the patriarchal age of eighty-six, and his mortal remains were laid to rest beneath the shadow of St. Paul's Church.

At the Vestry-meeting at which it was resolved to invite him to succeed his father, two resolutions were passed which may demand a passing notice. First it was determined that "a house should be provided for the minister by the congregation." I have been unable to discover any evidence that this resolution was at any subsequent meeting rescinded. But I have been equally unable to discover that any further steps were at any time taken to carry it into effect. A further resolution was "that the sum of \$200 should thenceforward be raised towards the stipend of the clergyman," and this was done, the amount being derived mainly from the pew-rents. The War of 1812 followed hard upon Mr. Stuart's arrival at Kingston, but operations were carried on, as we know, mainly east and west of the Limestone City, which for the time, benefitted, rather than suffered from the "little

unpleasantness." The dock-yard which had been established in 1789, was now the scene of a busy industry, between 1,000 and 2,000 men being steadily employed, and \$100,000 of Government money expended annually. Under the impetus thus received, Kingston continued to grow and was still the premier town of the Province. Anglicans too, began to realize the value of their Government land-grant, and in 1818, the system of leasing their lands with building privileges began. The section facing upon Brock street, was divided into five blocks, of which the annual rental was \$297.

The Princess Charlotte died on the 6th November, 1817. No event caused a sharper pang throughout the British Empire. The sad news could not in those days have reached Canada in less than six weeks, but the loyal members of St. George's immediately thereafter, put their Church into mourning. The cost of the funeral drapery was \$88, but the material was afterwards sold by auction, and the church recouped to the extent of \$57.

In the beginning of August, 1820, Bishop Mountain paid his last visit to Kingston, and administered confirmation on the third day of the month. His son, Rev. G. J. Mountain, who accompanied him, describes the church as "long, low, blue wooden building, with square windows, and a little cupola, or steeple for the bell, like the thing on a brewery, placed at the wrong end of the building. They are taking steps, however," he adds, "to build a new one." These steps consisted in procuring a plan and elevation of a church from Rev. John Bethune of Montreal, for which \$40 was paid, on 20th March, 1822. A further sum of \$12 was paid to J. Bryant, Feb, 11th, 1823, and a further sum of \$100, to Mr. Charles Johnston, in April, for the same purpose.

In addition to the block known as "G," a grant of the block of land upon which St. George's Cathedral now stands, had been subsequently made by the Crown, and the work of constructing the new building began in earnest in 1825. On April 9th, a building committee was appointed, consisting of Hon. G. H. Markland, Thomas Markland, C. A. Hagarman, Hon. John Macaulay, and John Kirby. Mr. Thomas Rogers, whose plans had

been accepted, was appointed architect, and the contractors for the masonry were Matthews and Lauder, for the carpentry, John Corrie, and for the plastering, Thomas Brickwood. The corner-stone was laid by Sir Peregrine Maitland, with impressive ceremonies, on June 25th. We learn from the *Kingston Chronicle* that the procession left Walker's Hotel, which stood facing the Market Square, at 11 a.m. It consisted of the band of 37th Hampshire Regiment, playing appropriate music, then the architect, the builders, the sexton, the clerk, the church-wardens (Messrs. Henry Smith and Thomas Askew), the rector, the building committee, the staff of the garrison, visiting clergy, barristers, physicians, the sheriff, the magistrates, members of parliament, military and naval officers, and gentlemen. Two members of the building committee then met his Excellency at the Government wharf and conducted him to the platform, when prayers were offered by the Archdeacon, and the stone was duly laid. The cavity contained the usual newspapers, coins, etc., and a scroll which bore these words. "By the favor of Almighty God, on the 12th day of June, in the year of our Lord, 1825, and the sixth year of the reign of our most gracious sovereign, George IV, by the Grace of God, of the United Kingdom of Great Britain and Ireland, King, Defender of the Faith, etc., etc., the corner stone of this Protestant Episcopal Church of St. George, dedicated to Divine Worship, according to the doctrines, rites, and ceremonies of the United Church of England and Ireland, in the Town of Kingston, was laid by his Excellency, Sir Peregrine Maitland, Knight, Commander of the most Honorable Military Order of the Bath, Knight of the Russian Order of St. George, and of the Order of William in the Netherlands, etc., etc., etc., Lieutenant-Governor of the Province of Upper Canada, the Venerable George O'Kill Stuart being Rector." On Oct. 10th of the following year, the contractor for the carpentry having failed to fulfil his agreement, the committee themselves undertook the work, under the superintendence of Mr. Rogers, and the finishing touch was not given until the close of the summer of 1827, when a steeple, a bell chamber, and a substantial platform were added to the original contracts. As most of those now living have been familiar with the stately portico, erected in the fifth decade of the century, we should probably have regard-

ed the completed structure of 1827 very bald, for the pillars and the dome which now surmounts the steeple, were then wanting, but the church was probably little less worthy than any then standing in Canada. The "elegant and commodious" structure, as an epitomizer of the day describes it, was opened for service upon Sunday, November 25th. "Prayers were read by Rev. William Macaulay, then Rector of Picton. Rev. R. W. Tunny, chaplain to the forces, (who died in the first year of the cholera, aged 55) officiated at the communion table, and Dr. Stuart, the Rector, preached an appropriate sermon from 1st Samuel, 12-24." The cost of the structure seems to have been about \$25,000. Of this amount the congregation subscribed \$5,600. The Lieutenant-Governor obtained, as a grant from the military chest, the large sum of \$7,500. From the Bishop of Quebec came \$400, and the balance was raised by a loan. I find the following interesting entries in the accounts of that date, and they help to explain the manner in which the congregation was accommodated while suffering the vexatious delays of which I have spoken. "Jan. 6th, 1826; paid Stephen Wood for work done at the Wesleyan Chapel, £0, 5, 2." "March 27th, 1826; from Henry Smith for rent of pew 12, Wesleyan Chapel, one year to Easter, £1." It appears therefore, that to the courtesy of the Wesleyans, the Anglican congregation were indebted for housing, while their church was in building, and from another source I have learned that they were permitted to hold one service each Sunday during the interval in which they received this grateful accommodation.

In the summer of 1826, the congregation saw the face of Dr. Charles James Stuart, then Bishop of Quebec. Six years had elapsed since the final visitation of Bishop Mountain, and we are not surprised to learn, that 115 candidates for confirmation were presented by the Archdeacon. From this time forward too, the exigencies of parochial work seem to have over-taxed the powers of the Rector, and he associated with him a succession of curates, the earliest of whom was the Rev. Thos. Hancock, who served from 1825 to 1830. The Rev. R. D. Cartwright succeeded him in 1831, and during the sad summers of '32 and '34, both the Rector and his assistant must have been sorely tried and over-worked. The burial register for these few weeks, which contains a list of interments from cholera numbering 171 persons, young men and

maidens, old men and children, gives some slight indication of the amount of faithful and exhausting duty performed by men who knew what it was to stand between the plough and the altar. Mr. Cartwright resigned on account of ill health, in April 1843, and was succeeded by Rev. Wm. Macaulay Herchmer, who was associated with the Archdeacon at the date which limits this paper.

Just a word may be added as to the fate of the old building which did reverent service for over thirty years. It was advertised for sale perhaps in the early months of 1826, for we read that in March of that year, Mr. Macfarlane and Mr. Thompson, received £0, 4, 7, each for advertising the sale. It is also added that the removal of the church was considered desirable for the accommodation of those who had erected buildings on Brock Street. Unfortunately the Vestry records from 1827 to 1835 have been lost. But tradition sayeth that old St. George's was removed to the corner of Wellington and Clarence Streets, used for a time as the Lancasterian school-house, and afterwards sold to Adam Main and removed to the corner of Union and Wellington Streets, where it still stands. This tradition we have been unable to verify. Enough, that in the humble structure were nurtured the faith and life of men who helped to lay broad and deep the foundations of our Canadian polity, who gave not to Kingston only, but to Canada, many worthy sons, and whose example, laymen and clergymen of the present generation may reverently emulate.

J. K. McMORINE.

BALFOUR'S "FOUNDATIONS OF BELIEF."

III.—NATURALISM.

MR BALFOUR'S criticism of Naturalism is undoubtedly valuable in bringing out into clearness what must be held by one who assumes that the principle of natural selection is sufficient to account for the origin of morality. Such an account gives no explanation of that feeling of reverence which is inseparable from the moral consciousness, nor can it explain the idea of moral obligation. If moral ideas are the product of the action and reaction between the organism and the environment, we can only say that, given a certain inherited organism together with a certain environment, and the result will be a certain action. But as, in this view, action must be the resultant of the co-operative factors, the actions done by any individual are the only actions he could do, and hence we must substitute an account of the various ways in which men act, for a theory of the way in which they ought to act. But, while we must so far agree with Mr. Balfour, there seem to be two defects in his method of dealing with the naturalistic view of morality: in the first place, he does not assail it on the ground of its untruth, but on the ground of the practical consequences, which, as he believes, would follow from its universal adoption; and, in the second place, he does not tell us wherein its falsity consists. Now, if these two defects in Mr. Balfour's criticism of Naturalism were mere oversights, we should still have to lament the inadequacy of his treatment (since no error is overthrown until its source has been detected), but we should not have to charge him with inconsistency. But they are not mere oversights: they are essential to a conclusion which the author has in his mind all along—namely, that no ultimate theoretical explanation of morality is possible at all, or, what is the same thing, that our ethical ideas are merely postulates which we cannot help assuming because of their immense practical importance, but which we cannot justify by any process of reason. It therefore becomes necessary to ask, (1) whether the argument from the practical consequences of the naturalistic

ethics is valid, and (2) whether Mr. Balfour's refusal to examine into the foundations of that theory, does not arise from a fundamental defect in his own conception of the world.

(1) Mr. Balfour admits that "there is nothing in the theory of determinism which need modify the substance of the moral law." In making this admission he seems to me to have destroyed the force of his argument as to the practical consequences of the theoretical acceptance of the naturalistic creed. Admit the account which Naturalism gives of the origin of moral ideas, and we admit that those ideas actually exist, no matter how they originated. The Naturalist, Mr. Balfour says, gives an account of their origin, which, if carried out to its logical consequences, destroys their sanctity and is therefore inconsistent with moral sentiment. But in estimating the practical consequences of a theory, as distinguished from its truth, we must consider, not the logical consequences which may be drawn from the theory, but the view by which those who hold the theory are actuated. The question, therefore, comes to be, whether those who adopt the naturalistic theory hold it in a form, which to their minds destroys the obligation to practise what morality enjoins. That they do not now do so Mr. Balfour admits, but he contends that they would do so if they were consistent with themselves. That is Mr. Balfour's view no doubt, but it must be observed that it is not Mr. Balfour's action, but the action of the Naturalist which is in question, and that until the latter has been convinced by the former, the dreadful practical consequences which are prophesied will not take place. On the other hand, if the Naturalist should come to adopt Mr. Balfour's view, if he should conclude that with the acceptance of his doctrine all distinctions of right and wrong disappear, the result, I should say, would be, not that he would lose all faith "in the substance of the moral law," but that he would be led to revise the account which had hitherto satisfied him of its nature and origin. The practical consequences of the naturalistic theory of morality as painted by Mr. Balfour, are therefore, I conceive, certain not to follow. The convictions by which men act in real life are almost invariably deeper and truer than their formulated creed, and I am certain that it is not those who have come to hold the naturalistic creed from a

profound regard for truth, however inadequate their doctrine is, whose conduct is likely to violate the great sanctities of the moral law. As Mr. Balfour is forward enough to tell us on other occasions, men in their practical life are not ruled by abstract theory, but by ideas which their theory very inadequately formulates; and, if we wish to find out the creed by which their life is really governed, we shall find it rather in their conduct than in their theoretical beliefs. In any case, whatever the practical consequences of a theory may be, we must be prepared to accept them if the theory be true; and therefore, the only criticism of an ethical doctrine which can be satisfactory, is one which exposes its theoretical unsoundness and puts a theoretically sound doctrine in its stead. An argument whose force depends upon *odium ethicum*, seems to me as futile and unsatisfactory as one which appeals to *odium theologicum*. Mr. Balfour is too ready to make capital out of both. We have therefore to ask why our author declines to enquire into the theoretical basis of the naturalistic theory of ethics, and whether this does not indicate a defect in his own conception of the world.

(2) There is one ambiguity which runs through the whole of Mr. Balfour's book—the ambiguity between the results of science and the philosophical interpretation of those results. What, then, according to Mr. Balfour, are the results of science?

Naturalism, we are told, contains two elements; 1st, the teaching contained in the general body of the natural sciences; 2nd, the doctrine that beyond those limits nothing can be known (p. 92). Does Mr. Balfour, then, reject the teaching contained in the general body of the natural sciences? Apparently not: what he rejects is the denial that beyond those limits nothing can be known. Thus he concedes to Naturalism the whole of its "positive" teaching, and only maintains that, beyond that teaching, there are beliefs which we are compelled to accept because of the claims of our "ethical needs." Let us, then, see what the natural sciences actually teach. Mr. Balfour has so mixed up his statement of the doctrine of Naturalism with the conclusions of science that it is not easy to separate the one from the other. I shall try to collect his least ambiguous statements as to what science actually teaches.

"Man, so far as natural science by itself is able to teach us, is no longer the final cause of the universe . . . His very existence is an accident, his story a brief and transitory episode in the life of one of the meanest of the planets" (3). Here, it will be observed, Mr. Balfour attributes to "natural science" the same conclusion as to Naturalism. We are to suppose that, on the basis of natural science, no other conclusion can be reached. This, indeed, is involved in his view that Naturalism in its "positive" aspect, is identical with the teaching of the natural sciences. Now, Mr. Balfour does not reject the teaching of the natural sciences, nor does he make any attempt to reinterpret its conclusions from the point of view of a theory of knowledge. And the reason is obvious: it was necessary for him to maintain that reason, acting upon the data of sensible experience, leads to this hopeless view of human life, because it is the intolerable burden of that view which is assigned as the reason why we should admit that, *beyond* nature, *beyond* phenomena, there are supersensible realities which are revealed to us in the Christian doctrine. Nature, as revealed to us by science, is for Mr. Balfour a region of dead law, or rather of chance. Such an assumption is demonstrably false. It is true that the special sciences reveal to us the fixed ways in which the system of nature shows itself to be a system; but this system is not self-explaining, and hence we cannot take the conclusions of science as more than relative. Nevertheless, those conclusions pre-suppose fixity, and therefore exclude the operation of arbitrary and irregular interference. Mr. Balfour must either reject science altogether, or he must be prepared to show that, while science reveals the unchangeable system of things, that unchangeable system pre-supposes reason as its animating principle. He does neither the one nor the other. The conclusions of science he regards as absolute when predicated of phenomena, but false when predicated of reality as it is in itself. Thus reality is exempted from law, and becomes a region of arbitrariness and caprice.

Again, we are told that, "from the point of view of organic evolution" (not be it observed from the point of view of Naturalism), reason "has been produced, directly or indirectly, by natural causes, acting for the most part strictly on utilitarian principles" (68). Now, Mr. Balfour does not reject the doctrine of

organic evolution. Here again, therefore, his conclusion is that, so far as the facts of experience go, reason is the product of natural selection. And for the purposes of his argument it is necessary for him to grant the truth of this explanation of reason. For he has to show that the conclusions of reason are untrustworthy, and he can only do so by throwing doubt upon its authority. Now, if this doctrine is true, it must be accepted no matter how unpalatable it may be. If, on the other hand, it is not true, the argument against the decisions of reason which assumes its truth falls to the ground. Either, therefore, the derivation of reason from natural selection is not true, or the argument for its divine origin is false.

Again, "science and empirical philosophy," we are told, "agree in saying that the scientific theory of the world rests on premises supplied by experience" (106). . . "Science rests in the main upon the immediate judgments we form about natural objects in the act of seeing, hearing, and handling them." "What, then, is the account which science gives of these immediate judgments of the senses?" It gives an account which shows that they are "habitually mendacious" (107). Thus, it rests upon contradiction. Yet, Mr. Balfour does not reject the account which science gives; its conclusions are, it would seem true, but they are derived from data which are false.

Could any reasoning be more unsatisfactory? The conclusions of science are true, and yet its whole basis is false. If true conclusions are to be reached from premises "habitually mendacious," it is little wonder that Mr. Balfour should belittle the power of reason, and fall back upon unprovable convictions, or faith, falsely so-called. He does not seem to see the full consequences of his own theory. If we may legitimately reach a true conclusion from false premises, why should not any conclusion be reached from any premises? Now, Mr. Balfour affirms that there is a discrepancy between the conclusions and the premises of science. In affirming such a discrepancy, he is assuming that reason cannot contradict itself. Why should it not contradict itself, if true conclusions may be reached from false premises? Surely, the true inference would be that the whole doctrine, ascribed to science, that its conclusions rest upon the immediate perceptions of sense, is false. The truth is that nothing can be

based upon such perceptions, for the simple reason that no such perceptions exist. A perception of even the simplest object of consciousness is already a judgment, and every judgment takes us beyond "immediate perceptions of sense." There is no "leap in the dark" from immediate sensation to a reality assumed to be beyond the range of knowledge; but the simplest data of knowledge already involve the consciousness of reality. This has been proved *ad nauseam* by that "Transcendental Idealism" which Mr. Balfour so perversely identifies with Solipsism. The genuine idealistic theory is that, from the very dawn of knowledge man is dealing with reality, and that the so-called "immediate perceptions of sense" are simply the first and simplest knowledge of a reality from which he cannot separate himself, because in it he lives and moves and has his being. Nor is science responsible for the inadequacy of the empirical doctrine. That doctrine falsely claims to justify science, while in reality it makes science impossible. Mr. Balfour indeed says that "science precedes the theory of science and is independent of it." Why then, does he identify science with "empirical philosophy?" The reason is obvious: he had to maintain a fundamental discrepancy between the conclusions and premises of science, because in no other way could he give plausibility to his argument in favor of unprovable beliefs. That discrepancy is essential to his plea that we must accept what reason cannot justify. Now, if, as I have contended, there is no discrepancy between the conclusions of science and any tenable theory of knowledge, obviously the whole argument for the acceptance of unavoidable beliefs falls to the ground. Science cannot, therefore, be held to deal only with phenomena, as distinguished from reality: it deals with reality, though with reality only from a limited and partial point of view. Thus, there is no break in the continuity by which we pass from scientific to higher truth. It is not by discrediting science that theology can hope in these days to establish its claims, but by showing that the conclusions of science must be taken up into a true theology and reinterpreted from a wider point of view. Mr. Balfour tells us that "by the very constitution of our being we seem practically to assume a real world in correspondence with our ordinary judgments of perception" (255). So that Mr. Balfour accepts the conclusions of science, though he admits that those conclusions have no

rational guarantee. The fault, it seems, is not due to a false theory of knowledge, but to "the very constitution of our being." We are such poor creatures that we have to fall back in despair upon the unproved conviction that there is "a real world in correspondence with our ordinary judgments of perception." Whatever the weakness of reason may be, we are entitled to say that it is strong enough to reject a self-contradictory theory. That there is "a real world" is certainly true, and just as certain is it that it is not "in correspondence with our ordinary judgments of perception." If it were so, how could Mr. Balfour possibly maintain that the "real world" is the manifestation of Divine Reason? The real world cannot be treated as at once an independent reality, and a reality that has no existence apart from Divine Reason. If we hold to the one, we must surrender the other, unless, indeed, we are to accept Mr. Balfour's sceptical doctrine, that a true conclusion may be reached from false premises. And if we are to accept that doctrine, I can see no reason why we should not hold both that a world independent of God is real, and that there is no real world apart from God, or, indeed, why we should not hold any number of contradictions.

As he goes on, Mr. Balfour begins to distinguish between science and Naturalism. "Science," he says, "is in no way concerned to deny the reality of a world unrevealed to us in sense-perception" (307). On this two remarks have to be made. (1) Mr. Balfour seems to have forgotten that there is no world "revealed to us in sense-perception." On his own showing, the world which science affirms to exist, is merely a world which we are compelled to postulate, but which we do not know. But (2), what is the relation of the hypothetical world which is not revealed to us in sense-perception, to the world which is so revealed? Are there two real worlds, both of them opposed to the phenomenal world that we know, and if so how do they differ from each other? Or, is there only one real world? If so, what are its characteristics? It must be a world exclusive of space, time, motion, energy—in short, we can define it only by negative predicates. But such a world is a mere abstraction, the bodiless ghost of the world of phenomena that we actually know. It is quite plain what all this comes to. We are back into the untenable dualism, which besets all theories which begin by separ-

ating the known world from the world as it is in itself. No proposition we make is applicable to the world as it really is; we live in a vain show, and move about in a region of shadows; nay, we are ourselves shadows, for separated from the knowable world we are nothing. And yet, Mr. Balfour finds that the end of Idealism is Solipsism! As I have already said, no charge could be more pointless. Idealism maintains that the world we actually know is the only real world; but it finds that the reality of that world is inseparable from the Divine Reason. Mr. Balfour, denying to us any knowledge of the real world, pours contempt upon the world we know, and finds it irrational. If the world as known to us is irrational, by what process are we to advance from it to a knowledge of God? Once admit that the known world is irrational, and we have to fall back upon the idea of a world of which we can say nothing but that it is not the world we know. No "ethical need" can establish such a world: it is a city in the clouds, a nebulous region which haunts the fancy of those who will not see that the world round about us is veritably divine, if only it is apprehended as it really is.

Nowhere is Mr. Balfour's scepticism so palpable as in his chapter on "Ultimate Scientific Ideas." All our scientific ideas, "when they are subjected to critical investigation, appear to crumble under the process" (289). Mr. Spencer maintains that "space, time, matter, motion, force, and so forth, involve contradictions which it is beyond our power to solve." Mr. Balfour endorses his conclusion, though he does not pledge himself to the "details" of the demonstration. Where he differs from Mr. Spencer is in pressing the consequences of this demonstration against science as well as religion. "As soon as the unthinkable-ness of 'ultimate scientific ideas' is speculatively recognized, the fact must re-act upon our speculative attitude towards 'proximate' scientific ideas" (294). And no doubt Mr. Balfour is right. But Mr. Spencer is also right when he retorts that, as Mr. Balfour's theory in regard to ultimate scientific ideas is the same as his own, for him all the propositions of science are untrue. If so, what becomes of the practical conviction of the real world upon which science is affirmed to rest? Must not that conviction be false? And if it is false, what becomes of the argument from our

"needs?" Can any of our "needs" force us to believe that ideas which are interwoven with the whole of our scientific knowledge are self-contradictory, while that knowledge is in essence true? I take the liberty of denying that our "ultimate scientific ideas" are self-contradictory. The sceptical arguments drawn from the nature of space, time, and the others, may all be resolved if we take each of those ideas in its completeness, and refuse to isolate one aspect of it. It is quite true that a world of pure space, or pure time is unreal, but it is just as true that a non-spatial or non-temporal world is equally unreal. The supposed contradictions which beset these ideas arise from treating them as "ultimate," *i. e.*, as if they had a meaning apart from the whole system of things, instead of being, as they are, aspects of the one reality, which for certain purposes we find it convenient to consider apart. The real world is an organic whole, and we may as well expect to explain an eye or an ear, on the supposition that it exists apart from the other members of the organism, and can discharge its functions in isolation from the rest, as attempt to explain one aspect of the world apart from its other aspects. It would not be hard to show that, so conceived, there cannot be a real eye or a real ear. Thus, if the eye is a thing by itself, it must be capable of existing by itself, and therefore the eye separated from the rest of the organism will still be an eye. But so separated, it has no existence as an eye; therefore, we may argue, a living eye is a self-contradictory idea. Again, it is the function of an eye to see; but the eye can see nothing when it is taken from the light; hence it sees and yet it cannot see; which is a contradiction. All this is dialectic run mad. The simple solution is that the eye has no separate existence, but exists only in the unity of the whole organism. Now, it is precisely the same with what are called "ultimate scientific ideas." Treat them as ultimate, *i. e.*, as having a meaning in their isolation, and they turn out to be unthinkable. Of course they are unthinkable when so treated; but they are not unthinkable when they are regarded as aspects of the one reality, apart from which they cannot exist. It is the same with the whole body of scientific ideas. If these are treated as if they were the whole of reality, they necessarily reveal their inadequacy, simply because they are not the whole of reality. But we cannot turn

round and say: Therefore, science deals with the phenomenal or unreal. If we take this view, we shall find, like Mr. Balfour, that morality and religion have evaporated. For morality and religion have a meaning only in relation to the one reality which comprehends scientific as well as ethical and religious truth: they deal with no unknowable region, but with actual men living in an actual world, and compelled on pain of extinction to recognize the laws by which it is constituted.

We have seen, then, that Mr. Balfour's attack upon Naturalism is vitiated by the confusion into which he has fallen between the propositions of science, and the empirical theory of knowledge. He takes away all support from the conclusions of science by identifying its method with a false account of that method. Now, this confusion vitiates his whole attack upon Naturalism. For, on his view, Naturalism is condemned for the very thing which constitutes its strength. The real source of its strength is its insistence upon the fact that the world is a system, or is under law. To deny this, is really to make the rationality of the world unmeaning; for a world not subject to law cannot be the manifestation of Divine Reason. There is, therefore, nothing in science incompatible with religion; on the contrary, the more science advances in the reduction of apparently lawless phenomena to law, the more it becomes the handmaid of a genuine theology.

As Mr. Balfour attacks Naturalism precisely where it is impregnable, so he grants it favours which it has no right to claim. This will become evident if we look at the account of its tenets which Mr. Balfour gives. Naturalism, he says, derives morality from natural selection. The reason why the altruistic virtues have come to be preferred is because in the "struggle for existence" they are "an advantage to the family, the tribe, or the nation." So Naturalism traces back the volitions of man ultimately to "the various forms of matter and energy which preceded the birth of the solar system;" and hence it makes the freedom of man impossible (20). Again, in limiting man's existence to the present life, it must deny the possibility of any reconciliation of egoism and altruism. If it is said that nature has at least produced men, even if it is itself irrational, Mr. Balfour

answers that, from the point of view of organic evolution, mind is merely "an inherited faculty for self-adjustment," and the adjustment is itself very imperfect. Moreover, if it were perfect, reason would no longer be required. Thus, on the basis of Naturalism, there is nothing in man which makes him superior to other phenomena; on the contrary "the sense of humour . . . should surely prevent us from assuming any airs of superiority over other and more powerful members of the same family of phenomena, more permanent and more powerful than ourselves" (27).

I have no quarrel with the characterisation of Naturalism which Mr. Balfour gives. Any theory which seeks to explain the whole nature of man on the basis of natural selection must regard man as an object among other objects, and therefore leave out all that is characteristic of his higher nature. My objection is that Mr. Balfour regards this conclusion as the legitimate result of a consideration of the world so far as it is known to us. That this is his view is evident from the fact that, when he comes to consider the relations of authority and reason, he employs these very results in support of the low place which he assigns to reason. It is in fact, as we have seen, essential to his argument to appal us by the dreadful results of the exercise of the scientific faculty, so that we may be forced to fall back upon the "postulates" demanded by our "ethical needs." Now, I have here to make substantially the same criticism as in the case of the theoretical basis of scientific propositions. Science is not responsible for the philosophical theory which some scientific men have sought to extract from it. The biological theory of evolution is one thing, the application of that theory in explanation of the intellectual and moral nature of man is another and a very different thing. If we keep this distinction clearly before us, it becomes evident that the fullest acceptance of the former does not carry with it the acceptance of the latter. Let us look at the facts of the case. (1) Naturalism tells us that the reason why the altruistic virtues have come to be preferred is because they have been of advantage to the family, the tribe, or the nation. Now, I suppose no one would deny that as a matter of fact the dominant races have also been the races most deeply

penetrated by moral ideas. This historical fact, however, does not carry with it the implication that the reason why the dominant races adopted moral ideas was because they saw it to be to their *advantage* to do so, nor does it carry with it the implication that they survived because they *happened* to adopt them. The former supposition rests upon the assumption that the end which men seek is their own individual satisfaction, and the latter rests upon the assumption that there is no inner harmony between the world and the moral nature of man. Obviously, therefore, the scientific or historical truth that the moral are also the triumphant races, commits us to no theory as to the ultimate relation of man to the world. When, therefore, Mr. Balfour concedes to the Naturalist that the doctrine of evolution is fatal to any but a utilitarian or naturalistic doctrine of morality, he plays into the hands of the Naturalist. And if it is once admitted that a scientific theory which has commanded the assent of all biologists of any eminence is inseparable from the denial of an idealist ethics, I am quite certain that, charm he ever so wisely, Mr. Balfour will never persuade anyone who insists upon having a theory which is at least self-consistent, that he can bring back under the name of "faith" what he has surrendered under the name of "reason." Any ultimate "unification of beliefs" which is to command the assent of rational beings must at least steer clear of a fundamental contradiction.

(2) Mr. Balfour's second point is, that Naturalism traces back the actions of man to "the various forms of matter and energy which preceded the birth of the solar system," and therefore denies freedom and moral responsibility. Now, here again, Mr. Balfour seems to me to play into the hands of the Naturalist. He seems to take it for granted that, unless we postulate a world different from that which is experienced by us, there is no escape from the conclusion that the actions of man are the product of natural forces. That is to say, he identifies the world of experience with a doctrine which reduces it to "various forms of matter and energy," and then charges science and philosophy with the defects of this inadequate theory. It is not difficult to show that a world of pure "matter and energy" is not the world of which we have experience. Reduce your world to mass and

energy, and you cannot derive from it anything but mass and energy. It is therefore, in the liberal sense, preposterous to attempt the explanation of human volitions from the ghostly world which has been constructed by your own abstract imagination. A world of mass and energy has precisely the same sort of reality which is possessed by a world of pure space, or a world of pure time, or even a world of individual points or individual moments. It is undoubtedly true that, apart from the fixed aspects or relations which we express by the terms mass and energy, there could be for us no real world; but it is not less true that no world ever did or could exist which was completely specified by mass and energy. What gives plausibility to the view that human actions are reducible to mass and energy is (1) the fact that all human action goes on within the actual world, and therefore pre-supposes as its basis a fixed quantity of mass and energy, and (2) the temporal succession of living and conscious beings upon non-living and unconscious beings. But neither of these facts is inconsistent with self-determination.

(1) As to the first, the fixed quantity of mass and energy in the world is merely a statement of how the world, when it is viewed for certain purposes as a mechanical system, must be regarded. The quantity of energy in the world is constant, but the constancy of that quantity does not exclude, but on the contrary pre-supposes, the qualitative distinctions and the changes by which the world is characterised. There could in fact be no conservation of energy if there were not incessant transformation of energy. When, therefore, we come to consider living beings we have to recognize that, in speaking of the world as if it were adequately characterised as nothing but mass and energy, we have been neglecting an aspect of it which must now be taken into account. And when we pass to the actions of self-conscious beings, we recognize that in our experience there are revealed to us forms of existence which are self-determinant, because their actions are the expression of ideals. There is, therefore, nothing in the account which science gives of the world to lead to the conclusion that the actions of man are reducible to mass and energy. Were there no mass and energy there would be no self-conscious beings, but were there no self-conscious beings, none of the actions which we refer to ourselves could take place. We have a right to de-

mand that any theory which seeks to explain experience as a whole, should not begin by artificially narrowing down experience to some of its lower aspects, to the exclusion of the higher. The Naturalist appeals to "experience," and to "experience" he must go; and he will find it impossible to explain experience by any manipulation, however deft, of mass and energy. Mr. Balfour, in conceding to Naturalism that experience may be explained by the conception of a world completely determined by mass and energy, has made a concession which is fatal to any spiritual view of the universe. (2) As to the second point, that conscious beings have been produced by material forces, the answer is of the same kind. This mode of explanation assumes that what follows in time must be originated from what precedes. No assumption could be more demonstrably false. It is the very nature of conscious beings to develop in successive moments of time what does not exist, if by "exist" we mean what is consciously realized. We cannot view these successive phases as related in the way of cause and effect, for the conception of cause and effect, as employed in the explanation of the world, presupposes fixity of conditions as distinguished from the development of new conditions. Experience reveals to us the evolution of higher and more complex forms of being, and therefore, the law of development, while it does not abrogate, yet compels us to view the law of causality as an abstract or partial determination of the real world. That law is no iron necessity which excludes the more comprehensive law of development; it is merely a statement of the fact that under identical conditions an identical event occurs. The law of development shows to us that there is a continual evolution in the conditions, and therefore, an advance from lower to higher forms of being. Thus, while it is no contradiction of the law of causality, the law of development brings to light the freedom in the actual world which the law of causality does not recognize. We are not compelled to fall back upon an appeal to our "ethical needs" in support of human freedom; but, candidly examining the facts of experience in their totality, we find freedom to be a characteristic of all beings who are self-conscious.

(3) Mr. Balfour's third and last point is, that Naturalism, by

limiting man's existence to the present life, makes any reconciliation of egoism and altruism, happiness and virtue, impossible. Here again, as it seems to me, Mr. Balfour takes up a position which is entirely indefensible. He argues to a future life by arraigning the present life as incompatible with the harmony of egoism and altruism. Now, Mr. Balfour claims to be a defender of the Christian faith, and yet his doctrine is certainly not that which was maintained by the founder of Christianity, nor can I see how it can be reconciled with the belief in the immanence of Divine Reason in the world which our author admits. Our Lord did not postpone "blessedness" to a future life, but expressed the most absolute faith in its realization here and now. And it seems to me obvious that, if we begin by condemning the world as it is, we shall have no basis for the assertion of a future life in which virtue and happiness may be reconciled. If in the only world we know there is a fatal disharmony between virtue and happiness, how can we have any assurance that the disharmony will ever be overcome? The reason why we are compelled to view the whole course of human history as the co-ordinate development of goodness and true happiness is, that no other conception is compatible with the facts. Mr. Balfour assumes, in common with the doctrine he attacks, that egoism and altruism are opposite and irreconcilable tendencies. But an egoism which is exclusive of altruism necessarily leads to unhappiness, because it violates the law of all morality, which is self-realization through the self-sacrifice of all that wars with the social nature of man. Thus, in so far as the individual realizes his true self, his virtue and his happiness are identical. A genuine egoism is at the same time altruism, and an altruism that is incompatible with a genuine egoism is destructive of morality. It is true that neither the individual nor society has reached this complete organic unity, but the stimulus to all progress lies in a rational faith in the possibility of its realization, and in the perception that the whole development of man is the process by which it is being realized. Take away this faith, and we virtually deny that the world is the manifestation of Divine Love. Now, it is an integral part of Mr. Balfour's theory that the world as it is does not admit of a self-development which is at the same time a development of society. There is, in his view, a radical inconsistency between the two

ends of egoism and altruism. It is not merely that the individual is not completely moral, and that society is not completely organic—propositions which are indisputable—but that the perfection of self is absolutely inconsistent with the perfection of society. To me it seems that this conception of a fundamental incompatibility between the good of the individual and the good of the whole makes all morality impossible. It rests upon a confusion between the necessity, for the full development of the individual, of freedom in the exercise of his capacities, and the assumption that such a development must necessarily be antagonistic to the good of the whole. Ultimately this confusion depends upon the assumption that the individual man is not rational, or that society cannot be so. If, on the other hand, the good of society can be secured only by the fullest development of all its members, and the good of the individual only by the fullest development of society, these two ends coincide. And this raises the whole question of the relation of the individual to society; a question which Mr. Balfour treats under the head of Reason and Authority. To his views on this important point we must next direct our attention.

JOHN WATSON.

(Continued in next number.)

THE PRE-HOMERIC AGE OF GREEK CIVILIZATION.

IT would be a strange thing if, when Flinders Petrie and other explorers in the far East are from time to time exhuming buried cities, restoring forgotten dynasties, and filling up large gaps in our knowledge of the past, the History of Greece should still stand where it was left by a Gell, a Dodwell, a Blouet, or even by a Grote. While everywhere else there was movement and expanding light, Greece and its fortunes were for three quarters of a century the prey of the tourist, the sentimental traveller, and the picturesque voyager. Homer, the grandest figure in Greek history, was also the remotest outpost of its civilization. Like some snow-covered Olympus or towering Atlas, he filled up the whole horizon. All beyond him was vague and impenetrable. On the other side of the mountains were no men.

It had yet to be learnt that there were other ways of reading Homer than had yet been applied. Up till a recent date Homer was not studied by historians, but by philologists, critics, and philosophers. The philologist studied Homer's rhythm, his dialect, his metre, and all the secrets of that epic art so simple and yet so inimitable. The critic analysed the composition of both Iliad and Odyssey, and claimed to find in them clear proof of the agency of several authors and of later lays foisted into the earlier. The moralist studied the nature of the men of heroic days, their thoughts, shades of sentiment and motive principles. He asked himself how they had resolved the problem of human destiny, what gods they worshipped, and what moral results flowed from their religion. All this was well. All these researches were based upon data furnished by Homer himself, and their solution required but refined feeling accompanied by a penetrating judgment.* Homeric knowledge, however, stood substantially where Wolf had left it. There was nothing in the way of new light to convince the skeptic who maintained that the siege of

* G. Perrot, *Homère* *Revue des Deux Mondes*, 1885.

Troy was a Sun-myth, and that the warriors celebrated in Homer's verse, were solar heroes.

It was Henri Schliemann who by his researches at Troy and Mycene, first furnished the proof of an extended period of barbaric splendour, having relations with Asia and Egypt anterior to the time of Homer, and characterised by the absence of iron, and by the use of a massive architecture, called by the Greeks of a later day, Cyclopean or Pelasgic. These discoveries serve as a perpetual commentary on Homer, clearing up difficulties that have long subsisted, and giving a meaning to even epithets that were thought to be but the gossamer play of a poet's imagination. We now know that the description of Mycene as "rich in gold" *πολύχρυσος*, is literally true, that the mysterious *κύανος* which commentators agreed must be "blue steel" is enamelled porcelain, used for decorative plaques and cornices, and that the magnificence and Asiatic features of the palace of Helen and Menelaus, were not a vision evoked from the teeming brain of the poet, but in their main features, a faithful reproduction of a scene familiar to the minds of his Ionian auditors, whose fathers had been dispossessed of their former glories and driven across the Ægean by the Dorian invaders, whose irruption brought to a close the Mycenaean period.

The finds that have been made are to the scholar what fossil remains are to the geologist. A race may be obliterated, but it leaves its traces behind it, either in the shape of buildings or tombs, or as impressions on language or on the arts of those who succeeded the perishing race. By the relics that survive we can fix identities of race from similarities of art, and read the history of the past from the unconscious testimony of material remains. "When properly studied and understood there is no language so clear or whose testimony is so undoubted, as that of those petrified thoughts and feelings which men have left engraved on the walls of their temples, or buried with them in the chambers of their tombs. Unconsciously expressed, but imperishably written, they are there to this hour. Any one who likes may read them, and no one who can translate them can for one moment doubt but that they are the best, and frequently the only records that remain of by-gone ages." * Language, it is true, is an invaluable aid, but even where

J. Fergusson: History of Architecture, Vol. 1, p. 53.

no trace of the language of a race is left, as in this case, we may reason of the works of man before a given date, with the same certainty with which we can reason of those of Nature.

If at first Dr. Schliemann's discoveries were met with coldness and even derision on the part of scholars, this was due as much to the naive simplicity of Schliemann and his child-like faith in the literal truth of the details of Homer, as to any stubborn prejudice or indisposition to accept new light from an unknown quarter.

Critical scholars could not help smiling a smile of bland incredulity when an adventurer, whose name had never been heard before within University walls, and who was not of the guild, claimed in the journals to which he communicated his researches, to have found the very treasure of King Priam and the dead body of Agamemnon, King of Men.

When, however, scholars of European reputation and trained to scientific investigation visited the sites that were being explored, and studied the finds that were exhumed, they were forced to confess that, though the matter was not so simple to them as it was to Schliemann, yet these discoveries were of the first importance and threw an altogether new light on the early history of Greece. Sir Henry Newton of the British Museum, Lenormant, Perrot, Schurhardt and others, made known to the world of scholars what had been discovered by the explorations, and expressed their conviction that while they could not accept the startling identifications of Dr. Schliemann, the evidence was overwhelming for the existence of a long period of power and splendour previous to the Homeric age, and that the state of civilization revealed by the monuments unearthed, corresponded in many points to that which is described in the epics of Homer. This age they called the Mycenaean age, because the art and civilization of the period culminated in Mycene. It lasted for probably six hundred years, beginning about 1700 B.C., and terminating in 1100 B.C., when the invasion of the Dorian tribes brought it to an abrupt termination. The least advanced stages of the art of this period have been found in Troy, more advanced stands Thera, then comes Tiryns, and at the summit

of its splendour stands Mycene. Let us briefly sketch each in the order of time, noticing in passing how under the rich and marvelous tissue woven by the imagination of Homer there is ever hidden a kernel of fact, a historical frame-work underlying the brilliant and capricious embroidery of the fancy.

Troy, now called Hissarlik, early invited occupation from its commanding position on a spur of Mount Ida. Only a few miles away flowed the *Ægean*, while mid-way between the sea and the hill of Hissarlik spread a plain of great fertility, watered by two rivers. On this hill several cities have been founded. Here in 1872, at a depth of fifty feet below the surface, Schliemann found the remains of the first city—yielding arms and utensils almost wholly of stone, with but slight traces of pure copper.* The pottery is rude, without blending of colors, monochromes of yellow, red, brown, or black. The ornamentation is of the simplest geometric pattern, consisting of parallel bars, series of points and curves. This geometric ornamentation is characteristic of the whole Mycenean period, becoming more elaborate and varied in the later stages but never arriving at a correct delineation of the human figure. In its most advanced period by an easy transition from the curve, many sea shells and animals with sinuous forms were represented. This may seem to be a very low stage of civilization, but in it we have evidence at least of settled life, and therefore of an agricultural population, with the elements of commerce, since Cyprus alone in antiquity yielded copper, and the presence of occasional jade implements implies some intercourse direct or indirect with either Silesia in Europe or Turkestan in Asia where only jade is to be found.

It is the second city that is identified with the Troy of Homer. How long a time elapsed between the ruin of the first city and the founding of Homer's Troy no one can tell. Several feet of earth cover the relics of the first settlement. This city was clearly the capital of a formidable power that could command the toil of many hands. A powerful rampart exhibiting signs of several enlargements ran round the hill. This enclosed the royal palace or citadel. A comparison of the hewn-stone walls of Mycene or Tiryns with the walls of Troy shows that architecture

* Schuchardt. Schliemann's Ausgrabungen, 1891.

in Troy was still in its earlier stages. The Trojan wall consists of a surbase of calcareous tufa sloping at a considerable angle. Above this rose a perpendicular wall of sun-dried brick, through and along which ran wooden beams as bondage to give solidity to the structure. The top of the wall was crowned by a palisade and battlements of wood, while the towers and gates were crowned with platforms which fed the fire that eventually destroyed this city. The fire has penetrated even the wall, for where the beams were, are now holes full of ashes and cinders with the clay adjacent vitrified. Towers constructed with such platforms recall to mind the scene where Helen in her search finds the Trojan Elders "*seated upon the Scaean Gates,*" watching the duel on the plain below between Paris and Menelaus. This statement is probably only one of those formulae which were passed on from the rise of the Epicchant by successive generations of singers until they reached the age of Homer, but it is all the more noteworthy as showing the substratum of fact that underlies the work of the imagination. Within the circuit of the walls are evidences of successive occupations of the same site by structures that replaced those falling into decay. These reconstructions display an advance in size and skill. The objects found exhibit increasing elegance and mastery of workmanship, while the style of ornamentation though more elaborate shows from the patterns followed that the second city is but a continuation of the first in point of art. The pottery is still monochrome, but animals are now occasionally attempted. Among the more elegant types of vases are some with rounded bottoms and supplied with a handle on each side. These are by some students identified with Homer's *δέπας ἀμφικύπελλον*, a drinking cup which the guests passed on from hand to hand. In this second city metal is plentiful, gold and silver and bronze bronze in various forms manufactured on the spot, an alloy of the copper that came from Cyprus and the tin that came from Central Asia, where alone tin was found in ancient times before the Phenicians exploited the mines of Spain and Cornwall.

The most interesting of all the finds at Hissarlik is the so-called "Treasure of Priam" which Schliemann considered to contain the jewels of Andromache or Helen. This jewellery had been stored away in a recess in the wall in a wooden box of

which only the bronze handle remains. The largest valuables consisted of some vases, inside of which were diadems, necklaces and ear-rings—all of gold. The workmanship evidences high skill, and in its bewilderment of gold threads, chains and pendants, there is a bizarre elegance that is suggestive of barbaric splendour. The oval leaves of hammered gold resemble in shape the amber or jade ovals so often found in Egypt on the neck and breast of mummies. The bronze weapons that are found are poor in tin, showing that the proportions between tin and copper had not been fixed by a sufficiently long practice. Casting of metals was well-known, for the molds of micaceous schist are plentiful. The delicate art of soldering was thoroughly understood, and thousands of small objects in gold testify to the dexterity of the workman and the wealth of the state.

This city seems to have been overtaken by some sudden disaster. Everywhere are there traces of the ravages of fire. Several skeletons were found, not extended in graves, but under crumbled walls with their weapons of war lying beside them. Everything is in harmony with the tradition preserved by the epic chant that the Queen-city of the Troad was destroyed by a hostile armament in revenge for acts of piracy committed by her chiefs.

Another of those centres of Mycenean art was the island of Thera, mid-way between Peloponnesian Greece and Asia Minor. The excavations were made here by Messrs. Nomicos, Fouque, and Gorceix. All the implements and buildings here discovered were found under a thick coat of volcanic cinders and lava. According to Herodotus, the colonization of Thera by the Phenicians carries us back to the fifteenth century before our era. As the Greeks had no knowledge of this volcanic outbreak which overwhelmed the greater part of the Island, we must push back the existence of this Mycenean city to at least a century earlier. The art of Thera is in many respects similar to that of Hissarlik, but there are also important differences. The rough-cast lining of the houses in Troy was of clay, not much finer than the mortar that they used, while in Thera it is lime that is used, and on the rough-cast are traced ornaments in figures and different colors. In Troy the artist's pencil was not used. The pottery

of Troy is monochrome, while that of Thera is of several colours, and figures of plants and animals are frequent decorations. Thera originates also the painted vase of Greece, which will be one of the glories of classic art.

The great similarity between the art of Thera where the most frequently recurring models are marine fauna and flora, objects readily suggested to those who lived in the midst of the sea, and the art of Mycene, by no means a maritime city, where the same motives enter more frequently but in a more conventional style, seems to imply that Thera was the origin of the art which later culminated in Mycene.

All that is most splendid and characteristic, however, of the Mycenean civilization, is to be found centred in Tiryns and Mycene. Everything tends to confirm the truth of the older Argeian myths that Asiatic and Egyptian elements entered into the civilization of Greece in its earliest periods. The masks of beaten gold found on the faces of the dead recall Egyptian modes of sepulture, and the decorated walls are suggestive of Assyrian mural art. At least two different dynasties had here their seat of power. Tradition speaks of two lines of royal houses, the Perseids and the Pelopids, of which the Perseid line was the earlier. It was in 1876 that Schliemann laid bare the rock of Mycene whose secrets had been hidden away from the sight of men since in 468 B.C. it was destroyed by the Argives. As everywhere else in this period the royal palace was at the same time a fortress. It was built on a hill that dominated the plain of Argos, between two deep ravines. At the foot of the citadel and covering the plain were the residences of the tribesmen of which no traces are left, except piles of fragments of pottery. On both sides of the slope that led up to the entrance into the fortress were vast stones confining the approach, while above the gate frowned two lions facing outwards to intimidate the foe. The principle of flanking is well-known, for all the approaches compel an enemy to expose the right or unshielded side to the defenders of the citadel. The gates, therefore, open to the side and not to the front.* The walls enclosing the citadel were of vast thickness, in some places being fifty feet thick, built up from the rock with cut stones

* Sir Henry Newton: Mycene. Edinburgh Review, Jan. 1878.

of immense size. Here the masonry was far superior to that in Hissarlik, and there was no slope of rough stone built up as a surbase. The wall rises perpendicularly to-day as when it was built, and seems destined for an eternal duration. The amplitude of the space enclosed, the richness of the decoration and the luxury that reigned here, as amply evidenced by the ruins of its palaces, testify that in Mycene we reach the culmination of the Prehomeric period, and that the idea Homer gives us of the height at which the Achæan monarchs stand above the nameless crowd is no exaggeration, when he styles them "*sceptre-bearing kings, the sons of Zeus, and shepherds of the people.*" It was within these enclosing walls, at a depth of 25 feet below the surface, that Schliemann found five tombs to which was afterwards added a sixth, discovered by the Greek Stamatakis. These tombs were hollowed in the volcanic rock and regularly walled on the sides. The top was anciently formed of a covering of planks, which in the course of time fell in with the soil above it, and served to protect the tomb until the present day. The value of the gold ornaments found in the tombs if sold by weight would amount to \$25,000. This gold was fashioned in a large variety of forms, as masks for the faces of the dead, as diadems, necklaces, buckles, bracelets, brooches, vases, plates, leaves of hammered gold, and buttons or plaques for wall decoration. It was in the bodies found here that Schliemann would recognize the Agamemnon, Ægisthus, and Clytemnestra of epic and dramatic poetry. A great many indications combine to prove that these tombs, however, belong rather to the Perseid than to the Pelopid line, and the simplicity of the mode of burial when compared with the so-called "Treasury" or Tomb of Atreus, the more sumptuous and later Pelopid mode of burial, seems to indicate that Mycene had not yet reached its highest pitch of power and splendour. In both Tiryns and Mycene have been traced out the sites of royal palaces whose outlines recall the size, and their mural decorations in gold, ivory, amber, and porcelain, the luxury of oriental dynasties. Doubtless when Homer describes the palace of King Alcinoos in Phæacia, he transports us into the realm of fairyland, but it was from reality that the poet borrowed the elements that he has combined in the image he presents of the splendours of this enchanted palace. The blue, the yellow, the black, the purple,

the walls of bronze, the golden doors, the silver lintel, all are here in Tiryns and Mycene, in Amyclæ and Orchomenos.

But it is outside the rock of Mycene in the plain at its base that we have the clearest evidence of the architectural skill and artistic attainments of the Mycenean age, in the construction and decoration of the cupola tombs. There are several at Mycene whereof the largest and most perfect is the "Tomb of Atreus." This tomb like all the other cupola tombs is circular in the ground plan and curves upward into an elliptic arch. It is formed by horizontal layers of stones, projecting the one beyond the other, till one small stone closed the hole and made the vault complete. The diameter of the "Tomb of Atreus" is internally about fifty feet, its height forty, and the thickness of the walls five feet. Externally, is a long passage made of massive stones leading to the doorway that entered into the circular hall. On one side of this hall is a chamber cut in the rock—the stone sepulchre apparently, while the vaulted dome formed the temple. The dome was lined internally with plates of gold, bronze, and other metals, as nails are found here and there in the walls. Though numerous examples of undisturbed tombs are found in Etruria, none such are to be found in Greece. All have been rifled of their contents. The very name of "Treasury" by which they were known to the Greeks must have excited their cupidity, and as their real destination was forgotten, no lingering respect for the dead restrained the hand of the spoiler. Another of these tombs erected by Minyas at Orchomenos described by Pausanias as deserving of admiration equally with the Pyramids of Egypt, seems from its remains to have been twenty feet wider than the tomb of Atreus. The wealth of Orchomenos had left impressions no less persistent than that of Mycene. In response to the envoys sent by the Achæans, Achilles refuses to renounce his vengeance though Agamemnon "should give him all the treasures of Orchomenos and of Egyptian Thebes, those cities which have much gold in their habitations." The gold has disappeared, but the power of Orchomenos is proved by the Cyclopean masonry, the underground drainage canals cut through the solid rock for miles, and the profound wells which evidence great engineering skill. Though the cupola has crumbled away—the sepulchral chamber

where the dead reposed remains. On the slabs of greenish schist that form the ceiling, a clever artist has represented a magnificent tapestry having a border of roses surrounding a motive of rare elegance—flowers with long pistils intertwined among scrolls of those complicated spirals which are so dear to Mycenaean art. With its brilliant and varied colors the web which has served as a model to the decorator must have been one of those objects of value that filled the dwellings of the inhabitants of Orchomenos. All these cupola tombs were covered by an immense barrow of earth. In the decline of the art a simple sarcophagus or urn occupied the centre of the mound. The mounds on the plain of Troy are of this character. A monument-building race seems to have occupied Greece and the whole of Asia Minor before the dawn of history. The last memorial of this style seems to be the tomb of Alyattes in the neighborhood of Sardis, dating from about 560 B.C. Immense numbers of smaller cupola tombs are found on both sides of the Ægean, bearing witness to the building faculty of this race that revelled in barbaric splendour. In "Hollow Lacedaemon" the realm of Menelaus, are several of the cupola tombs, many are found in Thessaly, the home from which set out the Minyan chief Jason on his piratical expedition to the Euxine coast. Some of the most interesting have been examined also in Attica, which an unwavering tradition represents as settled by the Pelasgi. In the seventh book of the *Odyssey*, Pallas Athene repairs from the citadel of Scheria to the "strong house of Erechtheus," that pious king so closely identified with her worship. The myths that relate to him, have formed at a later time the material of more than one drama and more than one picture. Quite lately there has been discovered on the Acropolis, the foundations of a structure unsuspected by the Greeks of classic times. This seems to have been one of those royal citadels that in the earliest times of Greece served as the residence of the first sovereigns of Attica.

The question of a Prehomeric age to which all these finds belong is no longer in debate. It is an accepted fact among scholars and historians. The uniformity of the architecture, the similarity of the decorative art, and the character of the metals employed, bind all together as belonging to the same period. Iron is

known to Homer and frequently referred to, more especially in the *Odyssey*. But in all the researches made in the sites here referred to, no trace of an iron tool has been found. The huge stones that characterise the architecture of this period were all cut by copper and at a later time by bronze tools such as were used by Egyptian workmen in the construction of the pyramids. As in the case of Egypt the appliances used were of the simplest. There was no knowledge of the screw or the pulley. The lever, inclined plane, rollers, and the rope alone were used. The monarchs of the Achæan tribes were as absolute in their authority as the Pharaohs. Thousands quarried the blocks in the mountains, thousands dragged them to the site of building operations, and thousands were required to lift them to their courses on the wall. Pausanias thought that only Titans or demigods could have built the walls of Tiryns where the stones range in weight from 4 to 20 tons. What would he have said had he seen unearthed the lintel stone of the Gate of Lions at Mycene nearly 40 tons in weight, and 17 feet long, 8 feet broad, and three feet thick, or the still huger stone above the door of the Tomb of Atreus, 150 tons in weight and 30 feet long, 16 feet broad, and 3 feet in thickness! The period was one of intense life, abundant resources, and notable achievement. It lasted for several centuries. At the beginning of the period stands Troy with its art, primitive and struggling, at its end stands Mycene, rich in gold, in which this art speaks its last word. They reached their culmination at different times. But so unique was the character of this civilization, and so powerful the impression made on after ages that the memory of it survived even in the dark days of Dorian rudeness. Against the background, however, of a far-off past, a true perspective of the order of events was lost. Thus episodes separated in time are brought into relation with each other, Troy is made contemporary with Mycene, and the splendour of the later city is reflected over the earlier. The glories of that brilliant chapter in Greek history passed down through a long line of bards terminating with Homer, in whose verses resound the expiring echoes of a renown that is thus rescued from oblivion.

In surveying these memorials of the past on which the hand of man has stamped the impress of his thought and will, we can-

not fail to recognize that the Greek world had even then in those early days, its unity, the sole unity it was ever to realise, the unity of mind and taste. That the recollection of it should fade away from the minds of the later Greeks, or that a lapse of many hundreds of years should succeed this outburst of splendour, ought not to surprise us when we recall the dark period of the middle ages that intervened in Europe between the downfall of the Roman Empire and the resumption of the classic traditions taken up anew after the sleep of ages in the forward movement of the Renaissance.

In assigning any exact dates to the events of this period, we have to rely, among the Greeks, mainly on traditional statements. The siege of Troy and the Dorian invasion are by popular tradition uniformly assigned to the twelfth century before Christ. This therefore, marks the close of the period. In the vast space that precedes there is but one point that is measurably fixed—the occupation of Thera by a Phenician colony in 1500 B.C. The Greek writers who are aware of this fact are ignorant of the presence of an earlier civilization on the island which was destroyed by an outbreak of volcanic forces. Geologists assign this disaster to about the year 2000 B.C. Allowing, however, but a century to obliterate the memory of this calamity, and to fit the island again, by the action of the rain and the atmosphere on the volcanic scoriae, for human occupation—the overthrow of Thera must be dated at 1600 B.C. And as Troy flourished earlier than Thera, the claims of those scholars will not be regarded as unfounded who ascribe to the Mycenaean period a duration from 1700 B.C. to 1104, when it was overwhelmed by the Dorians.

More precise information regarding the Mycenaean age comes to us from Egyptian sources. The authentic character of the documents transmitted to us by the great conquerors of the 18th and 19th dynasties cannot be doubted. If there was any relation between Greece and Egypt it must have been then, and the proof of such contact must be found in the discoveries at Mycena and in the excavations and records of Egypt. Now, not only has Flinders Petrie found in Egypt in tombs of the 18th and 19th dynasties, vases of Mycenaean pottery esteemed by the Egyptians for the beauty of its glaze and the strangeness of its decoration, but on the other hand scarabs with the name of Queen Ti and

her husband Amenophis III who ascended the Egyptian throne in 1450, together with cartouches of the same monarch, have been unearthed by the explorers in Mycene and other places. As the system of barter prevailed in those early days, when no coins as yet were struck, we are not surprised to find in exchange for the fine pottery of Mycene exported to Egypt, the ivory and glass of Egypt in Mycene. Glass, which was first manufactured in Egypt, is most abundant in Mycene as placques for walls and cornices in that beautiful blue tint which was the fashion in the time of Ramessides. On the blades of poniards unearthed in Mycene are found represented hunting scenes wherein deer and aquatic birds flee through papyrus groves, while the sphinx, whose home is on the banks of the Nile, is a frequent artistic device.

The intercourse to which the excavations in both countries bear witness, is confirmed by the records of Egypt. The name of the Pelasgi or Pelasdi is read under the form of Pelesta in hieroglyphic inscriptions of the time of Tothmes III, 1550-1500 B.C., several hundred years before the Trojan war. In the time of Rameses II, 1350 B.C., who is the great Sesostris of Greek writers, we find them at the head of a vast confederation of Aryan peoples belonging to Greece, the Cyclades and the shores of Asia Minor assisting the Turanian Khetans or Hittites in fighting those battles around Kadesh in Northern Palestine which are represented in the bas-reliefs of the gates of Luxor and Karnak. Under the name of Philistines in 1254 the Cretan Pelasgi destroyed Sidon, whose place was taken by Tyre in 1209. Who can fail to recognize in the *Aquaiousha* of the monuments the Achaeans of Greek history, who in the fifth year of the reign of Manephtah I, attacked Egypt in company with the *Toursha* (Tyrrhenians), the *Leka* (Lycians), the *Shardana* (Sardinians), and the *Sakalousha* (Sicilians)? And finally, about the year 1200 B.C., in the time of Rameses III, the old empire of the valley of the Nile was attacked by sea and land by a combined force of Teucrians from the Troad, Pelasgi from the isles, and Danaoi from the mainland of Greece. *

The Pharaohs claimed the "isles which are in the middle of the sea" as part of their empire. This was most probably true.

*Rawlinson; Egypt, Story of the Nations Series, 1890.

When Egypt was strong the Pelasgi were submissive: when it was weak they assailed and plundered it. The occupants of the Eastern Mediterranean must in the earliest times have soon come into contact with each other in friendly or hostile relations. Egypt and the tribes of the Ægean constitute but one world. Piracy has ever been dear to the Greek heart. Homer commends the practice of it, and Thucydides tells us that it was the normal condition of the Pelasgi, "the most vagabond of races" as Herodotus styles them. The pilot who sails straight south is on the coast of the Nile Delta, before losing sight of Mount Ida in Crete. And the bold corsairs who cleared the Ægean of Phœnician ships so that of all the islands, only Thera, Thasos and Milo belonged to them at the time of the Dorian invasion, had little scruple in reaping a harvest of wealth in the readiest fashion by the plunder of the Syrian and Egyptian marts. Thence steering quickly homewards they easily avoided vengeance by losing themselves in the intricate windings of the "glittering Cyclades," or if followed more closely they were tracked to their lairs, from the impregnable heights of Troy or Mycene they could look down with scorn on the puny assaults of their baffled foes. A reminiscence of such piratic raids do we find in the fourteenth book of the *Odyssey* where the disguised Odysseus tells Eumæus his faithful swineherd a tale that falls quite natural on the ear. He represents himself as a Cretan Captain who had gone with a band of corsairs to make a descent on Egypt. Five days did it take them to reach the Delta, and the nine vessels of the squadron hid themselves in the tall reeds of a river's mouth. They spread themselves in the plain, they plundered houses and were dragging off women and children to the ships. But reinforcements came from adjoining cities, and the pirates were put to flight, leaving their Captain in the hands of the enemy. His life, however, was saved, and during the seven years he has passed in their hands he has found means to enrich himself.

Herein is the explanation of the "much gold" of those "strong houses" of the Achæan, Minyan and Trojan monarchs. These impregnable fastnesses crowning the heights of Hissarlik, Tiryns, and Mycene, are the citadels of robber-chiefs, who from their lofty eyeries, all within easy reach of the shore, command the commercial routes of the Eastern seas. No waters are unknown to

these restless rovers and their crews, whether the Euxine with its prize of "The Golden Fleece" or the seven-fold Nile with its gold, ivory and glass. Bold Vikings of an earlier age, true monarchs of the sea, in a time when robbery is an honorable calling, their deeds will be exalted to the skies on the breath of popular fame. But the greatest of them all were those Pelopid kings of the house of Atreus, who to Greek craft added Asiatic ruthlessness.

We now know as formerly we did not know, Troy and Mycene, the culminating points of the heroic age. The researches carried out have solved many questions, they have brought the region of the Argolid into relation with many other points in the ancient world, especially with the isles of the Ægean, and through them with the nations of the Eastern Mediterranean. They have established by a new proof that the age called Heroic, Mycenean or Prehomeric, is that which in another branch of studies is called the age of bronze.* Combined with other evidence they show that the use of this metal lasted in Greece till the Dorian invasion, and that the military superiority of the Dorians was due to their use of iron. Finally, by the clear traces of decadence in the latter part of the Mycenean period, the excavations indicate that this civilization had run its course and that an infusion of new blood was required to fit the Greek race for occupying its rightful place in the Historic Age which was about to dawn. Behind the curtain new peoples were moving forward to the forefront of the stage, and the interest was to be shifted from the East to the West. Homer and the Bible were pre-requisites for the birth of the European nations. As the Germanic invasion paved the way for a regenerated Europe, so did the rude Dorian tribes, by the breaking up of serfdom, the introduction of Apollo worship for Totem worship, the substitution of burning for inhumation of the dead, the use of iron for bronze, and by a complete revolution of political notions as well as of social manners, lay the foundations for a new Greece which was, after the needful time for the fermenting of the new ideas, to flower forth first, as everywhere, into matchless song, and thereafter into that marvellous heritage Greece has given us in the glories of plastic art, of architecture, of tragedy, and of philosophy.

A. B. NICHOLSON.

* Emile Burnouf. Les Fouilles de Tirynthe. Revue des Deux Mondes, 1886.

SOME OF THE FACTORS OF MODERN CIVILIZATION.

THE past is our inheritance. The story of its growth, as century has been added to century, is present with us in history. Its literature, its song, its music, its science, its art, its philosophy, its religion, its common-place observances, its higher thought, and all the means by which its development has moved onwards from primitive forms to the fullness of the present day, these are woven into the very tissue of our being. We are truly the children of the past, representing the highest forms of humanity which it has thus far been capable of producing. The present is but a passing moment ; and the future, however fully fraught with hope, is yet an unknown quantity.

But, whatever may be the character of the future, we have every reason for believing that its development will be mainly along those lines that have guided the development of the past. For we cannot but think that there is a continuity in the processes of nature, whether acting through the celestial spheres, or in the organized structure and life of plants and animals, or in the realms of human thought and activity. As the world progressed in the past, so we may confidently look for its progression in the future. But its development will, in all probability, not be like the growth of the tree, which is ever moving onward towards its completed form, but rather like the motions of the planet, which sometimes apparently goes backwards and sometimes forwards, but upon the whole makes a sure and certain advance in the onward direction.

It is not easy to say precisely what we mean by the world's progress, or by civilization, but we have no hesitation in saying that the world has progressed, and that some nations are more highly civilized than others ; and we, who speak the English language, quite naturally give the highest place in the scale of civilization to the English-speaking people ; although of course we do not ignore the Teutonic and some other races.

It is equally difficult to give any detailed account of the causes of the world's progress, for these are in all probability too complex to be fully comprehended by the most powerful of human minds. There is, however, a strong tendency on the part of many people, to refer the greater part, if not the whole of the world's progress and our present civilization to the influence of the Christian religion. Now, there can be no doubt that the civilization of a people and their religion are in many cases somewhat intimately connected, but it appears to the author that we might just as well assume that, given its primitive form, the development of the religion of a people is due to their progress in civilization, as to assume that the civilization of a people is wholly or largely due to their form of religion, for both are assumptions which it would be difficult to prove.

Abyssinia is a Christian nation, but no comparison can well be drawn between the civilization of Abyssinia and that of ancient Greece with its manifold gods. And what is the civilization of Russia, with its state church and its gorgeous religious demonstrations, but a tyrannical slavery of both mind and body.

Moreover, a people who have a stereotyped civilization have usually a stereotyped and inflexible form of religion, while that growth in thought and invention, and that adaptation to circumstances which has been a part of modern higher civilization, has been attended by a concomitant transformation, and broadening of ideas, even in the most advanced of religions. For the Christianity of the howling Alexandrine mob which tore in pieces the philosophic Hypatia, the Christianity that persecuted the Waldenses and burned its hundreds of martyrs at the stake, and even the Christianity of the Protestant Calvin who persecuted Servetus to death for his Unitarianism, is not the Christianity of the Protestant and more highly civilized nations during the century soon to close. And whether civilization and any form of religion necessarily interact upon each other or not, it appears to be quite true that they advance *pari passu*, and that a higher form of civilization invariably indicates a higher and a broader religious ideal.

The idea, too prevalent in many cases, that in order to civilize a people it is only necessary to change their form of religion

from that of Mohamedanism, or Buddhism, or even Paganism to that of Christianity, is a thoroughly mistaken one. The conversion of a people from one form of religion to another does not, and cannot in itself civilize them, for civilization depends upon many other things, and notably upon that education which causes them to think and compare, and in this way brings them to know something of the relation between themselves and the vast universe which surrounds them. Civilization requires a change of intelligence rather than a change of heart.

It is quite true that a people might in many ways be changed for the better by a mere conversion to another religion ; thus they might by becoming Christians become also more humane and merciful to their enemies, but this is not generally borne out by the mediaeval history of nominally Christian nations, and the probability is that converted savages, if left without the influence of a higher and more educated race, would degrade their new religion to their own level rather than be permanently elevated by it.

In short, religion is only one of the many influences which act towards the civilization of a people, and when we consider the slowness and difficulty with which the world has worked its way from a state of savagery and barbarism up to its present condition, in which as yet, not even one-half can be considered as being civilized, we infer that it requires the forces of all the influences at our disposal to ensure even a slow uplifting of the human race, and that we cannot afford to ignore even the least of them.

To classify the influences which make for civilization, in the order of their efficiency, would not assist our purpose, even were it possible. It is sufficient to draw attention to the fact that we consider ourselves to be more civilized, or, in other words, to live on a higher plane of civilization than our ancestors of a hundred years ago. We are inclined to smile at their crude opinions and superstitions, and to look upon their way of doing the majority of things as being far behind that of the present age. Their narrow provincialism would be wholly unsuited to our times, and their ignorance of the laws of health and disease is somewhat shocking to our superior knowledge.

It may be well then to consider some of the ways in which the

civilization of one hundred years ago differed from that of our own time. A hundred years ago education, in its modern sense, was much less widely distributed than at present, and the amount of knowledge extant upon the majority of subjects was much less extensive. The educated man of that time was characterized by the generality of his information, to-day he is very much the creature of specialization. Now, specialization may be bad for the individual, but it is certainly profitable for the race, for without it, many of the great discoveries of the present century could not possibly have been made. Besides, as the field of human study gets wider the individual becomes less competent to master the whole, and if he is to do anything for the world it must be along some special line. The result has been not to produce a race of "admirable Crichtons" but to give us men whose knowledge of their speciality is far beyond anything that could be hoped for in any other system.

It is probably in the subjects of philosophy and classics and a few allied ones that the least advance has been made during the present century. But the study of nature in all its phases, in its organic beings and in its physical forces, and even the subject of mathematics, have advanced with wonderful strides. So great has been the advance in some departments of thought and investigation as to give rise to wholly new subjects. Thus, Sanitary Science, Bacteriology, Sociology, and Political Economics, are really new sciences or divisions of science. The first two of these have already done wonders in tracing diseases to their secret causes, and overcoming or preventing the disease by destroying its cause. And thus the nations who enjoy these boons of our modern civilization no longer tremble at the names of the plague, or the black death, or cholera, for some have been destroyed and others have been stript of their terrors, while hopes are entertained than even such insidious diseases as pulmonary phthisis will be brought under perfect control in due time. In the world of organic life the great principle of evolution, which was but a passing dream in the older speculation, has been placed upon unassailable ground by the comparative study of plants and animals, and has received confirmation from almost every side. So important is it that it has completely changed or modified

many of the older views, and has really introduced a new philosophy into the world.

It has even entered the stronghold of faith, and the subject of "higher criticism" is one of the results. Those who rebel against its generalizing scope and influence will do so in vain, for it is certainly one of the features of modern civilization, and although its results may be subject to future emendations, yet as a subject of study it has "come to stay." But it is with the world of physical study, of devised experiment, of invention and the ever-increasing employment of apparatus and machinery that we are at present more immediately concerned.

One hundred years ago chemistry was in its infancy, and not a single organic compound had as yet been produced by chemical synthesis. To-day hundreds of such are manufactured in the laboratories of the world, either by putting together their elementary constituents, or by saving the required compound out of the destruction of other natural material. And so extensive have these operations become that they have given rise in many cases to new commercial relations, by placing amongst the common objects of commerce, articles which heretofore were both scarce and expensive. Two hundred years ago the physical properties of steam were practically unknown; and the really practical steam-engine with all its numerous applications to land and sea travel, and to relieving the wear and tear of muscle and nerve, are inventions of the present century, and the most of them of the last forty years. One hundred years ago coal was not in common use, and hence the people of that age had no gas-lighted streets and houses. They had no coal tar and hence none of the brilliant and beautiful colors which now almost paint the world, and none of those remarkable compounds which exert such vigorous and peculiar actions upon the human system. They had no petroleum and hence none of the many things which petroleum has brought to us. Their knowledge of electricity was of the most meagre kind and could in no sense be called practical. They therefore had no electro-plated wares, or brilliant arc-lights or incandescent filaments. No furnace rivalling the heat of the sun and in which the most refractory known substance melts like wax, and crude mixtures are changed into precious stones, thus out-doing even the hopes of the Alchemists.

But all these things, and innumerable others have been wonderfully transformed in this age of modern civilization. The steam-engine has become a wonderfully complex machine in its almost perfected form, and its growth has been due principally to our superior knowledge of the physical laws of heat and steam, and to the great development of the modern workshop. Fifty years ago it would not have been possible, in any workshop in the world, or in all put together, to build the engines of the Umbria or Campania.

The processes of gas-making, of using up refuse material, of heating, of smelting, of extracting and working metals, and many others have been brought to a high state of efficiency. The ocean steam-ship and the steam railroad have increased the speed, the accuracy, the comfort, and the safety of travel upon both sea and land. And were it not for the short-sightedness and the want of a still higher degree of civilization in the nations themselves, the world might soon become like one common country as far as exchange of commodities as well as of individuals are concerned.

But it is probably in regard to the knowledge and uses of electricity that the most remarkable progress has been made. Electricity has become a veritable slave to man and a most genial one at that, for, unlike the human one so common a hundred years ago, it is always young, always fresh, always ready to do the work put upon it, and it never rebels. It covers our baser metals with silver and nickel and gold. It lights our streets and public halls and private houses. It draws our cars through town and city, and drives a large portion of our machinery. It rings our bells; it transmits our voice from house to house, and from city to city; and it carries our thoughts with the speed of the lightning around the whole world. What it will do in the future no man can foretell.

The last introduction into the mechanism and mechanical appliances of the century are bicycles and the incipient flying machine of Prof. Langley. The former of these has already materially affected the state of society, and in some respects in a beneficial way, since it has materially decreased the consumption of strong drinks, while the influence of the latter will probably be reserved for the coming century.

Now, one of the characteristics of savages is the way in which they look upon all persons not belonging to their own particular tribe. Every stranger is an alien and a barbarian, and naturally an enemy who is fit only to be kept in a state of slavery, or to be killed and eaten. Hence their incessant tribal wars. Traces of this savage feature come far down in the records of history, and the whole system of passports and police surveillance of strangers to be found in semi-civilized countries like Russia, Tartary, Kurdistan, etc., is closely akin to it. In fact, it is not so many years ago, although before the days of railroads, that a stranger in some of the mining districts of England, was apt to be treated with anything but respect.

But in all civilized countries at the present day, railways and steamships and telegraphs and postal service, and all the various means of communication, and travel and interchange of commodities, has made of man a cosmopolitan in both life and ideas. And just as a number of ponds of water may stand at very different levels while unconnected, but will gradually come to the same level when joined by channels, so it is through those great channels, our means of interchange already mentioned, that the civilization of the world is to be looked for, by their connecting together and bringing to a common level of civilization, all the nations concerned.

It appears then that to a large extent our modern civilization is due to, or at least intimately connected with our knowledge of the physical laws of nature, as obtained by the persistent and scrupulous researches of chemists and physicists during the present century, and to the material expressions of these laws and their relations in the thought of the inventor and in the skill of the mechanic. For it must be remembered that a knowledge of the acting principles in nature is of use only in so far as we can employ these principles; and in a very large number of cases the application is to be made through the medium of what may be called a machine.

Thus the steam-engine is a machine which transforms heat energy into the mass motion of a railway train or ocean steamer or other things of the kind. A dynamo is a machine which transforms the mass-motion of a revolving armature into electric currents, and an electro-motor is a machine which transforms

the energy of an electric current into that of a rotating armature. A bicycle is a machine for transforming muscular effort into translation over the surface of the earth with the least possible amount of wasted energy. And so on throughout the whole range of machines.

Thus, although experiment and discovery must precede invention in time, they can scarcely be said to excel the latter in importance, for without the inventor the discovery would be of little or doubtful utility to civilization. In fact, discovery and invention have in the past, and will continue in the future to go hand in hand. Moreover, these react upon mechanical handicraft, for however useful or important an invention might prove to be, the machine so invented could be of no practical utility unless the mechanical arrangements could be successfully produced in the workshop. So we see that the demands of civilization have created a specialization, not only in speculative education, but also in practical handicraft, for all the great machines so commonly employed nowadays are made under the care of workmen who each have charge of a special part. This process again is destructive of what may be called the general mechanic, but it appears to be a necessity in carrying out the demands of our modern civilization.

The production of machines for the performance of such work as was formerly done by manual labor or by crude processes not far removed from such, has been something enormous during the past hundred years.

In agricultural operations, besides the improved forms of ploughs and harrows and rakes and forks, etc., we have the mowing machine, and the reaping and binding machine, the threshing machine, and various others. In the manufacture of fabrics the inventions are numerous. The spinning wheel of our grandmothers has given rise to the jenny with its hundreds of spindles; the needles and thread and yarn to the sewing machine and the knitting machine; the old hand-loom to the wonderful power-driven jacquard, and the plain products of old times to the beautiful damasked fabrics of the present day. To enumerate the various engines, motors, transformers, propellers, and the thousand and one machines and mechanical devices in constant use is quite unnecessary. Every person who for a moment con-

siders the matter, must feel that invention and mechanism play a far larger part in our modern civilization than appears to the superficial observer.

But it is quite certain that the introduction of new and advantageous machines will not cease with the close of the present century, or with the death of any living man, but that it will go on in an increasing ratio, if we are to judge the future from the late past. It becomes a question, then, if the study of mechanism should not take rank amongst the great educational subjects of the times. And by this term we mean both the study of machines as acting upon certain principles, serving certain ends, and embodying the thoughts of the inventor, and the means, both theoretical and practical, by which a machine is constructed.

We are taught that instead of leaving everything to the physician, we should learn something of the structure of our bodies so as to be the better able to take care of them, and to keep them in proper order for the work they have to do. The same argument will apply to every person who has charge of any form of complex machine, and the number of such persons has increased a hundred-fold in the last hundred years.

Also, we teach our children to read and write and calculate, because by so doing we make them more useful men and women, and give to them a greater degree of self-dependence; and of late years drawing has been very properly added to these as being a powerful aid in expressing a certain class of ideas. In like manner the man who knows something of the principles of mechanism, and who has been taught the proper use of tools and has had his hands and fingers and eye and judgment trained by using them, is in a far better position in the world, and more self-reliant than the man who has to depend upon others for everything bordering on this line of education.

But some people will say, as they have hitherto done, that scientific and mechanical and physical training does not give culture, and that culture is the end of education. It is not easy to understand what these men mean by culture. If it is something which merely puts a polish upon the individual without increasing his usefulness in the world in which he is compelled to live, or assisting in the onward march of civilization, then the world has had a sufficiency of such culture, and the nature of the

progress during the last hundred years, in both civilization and the expansion of the experimental and practical side of education, is evidence that the world has found something better.

But if they mean by culture that which will enable man to assist in the well-being of his fellow creatures, and to do his part in lifting the world from a lower to a higher plane of civilization, then, the burden is on them to show that the mechanical education and its relations here referred to, do not give a most effective and desirable form of culture.

A man who studies a machine is studying not only a group of nature's physical principles, he is also studying the thought of the inventor or inventors who gave form to the machine, just as truly as the student of poetry is studying the thoughts of the poet whose work he is reading. Thus the study of the modern astronomical clock in all its relations, involves not only the study of mechanical principles which are of wide application, but also that of human thought directed along a certain line, and with a certain end in view, and extending over a period of upwards of three hundred years.

But the study of mechanism is the study of the principles which enter into all machines, whether made by man or by nature, and is especially the study of exact mechanical relations. And the proper way to study mechanism is by a judicious mixture of the theoretical with the practical. The practical is to be obtained in the workshop, and the purpose is not only to give the student a knowledge of machine structure and of tools and appliances, but also to exercise his ingenuity, his taste for accuracy, his means of surmounting difficulties by making the most of his appliances and to train his faculty of observation and the powers of his fingers and hand. It is strange how many people spend hour after hour in exercising their arms or their legs or their feet, but forget the training of the most important prehensile organs in nature, their fingers. And when they attempt to do delicate work, their fingers are, to use a common expression, "all thumbs."

Also, the busy mind must at times have leisure. But mental leisure is not idleness, for the active mind is never idle except in sleep. A change in the form of activity is usually what is required. And hence we often find that clergymen and lawyers

have mechanical workshops in which to pass their leisure hours, and sometimes they produce work that might be the envy of the skilled workman.

Another may object that it is undignified to go and work at a lathe or a vise in the workshop after the manner of a common mechanic. It may soil the fingers and make them calloused and destroy the softness of the skin and the delicate pink of the nails. The only answer to such a one is that his proper place is in some lady's bower, secure from wind and storm, for he might get frayed or chipped or cracked or even broken into pieces by his contact with the realities of the rougher outside world.

N. F. D.

AN OLD CONCORD WORTHY.

CLOSE by his (Emerson's) house, on the slope of the opposite hill, lived George Minot, a descendant of one of the early Concord families,—dying out in the male line with him, one who had never been in the railroad cars, nor but once in Boston, when with the Concord Company he marched there in 1812, but one who knew Concord field and forest by heart—a type more common in Concord then than now, who though he kept a cow and raised corn and “crook-necks” in his little field, eked out the larder of himself and his sister, the village-tailoress, with duck and partridges, horn-pout and pickerel. He valued and took much leisure, and liked to gossip with Mr. Emerson over the fence about “the old bow-arrow times” when, as he averred he had heard from the fathers, deer and otter and raccoons were common in Concord, and moose had been shot here.

“Here is George Minot, not so much a citizen as a part of nature, in perfect *rapport* with the trout in the stream, the bird in the wood or pond-side and the plant in the garden; whatsoever is early or rare or nocturnal, game or agriculture, he knows, being awake when others sleep, or asleep when others wake; snipe, pelican, or breed of hogs; or grafting or cutting; woodcraft or bees.”

On his (Emerson's) way to town he saw George Minot at work, after his leisurely fashion, and asked him if he was not going to cast his vote with all honest men for Freedom (the question of slavery being then under debate). “No,” said this honest Rip Van Winkle, “I ain't goin'. It's no use a-balloting, for it won't stay. What you do with a gun will stay so.”

—Emerson in Concord.

THE COMMERCIAL FUTURE OF THE EMPIRE.

A SUGGESTION.

THE recent meeting in London, England, of the Chambers of Commerce of the Empire for the purpose of discussing, among other subjects, the establishment of closer commercial relations between the United Kingdom and the Colonies—followed by the meetings of the United Empire League to consider the suggestions for a Customs Union made by the successful competitors for the "Statist" prize of one thousand guineas, have aroused great interest in Britain. The Venezuela and German incidents a few months since, however unsatisfactory in other respects, served an effective purpose in drawing the United Kingdom and the Colonies into closer sympathy with each other and of creating a feeling in the Imperial Country, that it was possible to be independent of foreign alliances. These same incidents are now bearing their further fruit in the increased interest which is taken by the Imperial Government as well as by the British public in all questions affecting the promotion of trade with the colonies.

The Colonial Conference at Ottawa, two years ago, passed resolutions favoring preferential trade within the Empire, and the withdrawal of all provisions in foreign treaties which would interfere with this preferential trade. The Rosebery Government, then in power, did not view either proposal with favor. Circumstances have, however, since then, been considerably changed by the advent to power of a new, strong Government, favorable, it is true, to the principles of free trade, but more Imperialistic in aim and not altogether favorable to those nations being permitted to have free access to British markets, who by heavy imposts and bounties in their own countries erect barriers to British commerce. That the strong personality of the Colonial Minister in this Government is exerted in favor of building up British commerce with the Colonies, and of promoting Imperialistic views, is one of the significant facts of the time. It will require a master mind to be able to reconcile the free-trade principles of Great Britain with the more or less protective ideas of so many of the vigorous young colonies;—to find the line of compromise.

which will be acceptable to people who are situated under such different conditions of boundary, race, climate, and productions. Is Mr. Chamberlain the master mind? and has the opportune occasion come?

At the recent meetings in London, it was hardly possible that resolutions directly favoring preferential trade should be passed, but a clear step in advance was taken when the delegates unan- imously adopted the resolution proposed by the President of the London Chamber of Commerce, to the effect that the subject of closer commercial relations between Great Britain and its Colon- ies demanded careful consideration, and that, on the request of the Colonies, it was expedient for the Imperial Government to promote such relations and to formulate some practical plan by summoning an Imperial Conference thoroughly representative of the interests involved.

In their award on the essays sent in competition for the "Statist" prize for the best suggestion of a scheme for the com- mercial federation of the Empire, the Marquis of Lorne and Lord Playfair mention that the whole of the competitors—136 in num- ber—look, without an exception, to fiscal union of the Empire as a necessary precursor of its political federation. That there is un- animity on this point is an important progressive step, as it nar- rows the preliminary consideration of the larger idea to the one question—Is a Customs Union possible? If that is not possible, there cannot be a federation of the Empire.

The suggestions of the two successful essayists have been arrived at from different standpoints. Mr. J. G. Colmer, what- ever his views on protection may be, sees the necessity of closer unity and of preferential trade, and whilst leaving to each individ- ual colony the decision as to the measure of preference it will give to British manufacturers, advocates the placing by the United Kingdom of small specific duties, equal, he estimates, to about 3 p.c. *ad valorem*, on the importations from foreign coun- tries of a number of food products and raw materials, which are also imported from the colonies and India, including animals, meats, dairy products, leather, wool, tallow, skins, fish-oils, wheat, flour and sugar. He further advocates a reduction in duties on the colonial products in the case of cocoa, coffee and tea. Great Britain is not entirely a free-trade country, and, he argues, if

duties are permissible there on beer, spirits, tea, coffee and tobacco, all of which are consumed by the working classes, objection cannot on principle be taken by free-traders to a small preference in favour of colonial products in return for a *quid pro quo*. Mr. Colmer's weak point in his very able essay, is that he has not sufficiently considered the British manufacturers' position (1) at home, where they have at present to contend with nearly four hundred millions of dollars in value of foreign manufactures annually imported into Great Britain and most of which enter directly into competition with local productions, and (2) in the colonies, where, under his schemes, whilst colonial importations into Great Britain would receive uniform treatment, there would not be reciprocal treatment of British goods in the colonies, as each colony would be allowed to select such articles for preference as it chose and would also arrange the extent of the preference to be given. Nor does he propose any sufficient offset to the bounties offered by continental nations. These bounties have not only affected the sugar industries of the West Indies, but have hampered those of Great Britain, and have led to the British public consuming, to a very large extent, sugar apparently cheap in price, but actually dear because defective in sweetening power.

The other essayist, Mr. Ralph S. Ashton, is an advocate of free-trade principles, and an important part of his argument—derived from experiences in the United Kingdom—is employed to prove the soundness of the fiscal system there, and the possibility of its application in the colonies. His scheme is not very clearly elaborated in the case of the colonies, but appears to consist in adopting intact the British tariff list and scale of duties, in admitting food products and animals free, and, in all other importations in imposing an *ad valorem* duty, varying in different colonies, but for Canada fixed at 10 p.c., with the addition of another 10 p.c. on luxuries. Deficiencies in revenue he would make good by excise and succession duties, and property and income taxes. The fiscal system in the United Kingdom he would leave unaltered. Mr. Ashton does not himself appear satisfied that his scheme will commend itself to the colonies, nor does he endeavour to show what advantages would arise to them from its adoption. It is doubtful if he has sufficiently studied the con-

ditions—so different in so many respects from those of Great Britain—under which the trade of some of the colonies is carried on and their revenues collected.

What then shall be the solution of the problem? With so many favouring circumstances all tending to bring into closer relations the scattered members of the Empire, it would seem as if at no time had the Imperial and Colonial Governments a more auspicious opportunity of approaching a question which has been hitherto beset with many difficulties. How shall the currents be utilized to the advantage of the Empire? In what shape can these Governments present a scheme to their people with a reasonable certainty of its being accepted? At the outset it is necessary to bear in mind that that proposal is most likely to be acceptable to all, which most nearly preserves the existing fiscal conditions and trade relations which each state, colony and dependency has found by experience to be best suited to its relative position, resources, climate and people. Any new fiscal policy which in its application would create a sudden and severe change in the home or foreign interests of any one section of the Empire would meet with immediate objection from the business interests of that section. At the same time it is equally clear that unless every section approaches the consideration of the matter in a spirit of some compromise, a commercial federation can never become an accomplished fact. If any self-governing colony insists on the protective principle being carried out in its entirety over the whole Empire, there are other colonies, as well as the United Kingdom which could not assent. On the other hand, if the United Kingdom should determine that free trade, as interpreted there, must prevail, Canada and Victoria are probably not the only colonies which would, in justice to their large local industries and to their working classes, feel bound to refuse their sanction. Colonies which have self-government will naturally consider the conditions which presently surround them and their own future, in preference to assenting to a policy which, however it might conduce to the welfare of other parts of the Empire, might result in ruin to large numbers of their own local interests.

In endeavouring to arrive at some practical scheme which will cover the preferential trade resolutions adopted at the Colonial Conference held at Ottawa in 1894, and at the same time meet

some of the difficulties urged in the press as standing in the way of their acceptance by Great Britain, the following considerations, among others, present themselves :—

That important sections of the Empire exist on every continent and in every climate, and produce or can produce probably every known natural product :

That the import and export trade of the more important colonies will per head of population bear comparison with the similar trade of the most progressive foreign states, in the case of Canada being about equal to that of France and much larger than that of either the United States or Germany, and, in the case of Australasia only exceeded by that of Holland and Belgium :

That the total external trade of the colonies and India, excluding the inter-colonial trade of Australasia, has already reached nearly \$2,250,000,000 annually although their population of European origin is probably under twelve millions, and that the proportion of this vast business directly tributary to the United Kingdom must under preferential trade enormously increase :

That any scheme, to merit consideration, must be framed in the interests of the United Kingdom as well as of the Colonies, and that that scheme will meet with most appreciation in Great Britain which will not only benefit the agricultural industries without sensibly increasing the cost of food products, but will also aid the British manufacturer in meeting fairly the extensive competition at his own door resulting from the cheap labour as well as the export bounties of continental countries :

That it only requires examination to establish the fact that a small duty like $2\frac{1}{2}$ to 3 p.c. on foreign wheat will not appreciably increase the cost of the loaf of bread to the working classes, and that such a duty loses much of its apparent importance in Great Britain where wheat is the subject of speculation and on a well defined rumour at any time of probable scarcity or over-supply, is liable to a rapid rise or fall to, possibly, more than the amount of such a duty :

That any effective scheme of commercial federation must necessarily carry with it some plan for the establishment of a Colonial Council, and for colonial contribution towards the defence of the Empire.

Keeping all of the foregoing facts and considerations in view, the scheme which suggests itself as likely to produce the least disturbing effect, and at the same time to be of advantage to those interests which most need it, may be stated under the headings given below. Although indicating generally that the duties should be light, and should be less on food products and raw materials than on other articles, it would seem preferable at this early stage to leave to a joint conference of representatives of the United Kingdom and the Colonies, the determination of the amount of the preferential duties to be imposed—whether they shall be in each individual case less or more than 5 p.c.—and the selection of the different products to be affected, although some of these readily suggest themselves. This conference would require to fully consider the financial and trade conditions, the resources and the needs of each section of the Empire.

(1) Each government to retain the right to adjust its own internal revenue and customs tariffs, except to the extent affected by the minimum customs duty hereafter referred to, and to provide for its own present and future financial obligations.

(2) An agreed on minimum customs duty, less than which none would charge, (10 p.c. would probably be more than sufficient in the most extreme case, and 5 p.c. ample generally) to be imposed by all governments connected with the federation, over and above any existing duty, on such natural and manufactured products—to be also agreed on—(except raw materials and food supplies provided for under clause three) as are presently imported from foreign countries, and at the same time are also or can be produced extensively—to a minimum limit to be fixed—within the federation.

(3) A less rate of duty (50 p.c. of the average minimum duty as above might suffice) to be imposed with similar conditions on all raw materials from foreign countries shewn to be required for manufacturing purposes, and which at the same time are also or can be produced extensively—to the minimum limit fixed—within the federation, and under similar conditions, on all foreign food materials which are in their natural state and have not undergone any process of manufacture or preparation.

(4) A further duty, equal to the bounty in each respective case, to be imposed on all foreign products, to encourage the export of which bounties are given by foreign nations.

(5) A revision of this tariff arrangement to be made every few years as experience is gained of its working and of the capacity of sections of the federation to replace further foreign products on a sufficiently extensive scale.

(6) All export duties to be remitted on articles shipped from one section of the federation to any other.

(7) The abrogation to be effected of those clauses in the German and Belgium treaties which presently interfere with preferential trade.

(8) Each colony to properly equip and maintain a standing force or an effective volunteer force, in numbers to be agreed on proportioned to the population and its character.

(9) The colonial governments to impose on their own shipping and on imports a small tax—in amount to be agreed on—to form their contribution to the maintenance of the Imperial Navy; or, as Mr. Colmer and others suggest, devote the whole of the preferential taxes to this purpose.

(10) The representatives in London of the Colonies to together form a Colonial Council—of which the Secretary of State for the Colonies should be a member—which shall deal with all State questions affecting the colonies, including preferential trade tariffs, and, in connection with these questions, act in an advisory capacity to the Imperial Government.

In the actual working of this proposal for preferential trade, there is an elasticity which is very desirable in consequence of the diversity in the fiscal systems of the different sections of the Empire. Each government is left with its present sources of revenue and rates of duty. It has also the right to impose what preferential duties it pleases and on what articles it pleases, and may even alter its whole fiscal system, provided it imposes the minimum duty on the foreign articles agreed on which all must charge over and above that charged on the British and Colonial articles of the same kind. Other results would also flow from the adoption of this proposal. British manufacturers would have a better control of the markets of their own country for their own manufactures, leading thus to a largely increased output, which would be still further increased by the preferential market in the Colonies and India. This would lead to work for Britain's army of unemployed. On the other hand, raw materials for

manufacturing and food supplies coming from other parts of the Empire would be duty free, while those from foreign countries would enter under duties that were lower than on manufactured goods and merely just sufficient to establish a preference—a preference which would only be conceded if the production of the article within the Empire reached a fixed limit. The decaying sugar interests of some of the Crown Colonies would also be revived, the growth of many agricultural products adapted to the climate, soil and other conditions of some of the colonies, but presently neglected or only cultivated for local use, would be greatly stimulated, whilst the production of food supplies not merely in Great Britain but throughout the Empire would be encouraged by giving them the preference in the British markets. And if it is remembered that the vast sums sent in the past to the United States by British investors have promoted enterprises there on an enormous scale and have led directly to the immense demand there for labour which Britain has also largely supplied, it is conceivable how both capital and labour will be diverted to the colonies under a well-considered scheme of preferential trade.

The important question which must engross attention throughout Great Britain is the levying of a preferential tax, light though it should be, on imports from foreign nations. Those manufacturers who do not depend on foreign raw materials, or who are feeling the effects at home of foreign competition, will, many of them, favour it, and the certainty of a larger output in numerous lines and better employment will attract the working classes. The agricultural classes will probably accept it as a measure of help, whilst among the people generally the events of the last few months have created the willingness to give at least consideration to any fair scheme which aimed at closer connection with the colonies and a colonial contribution to the maintenance of the navy. If the whole subject is now studied afresh by the leaders of public opinion there without the prejudice which is apt to be associated with principles which have been long accepted: with before them the aspirations and willing concessions of their kinsmen in Colonial Britain; and in the light of the new circumstances which surrounding and distant nations, as well as the young and vigorous colonies have created, then there may be hope for conclusions that many thoughtful minds believe—will not only maintain but increase Great Britain's prestige in the political as well as the commercial world. Will not the people make a concession to gain a consolidated Empire?

A. T. DRUMMOND.

THE COLLEGE.

REPORT OF THE PRINCIPAL TO THE BOARD OF TRUSTEES FOR YEAR
ENDING APRIL 29, 1896.

NUMBER OF STUDENTS.

No. of Undergraduates in Arts (attending)	265
" " Extra-mural	85
General Students in Arts	46
Post-Graduate Students in Arts	14
Undergraduates in Law.....	4
" Practical Science.....	6
" Theology.....	40
" Medicine.....	132
Total	592

Or, allowing for double registrations, 564 ; as compared with 432 in 1892-3, 456 in 1893-4, and 533 in 1894-5. Our increase last year was chiefly in extra-mural students. This class which has risen from 38, three years ago, to 85 this year, consists chiefly of teachers, who—unable to attend lectures—are prosecuting their studies at home, often with great earnestness and success. The Professors do what they can for them by means of correspondence ; but it is felt that more systematic assistance would be given, if tutors were employed to send them notes of the lectures and to correct their exercises and essays. It is also proposed that special examinations should be held for them during the Easter holidays. If these changes are made, the present fee of \$10 would have to be largely increased ; but that ought not to be a serious objection, as the extra-mural student is exempt from all the charges of attending classes. The matter is engaging the attention of a Committee of the Senate.

DEGREES CONFERRED.

In Medicine, M.D., C.M.	19
In Theology (4 Testamurs and 2 B.D.s).....	6
In Law (LL.B.)	4
In Arts (33 B.A. ; 17 M.A. ; 1 D.Sc.).....	51
	80

In addition to these, six honorary degrees were conferred ; in Divinity, on the Rev. Angus McColl, Chatham, Ont., and on the Rev. Wm. P. Begg, Kentville, N.S. ; and for professional and scientific distinction, the degree of LL.D. was granted to Professor John Fletcher, M.A., Wm. Saunders, F.R.S.C., James Fletcher, F.L.S., Dominion Entomologist, and A. T. Drummond, LL.B., Montreal.

LOSSES DURING THE SESSION.

At the opening of the Session, the Venerable Vice-Principal Dr. Williamson was taken from us, after fifty-three years of continuous service. The students have testified their regard for the beloved

Professor by erecting a mural tablet of brass in his memory in Convocation Hall; and it has been decided to appeal for \$5,000 to the graduates and others who valued him, to endow scholarships bearing his name with the money. In life, it was his delight to aid students. It is most fitting that he should continue to do so after death. Contributions to the fund should be sent to the Treasurer, J. B. McIver, Kingston.

Shortly after the New Year, death struck Dr. K. N. Fenwick and then Dr. H. Saunders, men in the prime of life, and whose places cannot be adequately filled. Here again the students have shown their regard for their Professors by presenting beautiful portraits of them, to be hung in Convocation Hall, painted by Mr. Ernest Lawson of Toronto. Friends of the late Hon. W. Morris, the first Chairman of the Board of Trustees, have also presented us with his portrait, painted by the same artist.

We have to record the loss of two Trustees, who as long as their health permitted—were never absent from the meetings of the Board, the Rev. Dr. Laidlaw, of Hamilton, and the Rev. D. J. Macdonnell, B.D., of Toronto. While we shall miss both, it is not too much to say that the loss of Mr. Macdonnell is irreparable.

Failing health has compelled Mr. John Cormack to resign the position which he filled with a perfect heart for so many years. In retiring, he takes with him the respect of every one who knew him; of students, Professors and Trustees.

Other losses, of promising students and kind benefactors, help to make the past year a sad one. Of the former, I would specially mention Mr. James D. Stewart, M.A., and of the latter Mr. Robert Anderson of Montreal, who for many years gave \$100 in scholarships to the Theology Faculty. He has left the University a legacy which will continue those scholarships, at least in part.

THE FACULTY OF PRACTICAL SCIENCE.

The Dean's report, which is appended, gives all the information necessary concerning this new department. Workshops are recommended by him, and it is proposed to build, in connection with them, baths for the football players, and a gymnasium for the students generally. Three thousand dollars are needed for these purposes, and it is hoped that the graduates who have often advocated while students these necessary additions, will assist in their erection.

MEDICAL FACULTY.

The work of the session was opened in the beautiful new Operating Theatre, towards the erection of which the late Dr. K. N. Fenwick contributed \$2,500, and his colleagues in the Faculty \$500 additional. In Pathology and Bacteriology, Professor W. T. Connell has organized a special Laboratory, and an additional Laboratory in Chemistry has been equipped. In these important departments, as well as in every department of Biology, Botany, Animal Biology, Physiology and Histology, apparatus is of the most modern kind, and we have Professors giving their whole time to the subjects they teach. The

attention of our medical graduates is called to this, and I trust that they will feel the responsibility of aiding in the further development of these branches of science in which they are professionally interested.

A beginning has been made in the work of forming a modern Medical Library open to the students. A steady revenue is secured for it by imposing on each student a small annual fee, and Dr. Herald, the Secretary of the Faculty, discharges the duty of Librarian gratuitously.

FACULTY OF THEOLOGY.

Mr. Hugh Waddell, Peterborough, has not waited for the fulfilment of the condition on which he promised \$5,000. He has subscribed the amount, and is paying interest on it, and I would recommend that this be set apart for a "Hugh Waddell Lectureship in Church History" until the whole amount needed for a Chair has been secured, and that Professor Macnaughton be appointed Lecturer for the ensuing session. During the past session Professor Macnaughton gave a course of lectures which the students appreciated very highly.

The Conference of the Theological Alumni, held last February, was most successful. A special feature of it was a course of lectures on "The New Life in Christ" by the Rev. Dr. Win. P. Begg. The programme for next February is herewith appended. It will be noticed that many of our Alumni prepare the papers that are discussed. This is a cheering feature which shows that one of the chief objects contemplated when the Conferences were first proposed has been largely attained. The Chancellor has kindly promised to continue his Lectureship.

PROGRAMME BEGINNING FEB. 8TH.

Forenoons.

- I. The Chancellor's Lectureship. Professor Watson will lecture daily on "Christianity in its Relations to Human Progress."
 - II. Biblical Theology. Rev. D. Strachan (Hespeler) will read a paper on "The Conception of God by Amos."
 - Rev. J. Mutch (Toronto), on "The Conception of God by Hosea."
 - Rev. R. J. Hutcheon (Toronto), on "The Conception of God by Micah."
 - Rev. G. M. Milligan (Toronto), on "The Conception of God by Isaiah."
- N.B.—See Robertson Smith's "Prophets of Israel."
- III. Problems of the Pastorate. Discussions presided over by Rev. Dr. Thompson (Sarnia). Papers by Rev. J. A. Grant (Richmond Hill), Rev. S. Childerhose (Parry Sound), Rev. D. G. McPhail (Picton).

Afternoons.

- I. Influence of Imperial Rome on Christianity. Rev. J. A. Sinclair (Spencerville).

- II. The Present Position of the Old Testament Historical Criticism. Professor Mowat.
- III. The Development of National Character in Canada and the United States. Rev. S. Bland (Cornwall).
- IV. Church History. (The First Century). Three lectures by Professor Macnaughton.
- V. Interpretation of Modern Life by Modern Poets. Three lectures by Professor Cappon.
- VI. Interpretation of History. Professor Dyde.
 Tolstoi's View of History, as seen in "War and Peace," by Rev. John Hay (Cobourg).
 Tolstoi's View of Life, "Life" and "Anna Karenina," Rev. T. J. Thompson (Belleville).
 Tolstoi's Religious Views, "My Confession" and "My Religion." Rev. A. Laird (Port Hope).
- VII. Some New Testament Problems. Professor Ross.

Evenings.

Social and Economic Discussions. Presided over by Professor Watson and Shortt.

(a) Kidd's View of Modern Socialism. Paper by Rev. Mr. Binnie (McDonald's Corners) on Kidd's Social Evolution.

(b) Caird's Conception of Christianity. Papers on Caird's Evolution of Religion. Rev. J. G. Stuart (London) and Rev. J. Miller (Norwich).

(a) Economic Meaning and Function of Labor, Wealth, Capital Money. Rev. W. W. Peck (Napanee).

(b) Economic Development of the Condition of Labor in England. Rev. W. A. Hunter (Toronto).

(c) Economic Development of the Condition of Labor in Canada. Professor Shortt.

(d) Trusts, Combines, and Monopolies. Rev. J. J. Wright (Lyn).

(e) The Municipal Problem. Rev. D. C. Hossack (Parkdale).

(f) The State in Relation to Crime. G. M. Macdonnell (Kingston).

BENEFACTIONS.

Besides the legacy of Mr. Robert Anderson, Montreal, and special donations from Mr. Pluman, Paris, Mr. Hugh MacLennan, Montreal, and contributions from various friends to make up a loss incurred by the Treasurer of the Bursary Fund, there is nothing to report under this head except the subscriptions received by the General Secretary. According to his report, these amount to \$6,800, in addition to the \$5,000, already mentioned as subscribed by Mr. Hugh Waddell.

SUMMER SCHOOL OF SCIENCE.

The School of Mining and Agriculture has, for two years past, held

QUEEN'S QUARTERLY.

a summer session, for assisting teachers and others in taking a University Course in Arts. The governors, finding that it did not attract public school teachers, have resolved to discontinue it; but being convinced that it is well calculated to assist a deserving class of High School teachers, I have arranged with the Professors of Botany and Animal Biology to continue it this year, at a nominal expense to the University. For the sessions of 1896, the subjects taught will have reference mainly to the practical part of the Specialists' Examinations in Botany and Animal Biology. Classes will begin on July 7th, and persons proposing to attend should apply to W. Mason, Bursar. The School of Mining and Agriculture has added a full course in Veterinary Science to its list of departments, and the Ontario Government is now responsible for its Dairy School.

CONCLUSION.

I submit herewith the Reports of the Treasurer, of the Dean of the Faculty of Practical Science, of the Librarian, of the Curator of the Museum, and of the Professors of Botany, of Physics, and of Animal Biology.

G. M. GRANT, *Principal.*

Statement of Revenue and Expenditure of Queen's College, Kingston, for year ending April 2nd, 1896.

REVENUE.	
Temporalities Board	\$ 2,000 00
The Professors, Beneficiaries of Temporalities Board	1,050 00
Kingston Observatory, Grant from Government	500 00
Rent of Drill Shed	750 00
Rent of Carruthers Hall	1,250 00
Rent of Grounds	120 00
Chancellor's Lectureship	250 00
Fees, Class and Graduation	\$ 4,882 39
Fees for Examinations, Library, &c.	3,814 41
	8,696 80
Interest on Mortgages and other Securities	17,418 23
General Assembly's College Fund:	
Church Agents, Balance 1894-5	339 00
" " on Account of 1895-6	1,537 69
Congregations contributing directly	1,100 25
	2,976 94
Receipts for Scholarships	2,572 34
Interest on Jubilee Fund Subscriptions	5,067 67
Balance Deficiency	9,015 14
	\$ 51,667 12
EXPENDITURE.	
Deficiency, 1894-5	\$ 12,734 06
Salaries—Professors and Lecturers in Theology, 9 mos.	5,750 00
" Professors and Tutors in Arts	18,861 50
" Other Officers for year	4,362 64
Chancellor's Lectureship	250 00
Furniture	132 00
Insurance	326 52
Expended on Examinations, Library, Laboratories, Museum, &c.	4,060 79
Expended on Practical Science Department	422 54

Taxes, Repairs and Grounds.....	\$ 544 69
Scholarship Account	2,572 34
Travelling Expenses	33 75
Advertising, Printing and Stationery	861 45
Fuel, Water and Gas	609 71
Contingencies.....	145 13
	<u>\$51,667 12</u>

QUEEN'S COLLEGE, KINGSTON, 25th April, 1896.

J. B. McIVER,
Treasurer.

Examined and found correct.

J. E. CLARK, }
D. CALLAGHAN, } *Auditors.*

REPORT ON PRACTICAL SCIENCE FACULTY, 1896.

To the Board of Trustees of Queen's University :

GENTLEMEN,—I beg to present the following report of the progress and condition of the Practical Science Faculty.

The teaching power and facilities, and the amount of accommodation available are the same as they were at the last annual report.

The number of students registered in all the Practical Science courses is eleven, but some of these are registered in Arts and some only in the books of the School of Mining.

Five students have been doing work and receiving instruction in the mechanical workshop. Four of these were engaged in mechanical work during the whole session, and the fifth left about Christmas to engage in an electrical manufacturing establishment.

The work of these four has added something to our stock of mechanical appliances without drawing directly upon the finances of the University.

Apart from the chemical laboratories, used mostly by chemical and mining students, the principal items of expense connected with the courses are those which belong to the mechanical department where lathes and tools of various kinds have to be continually used and kept in order, and material has to be purchased.

I herewith, accordingly, present a statement of what may be called the receipts and expenditure of this department, remembering that useful articles made in the workshops are to be credited as receipts to the extent of their actual value. The expenditure is as follows :—

Paid for Lathe Instructor	\$ 49 50
“ Material.....	25 35
“ Planings, etc.....	8 40
	<u>83 25</u>
Total	\$ 83 25

RECEIPTS.

Gear Cutter for Wood and Brass.....	25 00
Five Pieces, Models of Beam-Scarving	2 50
Two 42 in. Lathes with planed Iron Beds, for wood turning, \$30 each.....	60 00

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Fall Plate for Barnes Lathe	\$ 2 50
Centre Rest " "	2 50
Model of Bridge, $\frac{1}{4}$ Scale	2 50
Centrifugal Separator for Prof. Knight	6 00
Making changes in Chronograph for Prof. Knight	1 00
Making Apparatus for Prof. Millar	1 50
Carpenter's Bench complete	10 00
Total	\$ 113 50
Leaving balance in favor of the workshop of	30 25

In the next session I propose to make several other pieces of useful apparatus, *i.e.* useful for either practical work or for illustration; and to keep on in this line until we are furnished with all the means of doing fine and accurate work. For my firm belief is that a student will always do the best work, and put himself most fully into his work, when he has some practical or interesting product in view.

I was fortunate in getting a good active mechanic as lathe instructor. He gave attendance for three half-days per week, but owing to the insufficiency of our accommodations these half-days were often not more than about three hours.

The lathe instructor, of course, relieved me from a considerable amount of care, but this did not much decrease the real amount of work which I found it necessary to do. For all the planning and designing, and overlooking the carrying out of these designs, still devolved upon me, and I do not see how it could well be otherwise. The consequence was that about twelve hours a week of my time were given to the mechanical department, and by far the greater portion of that was spent in the workshop.

Besides this I agreed to lecture upon the subject of mechanism. This I faithfully carried out, lecturing upon the subject one hour per week throughout the session. But I found it necessary, for the students' sake, to give an extra course of lectures upon the construction, use, and adjustments of mathematical instruments. And owing to the death of our lamented friend, Dr. Williamson, I had, in the best way I could, under the circumstances, to take up the subjects of the mathematical course which had hitherto devolved upon him; for although in his latter years he did not do much, yet that little became a necessity for some one else as soon as he had passed away.

I had hoped to be able to give some time to doing independent work in my own subject of mathematics, but, in the ways mentioned my time is so completely occupied from morning to night, that the hope appears now to be a forlorn one.

Our present workshop does not give sufficient accommodation, and I would press upon the consideration of the Board, the advisability and necessity of better accommodation.

The practice of carrying on iron work and wood work in the same shop is objectionable from many points of view, which I need not specify; but particularly as the number of students increase we must have the means of carrying on the work during both the forenoon and the afternoon hours.

As soon as possible the Department should be supplied with a com-

petent Professor of Engineering, a man of a wide range of knowledge.

Professor Harris has been extremely obliging and deserves the special thanks of your Board for his kindness in giving his service free for the past two sessions. But his time is already very much occupied, so that he is not able to give more than two or three hours a week to the work here. We need a man who can give his whole time to overtake the work that is to be done.

For such subjects as Descriptive Geometry, strength of materials, subject of strains and stresses, theory and practice of surveying, theory of the steam engine, of the gas engine, the caloric engine, the dynamo and the motor, the various steam-powers, the general practice of engineering, civil, electrical, mechanical; mining, etc., will occupy about all the available time of a single professor, if indeed it does not prove too much for one.

I will make the best arrangements that I can for next winter, but I trust that some permanent one may be arrived at in the near future.

N. F. DUPUIS,
Dean of Science Faculty.

THE LIBRARY.

To the Chancellor and Board of Trustees of Queen's University :

GENTLEMEN,—I beg to submit for your consideration the following report with regard to the College Library. Large as was the number of volumes added to the Library during the previous year, the number added during the past year has been even larger. The following is a tabulated list :

Purchase.....	1012
From Dr. Williamson's Library	263
Estate of the late Sheriff Theodwell	136
Other Donations	352
Bound Periodicals and Pamphlets	96
Total number of volumes	1859

ABSTRACT OF FINANCIAL STATEMENT FROM AUDITORS' REPORT.

Total Receipts	\$1,687 88
Expenditure	2,226 21
Deficit	\$ 538 33

This deficit was due to two courses :—First, several accounts for books purchased during the summer had to be paid sooner than usual, thus throwing them into last year's audit ; secondly, the book binding account of last summer was much larger than usual owing to the binding up of a number of reports which had been accumulating for some time. To meet these accounts, after paying out my own cash on hand, I borrowed \$326 from the examination fund through Dr. Bell, of which \$200 has since been returned.

In accordance with the wishes of the Trustees I undertook the

preparation of a card catalogue of the Library, including both authors and subjects. Before doing so I visited the Library of Harvard University and the Public Libraries of Boston, Cambridge, Toronto and Hamilton where card catalogues are in use. Though rather alarmed at first by the estimates given of the cost of such an undertaking, yet, dispensing with experts and being fortunate in securing quite efficient assistance at very reasonable rates, avoiding patents and having the case made from my own specifications, I have managed to carry the preparations of the catalogue to a pretty advanced stage at a very modest outlay. The work consists (a) of the preparation of index names for the type-writer (b) the type-writing of the titles of the books on the cards under the index names (c) the alphabetical arrangement of the cards according to the index names, and the placing of them in the drawers of the case. The case is made to hold 84,000 cards. Up to the present 23,000 cards have been printed, and about 15,000 placed in the case. I estimate that another 20,000 cards will fairly well complete the cataloguing of the books now in the Library, including the more important articles in the higher grade periodicals. This will require at least \$100 for type-writing, \$50 for cards, and \$50 for assistance in preparing the index names and arranging the cards.

The influence of the new catalogue is already quite marked. Though opened in November and only partially completed, yet, since January, from 550 to 600 vols. per month have been consulted, which is nearly double the past record, while, owing to the additional classification by subjects, the range of books used has been greatly enlarged.

Some idea of the growth of the Library and the expansion of its usefulness may gathered from the following particulars. During my first year as Librarian, 1889-90, the total number of books added to the Library was 473 vols., and the number of library checks taken out by the students was about 90. During each of the last two years we have added over 1800 vols., and although in the meantime special sets of books have been placed in some of the class rooms and also in the general consulting room, yet the number of checks taken out this session has been nearly 300.

Appended is a statement of the expenditure in connection with the catalogue up to the present.

Expenditure connected with the preparation of the Card Catalogue.

Received from the Treasurer	\$ 300 00
R. J. Clark, Cataloguing the Bell Collection	11 25
Library Bureau. Cards 21,500	64 40
Duty on Cards	21 05
Freight on Cards	1 51
Express on Type-writer	1 20
W. W. Peck, Assistance with Catalogue	50 00
Miss S. Gibson, Type-writing	122 50
J. S. Shortt, Assistance with Catalogue	25 00
	296 91

Balance on hand

\$	3 09
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ADAM SHORTT, Librarian.

THE MUSEUM.

The Curator of the Museum begs leave to report that a collection of 77 specimens of Rocks and Minerals was lately received from the Geological Museum at Ottawa, also a small collection from Mr. James McCaig. Some interesting articles were received from Dr. George J. Neish, Jamaica.

No additions were made to the Zoological Department during the year. I would strongly advise that Dr. Knight be appointed Curator of the Department.

A number of plants collected in the neighborhood were added to the Herbarium. No grant was made last year to meet expenses and none were incurred.

Three gallons of alcohol and five tins of mounting paper are required for the current year.

JAMES FOWLER, *Curator.*

REPORT ON BOTANY CLASSES.

During the Session the number of students registered:—

In the Junior Class	18
First Year Honours.....	10
Second Year Honours.....	7
Total	35

This Session practical work was introduced into the Junior Class for the first time, but the amount of material required will render it impossible to continue it unless larger collections of plants can be obtained.

All the students who attended the Honour Classes during the Session are teachers preparing for the position of Science specialists. With only one or two exceptions all had taught Botany in the Public Schools and were well prepared for the College studies, consequently a large amount of work was accomplished and very satisfactory progress was made.

Owing to recent advances in Botany, the study has completely changed during the past few years, and it now takes its place side by side with the other branches of the scientific education. The former idea that the examinations of the external forms and arrangements of the parts of flowering plants, for the purpose of ascertaining their names, is the sole object of Botany only lingers as a popular misconception. A Test-Book, a few flowering plants and a pocket lens are no longer sufficient equipment for the student. The study of tissues and their functions, leading to a knowledge of the laws and conditions of life, opens up new views of nature and guides to important practical results. The morphological work necessary for beginners now receives a good deal of attention in the High Schools and Collegiate Institutes, and students are prepared when entering College to devote a larger portion of their time to Histology, Physiology and Cryptogamic Botany.

At the opening of the Session I introduced Vines' "Student's Text-Book of Botany" for the second year Honour Class,—a work of a much higher and intellectual character than any other Text-Book at present available. It deals with the vegetation of the globe, and makes large demands upon the intellectual powers of the students. For its successful study, a much larger Herbarium and a fuller equipment are necessary than we at present possess. Its numerous illustrations and examples are principally taken from European plants and cryptogams, and good collections of these are necessary for our future work.

WE NEED FOR NEXT SESSION.

1. Collections of our common plants. Allowing each student one plant a day (in Honour Classes they require more) for analysis, the number necessary for the Session is greater than our present supply can furnish. In previous years I have made collections, devoting a part of the summer vacation to the work. Last year I spent some time at Jones' Falls and secured a goodly number of specimens, besides collecting in Kingston, but I cannot supply the demand for another Session.

2. The Honour Classes require collections of Grasses and Cryptogamous plants. A few years ago I collected a large number of specimens between Kingston and the Ottawa River, but the supply now on hand, with the exception of the Mosses, is utterly insufficient for another Session. Mr. A. T. Drummond very kindly presented the Herbarium with a collection of mounted Algae and Lichens last year, but these cannot be used for dissection in class-work. I have asked the students, both in class and individually, to make collections for next winter's work, and perhaps we may obtain a supply from this source. In the U.S. excursion parties of students are formed to accompany a Professor to some selected region and spend a few weeks in collecting material for winter use.

3. The Herbarium must be increased for the benefit of the second year Honour Class. For a few years I endeavoured to give instruction on the Geographical distribution of plants, and also on economic Botany, but owing to the want of material was compelled to abandon this part of the work, though the subjects are very important both in a theoretical and practical point of view. We have a good collection of Ontario plants, also a large number from other parts of the Dominion and from the U.S. But a large part of our Text-Book is unintelligible to students without a good collection of European plants as type specimens. In the present condition of Botanical science no College can afford to confine the attention of its students to the plants of their own neighborhood. I intend visiting Oxford and Cambridge, and perhaps Germany, for the purpose of learning the methods of teaching now adopted there; and I have employed all my spare time for the last two months in selecting specimens from our duplicates, and making up bundles for exchange with European Botanists, hoping to supply some of our wants.

In my last report a request was made for a grant to procure jars and alcohol to preserve specimens in their natural forms, and so give

the student a clear idea of the actual form and appearance of the species in its living state, and save the dried specimens from destruction. Properly prepared specimens sealed up in jars would remain unchanged for many years. Five gallons of alcohol and three dozen jars would serve as a beginning.

5. Some papier mache or glass models of typical flowers and the parts of fructification are an absolute necessity for next Session. Also some microscopic preparations of the lowest forms of plants. These can be most easily obtained in France or Germany. About \$1.50 would be required to secure them.

6. The subject of Vegetable Physiology is receiving a large amount of attention at the present time, many Colleges make it the most prominent department in the Botanical course. We have always devoted a part of each Session to its study, but lectures and Text-Book work, without experiments, leave but a feeble impression. Last Session some pieces of apparatus were obtained and a few useful experiments made. To conduct the work properly a small conservatory, two well-lighted, well-heated rooms, and a dark room are necessary. An Instructor, in connection with the School of Agriculture, would make it valuable addition to our present course of studies.

JAMES FOWLER.

REPORT OF THE PROFESSOR OF PHYSICS.

Herewith I enclose an account of the expenditure in connection with the Physics Department for the past Session.

Mr. W. C. Baker succeeded Mr. S. A. Mitchell as Demonstrator of Experimental Physics and filled this position satisfactorily. Thirty-four students took advantage of laboratory instruction, and others would have done so if the laboratory had been open to them in the forenoons. I would suggest the appointment of a second tutor who would give instruction in forenoons and that he be paid out of the balance in my hands. As it is contemplated to build workshops for the Practical Science Faculty, the two rooms hitherto used by the Dean might be handed over to me for experimental work in light and electricity.

(Signed)

D. H. MARSHALL,

Professor of Physics.

REPORT ON ANIMAL BIOLOGY.

The total registered attendance in this department during the past Session was 103. In the junior class in Arts 10; extra-murals, 5; in first year honors, 9; extra-murals, 2; in final honors, 6; extra-murals, 2. In medicine, junior animal biology, 3; first year physiology, 31; second year physiology, 38; histology and embryology, 34. Laboratory fees from arts students \$164.00, from medical students \$132.00. This money was spent partly in the purchase of laboratory supplies and apparatus, and partly in repairs and laboratory assistance. Vouchers for its expenditure will be sent to the College Treasurer.

I emphasize the fact that our subject of study is *animal life* in all its aspects. As a matter of convenience and clearness in teaching, teachers of biology sub-divide this immense subject, and examine separately the social life of animals, their intelligence, their genetic relationships, their distribution, their embryology, their anatomy and their physiology. For the same reason, biologists make a separate study of the forces which have originated, continued, or arrested the growth and development of animals in geologic and recent times. All of these aspects are discussed with honor men as fully as time will permit. But it is different in the case of medical students. They make a close study of one animal only, and study it from only one or two of these aspects. It was to correct this narrow view of life that the medical faculty consented, two sessions ago, to add the pass class in animal biology to the medical curriculum. Brief as the course is in this class, it gives the students a new view of the meaning of human anatomy and physiology. He soon discovers that human physiology is *per se* a misnomer; that if he limited his knowledge of physiology to that of human beings, he would be largely ignorant of the subject. Animal physiology—not human physiology—is what a modern medical man studies, and he learns more of it from the domestic animals than from man. On the anatomical side the student soon sees that the human body is something more than a collection of bones, muscles and nerves. He finds the same organs somewhat modified in the cat, and still more changed in a fish, and soon gets glimpses of the view that man is the historic climax of a longer line of ancestry than he had ever dreamt of.

The time seems opportune when some other phases of the study of life should be required from the student in medicine. The Medical Council will next year exact five years' study from all who desire to practise in Ontario, and while many students will naturally devote the additional year to final subjects, that is, to the various forms of disease as manifested in men, women and children, some of the more ambitious and clever students will take a wider view of disease, and desire to study it *comparatively*, or as it manifests itself in various forms in animals and plants.

The only objection that can be urged against the fifth year's course of the Medical Council is that its scope is too narrow. The regulation implies that students must attempt research work in their fifth year. Now, the truth is that very few medical students are, at graduation, fit to do research work in either physiology or pathology. The foundations for such work must be broadly laid. By this I mean that a man is best qualified to do research work in medicine who has acquired a wide knowledge of animal and plant biology, who knows anatomy, physiology and embryology comparatively, and not in the limited way learned by the average medical student. If this is so, then the attempt to induce raw graduates to devote themselves for six months to research work is a mistake. The time has long gone by in any science when the mere beginner can hope to make any considerable addition to the sum of human knowledge. Infinitely better

to teach him to be modest and reverential in the presence of the work done by the great masters. Research work is done now-a-days by experts—not by beginners.

In place therefore of fixing the curriculum for five years, the Council would, in my opinion, do well to allow students a choice as to how they shall spend the time. In place of apportioning two years to primary subjects and three to final, would it not be well to encourage students to lay the widest possible foundation for medicine by taking during their first three years a full honor course in biology. Students in other departments of learning are compelled to view their subjects widely. The man who devotes himself to literature now-a-days must know not only English literature, but modern literature. Not only so, but before he has spent a day in the serious study of modern literature, he discovers that its roots are all in the past—in the literature of Egypt, Palestine, Greece, Rome. To understand the present he *must* know the past. So, with the student of social and political science, of religion and of philosophy. If he wishes to understand their present-day problems and relationship, he must study them in the light of the past. And the same thing is true in biology: a student who limits his knowledge of anatomy to one animal, for example, man, would be like a litterateur who limited his studies to Browning or a philosopher who limited himself to Spencer or Caird.

From the crown of the head to the sole of the foot we bear upon us indisputable evidence of our relationship to the past, and of our ascent from the lower animals. If we wish therefore to lay a broad and solid foundation for the future life-work of our graduates in medicine, we can do it only by encouraging them by every means in our power to devote the additional session chiefly to practical work in comparative anatomy and embryology. How wonderfully these subjects illumine medicine can be seen by opening a modern test-book. Not merely is it impossible to understand such normal structures as the aortic arch, the appendix, the musculature, and the hundred other puzzles of the earlier anatomists, but many abnormal structures and malformations are absolutely inexplicable apart from the results of modern embryology and morphology. Cleft palate and harelip are perhaps intelligible apart from the doctrine of evolution, but the existence of openings on each side of the neck, or of tumors marking the site of such primitive openings, are not so easily explained. We meet also with openings on the throat or abdomen, on the head and back, with malformations of the heart, blood vessels and other organs of the body, which cannot be understood apart from the theory of the descent of man, or from the light which embryology sheds upon their dismal existence. Vestiges of the fearful and wonderful creation of man meet the surgeon at every turn. A cloaca in one man, or a right aortic arch in another give proof of his relationship to birds, gill slits tell of his affinity to fish, whilst communicating ventricles shew that in his heart at least, he is little better than a reptile.

The first winter I was on the staff, a practising surgeon sent to the laboratory for diagnosis what he called a small tumor. He gave

no history of the specimen except that he had removed it from the tongue of a boy. On examination it proved to be a cartilaginous tooth, and was evidently one of those growths, abnormal in the human being, but perfectly normal in some of the lower animals, (fish) in the same situation. In the same way, a growth of hair is sometimes found on the inside of the cheeks of children. This again is of course quite unusual, but when we examine the cheeks of rabbits, hares and porcupines we find analogous growths. All such structures are puzzling to the physician, simply because he fails to connect them with the past. Similar puzzles meet all investigators. For example, finding no farms owned by farmers on Amherst Island is puzzling. Finding no farms that have been regularly surveyed and planned in Longueuil Township, in the County of Prescott, is equally puzzling. But a brief reference to the past solves both difficulties. Amherst Island was, years ago, granted to an Irish landlord who decided to manage it like an Irish estate. Longueuil township was part of a French seigniory, and it is therefore to-day indissolubly connected with the French occupation of Upper Canada. And in the same way, the vestigial structures which were so puzzling to the earlier anatomists, and the congenital malformations which are so inexplicable to the half-educated surgeon of to-day, become luminous to the man who has read modern biology.

I have been led to make these observations in the hope that some of our graduates may be induced to consider this matter more fully than they have hitherto done, and may use their influence in having the Medical Council so legislate as to lay a broad and generous foundation for medical education, rather than attempt to embellish a flimsy structure with tawdry ornamentation in the name of research work. How disjointed is the framework of our medical curriculum was forcibly brought to my mind by examining recently, Coats' Manual of Pathology, edition of 1895. A hurried reading shewed me that about 250 pages, were taken up in discussing matter that belongs properly to biology. The author is hardly to blame. The ollapodrida of embryology, morphology and pathology which he has compressed into a single volume of 1100 pages is the faith of the medical curriculum, not his. It had its origin in an evident desire to make medical students, at the *end* of their course, familiar with subjects which they should have mastered in their first or second years, and apart from the incongruity of the matter the book is doubtless a very able work on pathology. But if such a course of medical study is defensible, then one in arts which would invert all our present courses would be equally defensible.

I have again to express my indebtedness to Professor Dupuis for making a very efficient centrifuge machine, and for repairs and alterations made in some of my apparatus. To Dr. Goodwin of the School of Mining I am indebted for donations of chemicals, and for the use of apparatus. Mr. Campbell, a student from Manitoba, gave us the skull of a beaver.

The demonstrator for the past session, Mr. Wm. Moffatt, M.A.,

has done his work satisfactorily, and is willing to do similar work next session if re-appointed. He spent an hour a day demonstrating to the class of practical anatomy with honor men in Arts, and during the last three weeks of the session reviewed the first year physiology with medical students.

As regards our more immediate and pressing wants I beg to submit the following :—

1. That half-a-dozen more, strong but inexpensive microscopes be procured for the use of first-year students ; cost, about \$100.00.
2. That a dust-tight case be procured in which to place the physiological instruments now belonging to my department. I was authorized to get the case last year, but the money was used in buying additional apparatus, and I have had to pay the penalty by caring for my instruments at considerable personal inconvenience.

A. P. KNIGHT,

The John Roberts Professor of Animal Biology.

April 30th, 1896.

ERRATUM.—On page 11, lines 5 and 19, read June 20.

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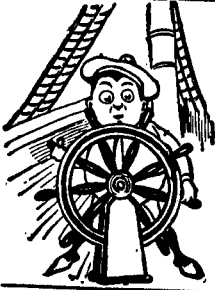
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