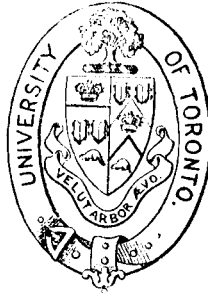




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No. 2.

THE EXPANSION OF THE MODERN STATE.

BY FRANK B. PROCTOR, B.A.

“It is not a question of absolute evils ; it is a question of relative evils —whether the evils at present suffered are or are not less than the evils which would be suffered under another system.”—Herbert Spencer, Introduction to Essays entitled “A Plea for Liberty.”

THE rapid expansion of the sphere of the state's activity, in all civilized countries, during the last hundred years, is one of the most remarkable social phenomena of the present time. This extension of governmental functions has been contemporaneous with a great increase in material wealth, which, by affording a large taxable area, has indeed rendered the former possible. It has resulted in the growth of new doctrines with respect to the proper sphere of the state and in much discussion concerning its causes and tendencies.

When Adam Smith published “The Wealth of Nations” in 1776, the Government of Great Britain had in only a few cases extended its control beyond the two essential duties of providing for the national security and administering justice. The most important of these exceptions were the Established Church, poor relief, the regulation of external commerce, and the post office. Capitalistic production and the factory system were both in an incipient stage. The laborer was able in most cases to protect himself from injustice without state interference. State education was as yet unthought of, and state participation in the industrial domain had taken place only to a very limited

extent. Of an annual revenue of about £10,000,000, a little less than one-half went to pay the interest on the national debt, the army and navy took £3,800,000, the civil list and expenses of government £1,200,000, and there remained less than half a million pounds to be divided among the other undertakings of the state.¹

Adam Smith's postulates as to the functions of the state bore a definite relation to these circumstances. He divided its duties into three. These were to protect its inhabitants from invasion or violence by other states, to administer justice within its territory, and to establish and maintain certain necessary public works which private citizens could not undertake with any hope of financial success. Education, he considers, should be partially under state control and partially left to individual enterprise. He was opposed to the state endowment of religion, and to the state regulation of industry and commerce. His theories were the result of an unconscious synthesis of the actual conditions and needs of his time.

The beginning of the present century synchronizes with the first stage of the existing industrial régime. Wealth increased rapidly in the hands of employers and landowners, but the condition of employés and laborers was not proportionately improved. The distinction between the two classes became more marked, and their interests more divergent. In 1802, the first of the Factory Acts was passed, in the hope of checking the abuses of the apprentice system in the cotton and woollen mills. In 1819, a second Act was found necessary. These proved to be only the vanguard of a large number of enactments restricting and regulating the employment of labor in factories and mines.

It was under these conditions, when state interference in industry was necessary if the grossest forms of injustice were to be prevented, that Mill wrote his *Principles* in 1848. His attitude towards the state is much more catholic than that held by Smith. He divides its duties into necessary and optional,² but he intimates that there is no rigidity in either classification. An optional function may become a necessary function under different conditions. Expediency is the sole rule that will pre-

¹ Dowell, *History of Taxation*, Vol. II, p. 163. ² *Principles*, Bk. 5, Ch. 1, ¶ 1.

scribe the limits of state action.¹ The government's most important duty is that of protecting the citizen and his property, and this necessitates the administration of justice in a cheap and rational manner.² Education is one of the things for which the state should make provision, and that on the ground that a civilized government, being better qualified to fix educational standards than the mass of the people, is capable of offering them a better education than they would of themselves demand.³ Freedom of contract implies ability to decide one's own interests, and since this capacity is absent in children and persons of unsound mind and the like, the state quite properly interferes to protect them.⁴ Public charity is a duty which the government must fulfil, and has much more beneficial results as a state function, if wisely administered, than those flowing from private relief of indigents.⁵ His general maxims are unfavorable to an extension of state control. There should be no governmental interference with free agency, unless it is so necessary as to recommend itself to the general body of citizens as essential. Any increase in the functions of government is an increase in its authority and influence, and this is *prima facie* an evil. Every fresh duty imposed upon the government is a duty imposed upon a body already overburdened, and the result is inefficient work. Finally, the inferior interest that characterizes governments in the discharge of their duties more than counterbalances the increased facilities that they have at their command. "Government management," in short, "is proverbially jobbing, careless and ineffectual."⁶

In the half century that has elapsed since the appearance of Mill's Principles, civilized states have steadily extended their sphere of action, and their different national budgets have increased at a rate altogether out of proportion to their increase in population. Thus state railway and telegraph systems have been established, tramways, waterworks, gasworks and public libraries added to municipal property, sanitary living enforced, and an almost innumerable number of restrictions imposed on the liberty of individuals. On the surface, at least, Leroy

¹ Principles, Bk. 5, Ch. 11, ¶ 2.

³ Ibid, ¶ 8.

⁶ Ibid, ¶ 13.

² Principles, Bk. 5, Ch. 8, ¶¶ 1 and 3.

⁴ Ibid, ¶ 9.

⁵ Ibid, ¶¶ 2, 3, 4, 5, 11.

Beaulieu seems to have sufficient ground for his statement that "the modern state overruns all the spheres of human activity; it threatens the whole range of human personality."¹ Whether this movement is in actuality what it is in appearance is the central problem of this paper. Before pronouncing on it it will be advisable to see what conclusions may be adduced from the evidence at our disposal. Some general ideas as to the composition of the modern state, and its methods of working, will afford a valuable starting point. These will be sufficiently indisputable to need no great amount of proof.

Despite German theorists, there is nothing ideal about the governmental machinery of a modern state.² It is in no sense the mind of the social body, but a derivative personality with neither more or less efficiency than is possessed by those who administer its affairs. It neither thinks nor wills of itself, but only through the thought and will of those who act on its behalf. The government of a country, however, does represent, in almost every case, a higher degree of intelligence than is possessed by its average citizen. And this largely because state service is usually an honorable and rapid method of obtaining fame, so that many able men train themselves with the object of qualifying for the responsibilities of such positions. The good results following from this process of selection more than overbalance the disadvantages arising from "inferior interest" and the possibility of obtaining wealth by dishonest administration. Cohn's statement that "the characteristic feature of the state in respect to the development of its wants consists in the superior rationality of the state as compared with the private economy of the individual" seems to me to be correct in the main.³ But leaving this open until the evidence from which it is generalized is examined, certain less important characteristics of state action deserve mention. There is in modern states a certain unity of policy pursued, according as the state is more or less stable, that is lacking in private undertakings of considerable duration; and this because the governmental staff changes slowly in form, the number of new officials being usually only a small part of the

¹ *The Modern State*, London, 1891, p. 2.

² For an expression of the current German theory of state functions see Stein's *Finance*, and, more especially, Schäffle's *Structure and Life of the Social Body*.

³ Cohn, *Finance*, Chicago, 1895, p. 73.

whole body. The relative importance of different duties is more likely to be estimated correctly by the state than by individual citizens, for the local or personal bias that frequently influences individual judgment is absent from state management or counteracted by a fusion of diverse views. Again, it is apparent that state control involves little of that loss of energy that is a frequent concomitant of private management where conflicting interests frequently do no more than neutralize one another; as where a combination of workmen to effect certain changes in the hours of labor or the like is met by a combination of employers to resist them, and the net result is probably the continuance of the existing conditions.

State expenditure may be classified as to its results, as productive and unproductive, and as to the agency through which the outlay is made, as national and local. These four divisions of the subject must be treated more or less distinctly from one another.

All state theorists and financiers are agreed that the function of guaranteeing security is the most important duty performed by the state. This security is of two, that of the nation as a whole against outside attacks, and that of the individual members of the state against one another. The latter is included in the administration of justice.

External defence grows more and more costly as society advances. Not only has it been the cause of the largest part of most national debts, but it also figures in nearly all European budgets as the largest item of annual expenditure. The increased outlay in this direction has been due to two causes, the creation of standing armies and the constantly increasing complexity and costliness of the instruments of warfare. Standing armies are examples of the specialization of labor, rendered necessary by the highly complicated industrial life of modern times. Their direct cost to civilized nations is much greater than under a system of compulsory, unremunerated service. But taking the citizens into account, as well as the state, there is an immense saving. For in the latter case there is a temporary overthrow of industry on the outbreak of war, and heavy individual expenditure. The employment of standing armies has assisted materially in lessening the destruction of

life and of property in warfare. The destruction or capture of its army forces the defeated nation to make peace. When the whole able-bodied male population of a country engaged in warfare, a relatively enormous destruction of life and property was necessary to accomplish the same end.

In 1755 the expenditure on the army and navy of Great Britain was £2,000,000.¹ By 1792 it had risen to £6,250,000, and by 1826 to £15,000,000, at about which figure it remained for a quarter of a century.² Then rapidly increasing, it reached the sum of £26,700,000 in 1884-5, or more than one-third of the whole national expenditure.³ In 1889-90, the outlay in this direction had swollen into the unprecedented amount of £32,780,000.⁴ Statistics gathered from other European countries show as great or greater proportionate increase in their annual military expenditure.⁵

The protection of its citizens against injustice is a state duty admittedly secondary only to the supreme duty of preserving the national security. It will depend on the conception of justice permeating those who control the government, to what extent this function is exercised. The minimum of justice, according to the most rigorous limitation of governmental action, consists in protection of person and property against violence.⁶ This may be confirmed in either of two ways. The government may enact laws creating certain rights with certain penalties for their infringement, and establish courts for their determination in particular cases. If it stops here, the injured party will have to set the judicial machinery in motion by his own effort and at his own expense. But the state may proceed further and enforce the law itself through the agency of an executive department, thus "convincing every intending disturber of the peace, beforehand, of the futility of such an attempt."⁷ This latter is the duty of police. Justice thus becomes a matter of public concern, and an unvarying standard of conduct is applied to all classes without distinction.

¹ Dowell *History of Taxation*, Vol. II, p. 128.

² *Ibid.*, Vol. II, p. 281.

³ *Ibid.*, Vol. II, App. 2.

⁴ Bastable *Public Finance*, Bk. 1, Ch. 2.

⁵ Vide Leroy Beaulieu *Finance*, Part II, Bk. 1, Ch. 6, and Cohn *Finance*, p. 275.

⁶ Sidgwick *Elements of Politics*, Ch. 4.

⁷ Cohn *Finance*, p. 135.

The administration of justice costs more as civilization extends, for as the moral sense of a nation becomes keener it punishes as offences acts which under less advanced conditions it endured with equanimity.¹

Police organization for the prevention of crime and capture of criminals is a growth of recent date and is fulfilled largely by municipalities. The necessity for police protection is much greater in centres of population, for the facilities for accomplishing crimes are greater there and the means of escape more available. Large municipalities like London and Paris are compelled to spend an important part of their income in this direction.²

The care and reformation of criminals is a question connected closely with the administration of justice. This duty is undertaken by civilized states at no little expense. Self-protection demands that these malefactors be kept where they cannot harm society, while humanity requires that they be punished without passion and their reformation attempted. It seems evident that they should be made self-supporting as far as possible.

Proceeding from those state functions the propriety of which is not generally debated, we come to those which are continuously the subject of controversy. Under the latter are included the state control of education and religion, the dispensing of charity, the supervision of industrial processes, the assistance extended trade and commerce, and the employment of state funds in productive undertakings.

The necessity for state control of education is frequently denied. Objection is taken not so much against the manner in which this service is performed, as against the alleged injustice of taxing the industrious to educate the children of shiftless parents. But this objection is at best superficial. For, in the first place, it is impossible to apportion the burden of any of the essential state functions according to benefit received, seeing that they accrue to society generally. But even were it so, this would remain a question of relative rather than of absolute evils. The question is not, can the state afford to educate its citizens, but,

¹ Holland Jurisprudence, 5th ed., p. 280.

² Vide Sidney Webb *The London Programme*, p. 138, and Leroy Beaulieu *The Modern State*, p. 171.

can the state afford to allow a large part of its citizens to grow up uneducated. To do so would be to imperil its own existence.

The full force of this argument applies only to primary education, which should be nearly if not altogether free. The return to the state from this part of a citizen's education, through his increased respect for law and his increased utility as an industrial factor, more than compensate it for the outlay incurred. Were it left to private initiative, it is apparent that those requiring it most would be the least likely to obtain it. The same cannot be said of intermediate and university education, for these affect society much less directly. They are participated in by only a small part of the nation, to whom they are usually a source of material profit. The nation, therefore, may look, reasonably enough, to those who enjoy the fruits of higher education to pay for it.

One argument, other than that the state derives an important if indirect benefit from higher education, may justify state assistance under certain conditions. In new countries of undeveloped resources, where private fortunes are not likely to be either numerous or large, universities and kindred centres of education may be endowed by the state, with the same justification that might be urged for assistance granted a new industry. That is to say, that the sacrifice would be temporary, and the benefits flowing from their establishment permanent. State aid to technical education is justified by the increased economic utility it returns to the state.

The cost and supervision of education is apportioned usually between the central government and its different municipalities. This is necessary, because education is a matter of many details, and can be regulated most satisfactorily by local bodies. The amounts spent on education by civilized states have increased very rapidly in recent years.¹

The state endowment of religion is a question of the past rather than of the future. The state churches of most European nations have come down from a time when a close union between church and state was necessary to progress. They were authoritative moral restraints at a time when other restraints were lacking. Their disestablishment is in the line of progress.

¹ Cohn, *Finance*, p. 278; Webb, *London Programme*, p. 175.

Whatever may be said in favor of state aid of the fundamentals of religion, state churches now find few apologists, and fewer still who base their claims on theoretical grounds. If all the citizens of a state could be brought to think alike on religious matters, there might be no theoretical objection to the state making provision for religious purposes. In the absence of any such unity it seems to be most unjust that any man should be taxed to defray the expenses of a religion of which he disapproves. And the injustice consists not in the compulsion (for without compulsion no government is possible) but in the fact that in matters of this nature any citizen is as capable of reaching the truth as is the wisest government.

The dispensing of charity is a state function that has been frequently and bitterly attacked. So far as it has been performed and under the methods adopted, it has been pronounced a failure, and with some justification; certainly no theoretical reasoning can excuse its exercise if the results are continuously unsatisfactory. Herbert Spencer asserts that this is so and that it is so of necessity. Suffering is the result of wrong-doing and much of it is curative. Charity is the prevention of a remedy, and is thus kindness to some at the cost of cruelty to others.¹ But these statements are as badly in need of modification as are the poor laws which Mr. Spencer condemns. The question, after all, is one of relative evils and it is eminently practical. Modern society finds itself burdened with a large number of persons, who, frequently through no fault of their own, cannot earn sufficient to keep themselves at even the minimum of subsistence. They cannot be allowed to starve to death. The question, then, resolves itself into this: shall the state as a whole undertake to provide for them, or shall their care be left to private individuals? On the side of state assistance, it is argued that to leave the task to private individuals would be in effect an extra tax upon the charitable; that the pauper may be able and willing to work, but finds no work to do; that to give no support to paupers while criminals were supported would be an incentive to crime.² It is argued, on the other hand, against state interference, that such aid tends to increase the number of paupers; that it demoralizes the

¹ *Man v. State*, pp. 28-68, 72.

² Bastable, *Public Finance*, Bk. 1, Ch. 4.

recipients, interferes with the beneficial action of private charity, discourages providence, and lowers the rate of wages.¹ The strength of these arguments will show how difficult it is for either the state or individuals to administer charity without accomplishing much evil. But, on the whole, both in theory and practice, the balance of advantage is on the side of state control. Private charity is in its very nature intermittent and indiscriminating, bestowing its favors at least as frequently upon the undeserving as upon the deserving.

The distribution of charity is undertaken usually by local bodies, since they are better able to enquire into the particular circumstances of each case. As far as possible a return in labor should be demanded for the assistance afforded. Charitable institutions might, with advantage, be allowed to depend partially on private assistance for the supply of their needs. In this way, the burden on the state is lessened, and private charity is distributed through the hands of qualified persons. State expenditure in this direction has increased greatly in recent years.²

One of the tasks undertaken by civilized states within the last hundred years, is the supervision of industrial conditions and processes. In Great Britain especially, a vast amount of legislation has been passed, in recent years, regulating the hours and conditions of labor, the operations of trade unions and monopolies, and on similar industrial matters. To enforce the provisions of these Acts a large number of officials have been appointed and a considerable annual expenditure incurred. The policy of all such legislation has been combated on the ground that it is a direct encroachment on the rights of the individual. This raises the question, what are the rights of the individual? a subject too large for discussion in this connection. It is sufficient to note here that the presumption will be nearly always against such interference, and that only when the necessity is perfectly clear can it be justified. In each particular case the question of interference "must be solved with a careful estimation of the total utilitarian results."³

The aid extended commerce generally and certain particular industries is of an analogous kind. The establishment of a

¹ *Ibid.*

² *Vide Webb, London Programme, pp. 93 and 175.*

³ *Jevons, State in Relation to Labour, Ch. 9.*

monetary system and of a system of weights and measures, as well as the expenditure on docks, canals, consular service and similar objects are instances of the aid afforded all branches of industry. The most frequent way in which a particular industry is assisted is by the imposition of a protective tariff. The propriety of aiding industry generally, in the methods specified, is hardly disputed, so successful have they been in practice. The same cannot be said of the assistance given separate industries, for the frequent result has been the forcing of trade into unnatural channels or the creation of a monopoly.¹

The expansion of the state into what Bastable terms the "industrial domain" remains to be touched upon. Two classes of industries, in particular, have been undertaken by governments. The first deal with communication and transport, the second comprise certain industries that supply commodities usually necessary and of universal demand, and that are more or less subject to monopoly. The most important example of the first class is the post office. The peculiar nature of this service, requiring, as it does to be exercised in a uniform manner over a large area to obtain the best results, fits it in an especial degree for state control; while long experience has confirmed its advisability. In Great Britain, France and Germany the post office forms a valuable source of income.

The chief agencies of transport that are capable of state ownership and control are roads, canals and railways. The maintenance of roads is a duty that has devolved upon governments since the earliest times. They are usually taken care of by the different municipal bodies within the state. Canals are built and maintained, as a rule, by the central government. Railways, owing to the vast amount of wealth invested in them and the great skill required in their management, seem to be beyond the proper sphere of state control. Granting that the rulers of a state have sufficient technical ability to master the multitude of details involved in the management of a railway system, which might readily be disputed, the question whether they can afford to give it the necessary time and attention remains. State control has neither been so unsuccessful nor so successful in the cases in which it has been tried as to warrant

¹ But see Cohn's argument for assistance of backward industries, *Finance*, p. 141.

any general conclusions based on experience.¹ But the consensus of evidence seems to show that it is advisable to hand over state railways to private companies for working, vesting the permanent or ultimate ownership in the state. This method enables the state to participate in the profits, while relieving it from the duties of management.

Municipalities have undertaken in modern times to supply certain general needs of their citizens, such as the supply of drinking water and artificial light. Some of these services are, as already mentioned, of the nature of monopolies, and suitable for municipal control. But the circumstances of each particular case vary so greatly, that the adaptability or unadaptability of a service of this nature to municipal management, can usually be decided, in any given case, only by experience. The more profitable and complicated the service, the greater will be the danger of maladministration.

Having now completed our detailed survey of the state's sphere, an examination may fittingly be made into the effect of its expansion on public finance. The total expenditure, central and local, in the United Kingdom during the year 1887-8 was £154,874,000; in France (1886) £185,140,000; in Italy (1885) £96,520,000.² Taxes levied by the central authorities in Great Britain amounted to £54,400,000 in 1825, and to £77,000,000 in 1884, or an increase of not quite one-half.³ During the same period the population increased from 22½ millions to 35 millions, or somewhat more than one-half. So that the large increase in the amount levied by taxes has been caused principally by local expenditure, which has grown from £13,000,000 in 1842, to £67,000,000 in 1888, or about five-fold. The larger part of this increased expenditure has gone to fulfil the duties of poor relief and education, to build municipal works and to fulfil such other similar duties as fall within the province of local bodies.

This showing would not be very unsatisfactory if Great Britain, or the other European nations, were in the habit of discharging their liabilities as they contracted them. But on the contrary nearly all public debts are rapidly increasing. The

¹ Leroy Beaulieu, *Finance*, Bk. 1, Ch. 6; Bastable, *Finance*, Bk. 2, Ch. 3.

² Bastable, *Finance*, Bk. 1, Ch. 7. ³ Dowell, *Taxation*, App. 3.

largest part of this increase has been caused in most cases, by the expenses of war and preparation for war,¹ although the extension of state functions has had an important effect upon it, especially where large public works have been built or expropriated. For the present at least, most states are in greater danger of dissipating their wealth through over-protection than they are through socialistic or humanitarian undertakings. Accordingly Professor Nicholson's objections to the increased area of state control seem somewhat beside the mark.² Historical analogies may be as false as any others, and the comparison of modern taxation with the taxation that overthrew the Roman Empire can hardly be allowed to pass unchallenged. It was not so much over-taxation that helped bring about the downfall of Rome, as it was taxation wastefully collected and as wastefully expended. Modern taxation is not usually either collected or expended in this way. It is not imposed from above upon the people, but by the people upon themselves. If they wish to reduce it they have the remedy in their hands.

The effect of the extension of the province of the state on individual liberty cannot be discussed at length within the limits of this paper. But some of the confusion surrounding this aspect of the subject may be removed. Herbert Spencer has asserted that this movement is slowly but surely bringing about a revival of despotism that is none the less a slavery because it may have the marks of a democracy.³ This view is seemingly based on a misconception of what individual liberty consists in. The greatest individual freedom is possessed by the man who is freest from external control or hindrance, whether that control or hindrance be exercised by an organised government or by an individual. Freedom is not inconsistent with governmental interference, for the government may interfere to prevent arbitrary encroachment on the rights of individuals.⁴ Liberty is not synonymous with the absence of restraint—which is license—but is the absence of arbitrary, wasteful or unjust restraint. Applying this reasoning to the case in hand, it follows that the fact that a certain state function interferes with the so-called liberty of certain individuals is no argu-

¹ Dowell, *Taxation*, App. 2.

² *Historical Progress and Ideal Socialism*, p. 27.

³ *Man v. State. The Coming Slavery*, pp. 33-42.

⁴ Ritchie, *State Interference*, pp. 26, 93.

ment against it, provided it confers a more than equivalent advantage on society generally.

To sum up our findings. The effect that lengthening the state's programme has on its primary and more essential duties is not altogether a desirous one. If governmental duties are increased without an increase in the number of officials, there is great danger that they will all be inefficiently performed. But an increase in the numbers and power of the governing body presents it with increased facilities for using its power oppressively or corruptly.¹ To steer between these two evils requires much caution and a careful estimation of the results of experience. The exercise of certain functions by the state results in advantages that are apparent. But by adding one function to another we ultimately overburden the state machine, and the resulting evils outweigh the benefits. The question to be decided is, where does this line of demarcation lie. What ratio of state action to individual enterprise will bring about the maximum of advantage? How far should the state extend its powers to harmonize as near as may be the liberty of each individual with that of society in general? Experience alone, I think, can fully solve these questions. I shall not venture to say how near we are to the limits of beneficial state action. But I think we have reached a stage in our development where it behooves both states and citizens to move very cautiously.

¹ Sidgwick, *Politics*, p. 160.

THOMAS HILL GREEN.

BY S. T. TUCKER, '98.

[Read before the Philosophical Society.]

MR. GREEN is one of the great philosophers of the recent past, whose life and career has been, and will be, an inspiration to many. He can be classed with the few great thinkers of the latter part of the Nineteenth Century, whose depth of thought and keenness of insight into the problems of life have moved not only literary England but the Old and New World. He was a man of extraordinary mental powers, possessing a rare combination of speculative genius, political insight, moral strength, and of the application of philosophy to practical life.

The youngest of four children, he was born on April 7, 1836, at Birkin, a village in the West Riding of Yorkshire, of which his father, Valentine Green, was Rector. His mother was the daughter of Edward Thomas Vaughan, Vicar of St. Martin and All Saints at Leicester. When he was only one year old his mother died. The father was not widely known, but he was attentive and true to his children. He was a man of deep religious feelings, and yet not unduly dogmatic in his theological beliefs.

At the age of fourteen Thomas went to the school at Rugby. Here we find his peculiarities showing themselves more distinctly. He did not take much interest in sports, except as he thought them necessary for his health. He was not ambitious for college distinctions, and his masters said of him that he was constitutionally indolent, slow and easily puzzled. He was not enthusiastic in his love for languages, and, consequently, did not make his college career an immediate success, for it was in these subjects that distinctions were chiefly won.

At the age of nineteen he won a prize for Latin Prose. He gave as a reason for his success that the passage given to translate was of a philosophical character, being from Milton's

Areopagitica. Another time, when he failed in competing for a prize, he said: "It was because it came out of my own head instead of out of books." Concerning another essay which he had to write, he said: "To consult a variety of fusty authorities which I never can succeed to do well, I always find that if I cram myself with the ideas of others, my own vanish." From this we see his fondness for independence of thought.

In manner he was very reserved, not popular as we generally conceive popularity, but all had a deep respect for him. One of his colleagues said of him: "I can remember that from the first I had an impression of him as living a life of his own, apart from the general stream of boy-life." He was considered by all as a deep thinker and reasoner. He soon distinguished himself at the societies as a debater. One has aptly expressed his character as follows: "He is a plant growing, not a brick being moulded." His disposition was such that he would not make many intimate friends. He seems to have made only one great friendship at Rugby, and that was broken off suddenly by his friend's death. Although his intimate friends were few, yet he was true to them. Only a few of those who came in contact with him were able to fathom his character and personality.

In 1855 he entered Balliol College. Here, again, as at Rugby, he admitted the excellence of the lectures, but classical studies had little attraction for him, consequently, after two years, he only obtained second class standing. Humiliated by his failure, he worked diligently for a year and a half, and in 1859 obtained first class standing. In 1860 he was employed to lecture on ancient and modern history, and at the age of 24 was made a fellow. His most intimate friends, while an undergraduate at Balliol, were Jowett, Conington and C. Parker. These were his seniors by several years. Jowett was his tutor, and to him he owed much of his success.

Mr. Green took enthusiastic interest in, and had strong sympathy for, the lower classes. He took pleasure in meeting farmers and tradespeople on their own level, and knew how to do so without seeming to condescend. One of the noblest features of his character was a deep sympathy with the wrongs and sufferings of the poor. At the time when John Bright offended England with his book entitled "Perish Savoy," Mr.

Green wrote an essay on "National Life," in which he took the side of the poor and pleaded their cause.

During the few years of his fellowship at Oxford, he became restless, not knowing in what way his life would shape itself. Various lines of work presented themselves to him, but of all none suited him better than teaching, with a hope of a professorship at some future date. In 1864 the chair of Moral Philosophy at the University of St. Andrew's became vacant by the death of Professor Ferrier, and Green determined to apply for the position. He found that to obtain it, it was necessary to secure not only the influence of the authorities of the University, but also the sympathy of its friends and supporters. University politics was not congenial to him, and consequently he failed to secure the position. In the same year a royal commission was appointed to enquire into the education given in those schools in England and Wales, attended by the children of the gentry, clergymen, commercial men, farmers and tradespeople. Mr. Green, through the influence of Dr. Temple, now Archbishop of Canterbury, was appointed as one of the commissioners. By allotment he inspected the schools in Warwickshire, Staffordshire, and, afterwards, added those of Buckingham, Leicester and Northampton. His investigations were the occasion of an essay on the improvement of education in England. From this essay, and from his lectures on education, we would conclude that he had strong sympathy with the intellectual improvement of the middle classes. This commission gave him a clearer insight into the educational advantages offered to these classes than he could have obtained in any other way. His report to the Government was very valuable, showing a great knowledge of the defects and needs of the English public schools. The information procured, and the opinions formed, became valuable also to himself in after years. They helped to mould his opinions concerning various political topics. About 1865 he became tutor in Balliol College, and was the first layman to hold such a position. Not long afterwards he was appointed lecturer in philosophy. He began with Ethics. The subjects on which he lectured were determined, partly by the requirements of the University, partly by his own choice. They included the Ethics, Logic and Metaphysics of Aristotle.

In all his duties in connection with the College he never satisfied himself. His ideals were always beyond their realization. In January, 1871, he became engaged to Miss Charlotte Symonds, daughter of Dr. Symonds, of Clifton. They were married in July of the same year. Her sympathy with his plans and purposes was deep and lasting, and gave added inspiration to his labors.

About this time he began to appear on the political platform. He took much interest in the various reforms, and especially all relating to education and temperance. He also took a deep interest in the reforms of the Established Church.

In 1878 he obtained the Whyte's Professorship of Moral Philosophy. He was now able to develop his principles, more systematically than was possible while in the position of college tutor, and compelled to work with the requirements of the examinations constantly in view. The substance of his lectures while Professor is embodied in the well known "Prolegomena." When he accepted the position of Professor traces of physical decline were visible, and gradually by overwork his health became undermined, and soon it became evident that he could not long enjoy his new position. He, nevertheless, continued to perform the various duties devolving upon him for four years, until March, 1882, when he took suddenly ill. Symptoms of blood poisoning appeared, and within a week all hope of his recovery was gone. But the thought of death did not disquiet him in the least. After arranging for the several duties he should perform, he requested that his favorite chapter (the eighth chapter of the Epistle to the Romans), should be read to him. As the evening advanced he became weaker, and the spirit seemed to be gradually freeing itself from its imprisonment. At nine o'clock of the 26th of March he quietly passed away.

So far in this essay we have been dealing with one side of our subject, the biographical. The other side of his life is the more important to us because of his pre-eminence as a philosopher. What was his philosophy? Did he accept without question the solutions of the problems as furnished by those that preceded him? Or did he think them anew, in the light of repeated failures, or at least, but partial successes?

There were three dominant interests for him : politics, theology and philosophy, the three constituting in some way an essential unity. He never believed in a theory which divorces politics from religion, or religion from reason. But we must confine ourselves to his philosophy. Most of those who have read his works find him obscure and difficult to understand. One has said that "the difficulty was not that he loved abstractions, but that his way of looking at knowledge and life did not adjust itself to the ideas which have filtered from English philosophy into the mind and language of educated men. He seemed to be simply asking embarrassing questions, at first about matters which were quite plain, and turning accepted truths upside down, making out 'things' to be 'thoughts,' and the 'objective' as 'subjective,' that 'induction' implies 'deduction,' and the 'particular' is 'universal,' just because it is particular; that the progress of knowledge is from the abstract to the concrete, and that reality is 'constituted by relations.' Instead of resting in the comfortable assurance that 'ideas are impressed on the mind by things,' he insisted on knowing exactly what is meant by 'mind,' 'impression,' and 'thing,' and finally seemed to reduce everything to what he called 'self-consciousness.'"

The first question we may ask then is, What did philosophy mean to him? We will give a quotation from his own words: "Metaphysics is neither an intellectual game, nor the result of an illusion, destined to elimination by the progress of positive science. It is by no avoidable error, as in the effort to escape from himself he may sometimes imagine, that man has infected nature with his theology or metaphysics. Its relation to himself is the condition alike of the impulse to know it, and of the possibility of its being known. He is as metaphysical when he talks of body or matter as when he talks of force, of force as when he talks of mind, of mind as when he talks of God. That which he calls 'nature' is traversed by the currents of his own intellect, and where intellect has gone, sentiment has followed. In a word, philosophy is an outcome, a necessary outcome, of the impulse to understand, and its history is the history of a progressive effort toward a fully articulated conception of the world as rational."

If philosophy, then, is an attempt to interpret life and the

world, the question next arises: To what school of interpreters does Professor Green belong? He seems to follow Hegel the closest of any. In a review of Dr. John Caird's "Introduction to the Philosophy of Religion," he expresses himself in a way which enables us to estimate with tolerable definiteness the exact nature and extent of his Hegelianism: "That there is a spiritual self-conscious being, of which all that is real is the activity or expression; that we are related to this spiritual being, not only as parts of the world, which is its expression, but as partakers in some inchoate manner of the self-consciousness, through which it at once constitutes and distinguishes itself from the world; that this participation is the source of morality and religion; all this is the vital truth which Hegel had to teach." But where did he part company with Hegel? Here, again, we can quote a passage from another writer, that represents it better than we can express it: "Professor Green felt himself unsatisfied with Hegel in precisely the point from which his own thinking perpetually started, and to which it perpetually recurred. The conviction of the spirituality of the world, underlying as it does all his speculations, was constantly balanced by the conviction that in trying to realize the spirituality we must begin, not with our own insides, but with the world as it is, with 'things' and 'facts,' which at the outset look anything but spiritual, but which, seen in their truth, are the forms, and the only forms, in which spirit exists for us."

The next question is: In what sense was he an idealist? He says: "The true idealist is one to whom all knowing and all that is known, all intelligence and all intelligible reality, indifferently consist in a relation between subject and object. Any determination of the one implies the corresponding determination of the other. The object may be known under one of the manifold relations which it involves as matter, but it is only so known in virtue of what may be indifferently called a constructive act on the part of the subject, or a manifestation of itself on the part of the object. The subject in virtue of the act, the object in virtue of the manifestation, are alike and in strict correlativity so far determined. The reality is just this appearance, as one mode of the relation between subject and object. The reality of matter is just as little merely objective as subjective, while the reality

of mind is not a whit more subjective than objective. The idealist, then, is an idealist, not because he resolves all things into his 'ideas' of them, but because he holds that the ultimate ground of reality, which we suppose ourselves to know, is thought."

Concerning his views of morality and the principles of ethics, we have very little space to discuss. We may just say this, that the existence of morality depends on the existence of a self or personality, a something which is not an "event," nor a "series of events," but a self-distinguishing consciousness, which makes both the "event" and the "series" a possibility. He antagonises the idea of making ethics a part of natural science. He shows that the natural philosopher takes his ready made "natural world," interprets it as an order and a reality, then interpolates into it, as a part, the mind, without which there could be no ordered and real world. He claims that an "order of nature" involves a conscious subject, which, though it operates through an animal organism and under empirical conditions, is itself "eternally complete." Thus the freedom of man is not merely a postulate of developed morality, but is already implied in the most rudimentary act of intelligent experience. It is the same self which is operative both in knowing and willing, in both there is present a self-seeking and a self-distinguishing consciousness.

We will conclude by quoting a passage from his "Prolegomena," showing forth his ethical principles: "Through certain *media*; and under certain consequent limitations, but with the constant characteristic of self-consciousness and self-objectification, the one divine mind gradually reproduces itself in the human soul. In virtue of this principle in him, man has definite capabilities, the realization of which, since in it alone he can satisfy himself, forms his true good. They are not realized, however, in any life that can be observed, in any life that has been, or is, or (as it would seem) that can be lived by man as we know him; and for this reason we cannot say with any adequacy what the capabilities are. Yet, because the essence of man's spiritual endowment is the consciousness of having it, the idea of his having such capabilities, and of a possible better state of himself, consisting in their further realization, is a moving

influence in him. It has been the parent of the institutions and usages, of the social judgments and aspirations, through which human life has been so far bettered ; through which man has so far realized his capabilities and marked out the path that he must follow in their further realization. As his true good is, or would be, their complete realization, so his goodness is proportionate to his habitual responsiveness to the idea of there being such a true good, in the various forms of recognized duty and beneficent work in which that idea has so far taken shape among men. In other words, it consists in the direction of the will to objects determined for it by this idea, as operative in the person willing ; which direction of the will we may, upon the ground stated, fitly call its determination by reason."

THE PRINCIPLE OF NATURAL SELECTION.

BY F. S. SELWOOD, '97.

[A Paper read before the Natural Science Association, November, 1896.]

IN 1859 appeared Charles Darwin's famous work *The Origin of Species*, which was destined to exert as great an influence on the scientific thought of the age as any other single work, either before or since. This influence has been due, in the first place, to the infusion of a new principle into biological study and research, and in the second place, to the fact that the book itself stands as an ideal scientific production. The style is clear and lucid, the argument logical and firmly grounded in fact, and lastly, the conclusions and inferences drawn are not made before the most exhaustive enquiry and research has been completed.

The object of the present paper is to state as clearly as possible Darwin's *Principle of Natural Selection*, and the chief arguments and statements by which it is supported. This Principle of Natural Selection is the chief factor in Darwin's explanation of the origin of species. The term *Origin of Species* is not used by Darwin as meaning the origin of life on the earth, but rather the production of any or all species from pre-existing species. Darwin is very clear on this point, distinctly stating in the course of the work, that the first appearance of life on the earth is a matter entirely irrelevant to his treatment of the subject under consideration.

Natural Selection is that process by which those individual differences and variations which are favorable to the life of the individual, and therefore to the maintenance of the species, are preserved; and those that are injurious destroyed. Those differences and variations which are neither useful nor injurious are not affected by Natural Selection, and, hence, may remain fluctuating or become fixed. This depends on the nature, either

of the organism, or of the conditions under which it lives, or of both.

There are two fundamental facts upon which Darwin bases his theory. The first is, that all living beings present, or tend to present variations from the parental forms, and this is true also when applied to the different species. To this phenomenon, the name *Variability* has been given. The second is, that under Nature there is continually going on a severe struggle for existence on the part of all living beings, either with other living beings or with the conditions of life in which they happen to be found. For this second fundamental phenomenon the term *Struggle for Existence* is obviously most suitable.

We shall now look at these two facts more closely. The first, or *Variability*, is everywhere apparent, for we see that the various offspring of the same parents present slight differences, called *individual* differences, which suffice for distinguishing one from another. We find also that varieties differ from one another in certain characteristic features, these being termed *varietal* differences, and in species we distinguish *specific* differences.

The individual differences are of the highest importance, for as we all know, they are often inherited, and therefore they afford materials for Natural Selection to act upon and accumulate. Many naturalists claim they only occur in those parts which are unimportant, but Darwin found them occurring in parts that must be recognized as important. An example occurs in the insect, *Coccus*, in which the branching of the main nerves, which takes place quite close to the central ganglion, is quite variable in different individuals.

Naturalists find great difficulty in many cases in clearly defining a line of demarcation, separating varieties from species, and likewise the less distinct varieties from one another. This difficulty is clearly shown by the fact that the classifications of any class of organisms, by different naturalists, differ very considerably. Moreover, as de Candolle says, the best known species present the greatest number of varieties and sub-varieties, and as a species is studied more and more, new varieties are continually being discovered. Hence those naturalists who have made the most extended investigations are forced to admit the

existence of much variation. Darwin found that wide ranging, much diffused and common species vary most, and also that the species of the larger genera in each country vary more frequently than those of the smaller genera. After closely observing a large number of forms, Darwin concluded that individual differences blend, by insensible series, into varietal differences, and these in turn, into specific differences. He therefore considered well established varieties as *incipient* species. Speaking generally there is in organisms an inherent tendency to variability, which is also in great part due to changed conditions of life, which may act either directly on the whole organization, or a part, or indirectly through the reproductive system. In the case of direct action there are two factors, the nature of the organism, and the nature of the conditions; the former being the more important of the two. The effects may be definite or indefinite; *definite*, when all or nearly all the offspring of the individuals exposed during several generations to the same conditions are modified in the same manner; *indefinite*, when individuals of the same species present peculiarities which cannot be accounted for by inheritance from either parent, or from some remote ancestor. In regard to indirect action through the reproductive system, Darwin infers that Variability may be so induced, because of the great sensitiveness of this system to any change in conditions. This is attested by many facts, an example being the difficulty experienced in getting tamed animals to breed freely in confinement.

Variability is regulated by many laws, only some few of which, as yet, are recognized, and of these, few are thoroughly understood. The most important are the following:

I. *The Effects of Increased Use and Disuse of Parts.*

An example is the Ostrich. In this form, the wings have through disuse become incapable of flight, having decreased in size in relation to the size of the body, while the legs through increased use, as in escaping enemies, show a marked increase in relative size. A second example is that of the blind animals inhabiting the caves of Kentucky and Carniola. In these, rudimentary eyes can often be made out, and since they are closely related to forms which live at the surface and possess highly de-

veloped eyes, the rudimentary condition of the eye must be attributed to a gradual reduction through disuse.

II. *The Law of Correlated Variation.*

Through the operation of this law, if a variation appear in any one part, variations, as a consequence, appear in other parts of the body. These latter variations may or may not be of special value to the individual or the species, yet they are retained since they arise through Correlated Variation, in connection with a variation or variations which are of special importance to the species. A remarkable instance of Correlated Variation is seen in the relation existing between the presence of more or less down on the young pigeon when first hatched and the future color of its plumage.

III. *A Part developed in any species in an extraordinary manner, in comparison with the same part in allied species, is highly variable.*

The explanation of this is, that the modification to be present in only one species must be comparatively recent, and hence the *generative* variability, as it is termed, is still present, since it has not as yet been fixed through the continued selection of individuals with the required variation. A good illustration of this law is found in the Rock Barnacles. In most genera the opercular valves, which are very important structures, differ extremely little, even in the most widely different species. Yet in the species of the genus, *Pyrgoma*, these valves present a marvellous amount of variation, the homologous valves being sometimes entirely different in shape, and we even find the individuals of the same species differing to such an extent in this feature, that the varieties of this same species differ more from one another than do the species of the other distinct genera.

IV. *Specific characters are more variable than Generic characters.*

On the view that species are only strongly marked and fixed varieties, we should expect to find them still continuing to vary in those structures which have varied within a moderately recent period, and which have thus come to differ. These characters which thus vary are *specific*, while *generic* characters may be

considered as those which have been inherited from the common progenitor of the several related species, and which have varied, if at all, only to a very slight extent.

V. *Secondary sexual characters are highly variable.*

By these are meant those characters which distinguish the sexes, yet are not directly concerned in the act of reproduction, such for example as the gorgeous plumage of the males in many species of birds, in contrast to the unostentatious plumage of the females in the same species.

VI. *Multiple, Rudimentary and lowly organized structures are variable to a very considerable extent.*

An example of variation occurring in Multiple structures is the variable number of vertebræ present in Snakes. The variation of Rudimentary organs is probably due to their uselessness, which removes them from the checking influence of Natural Selection.

The second fundamental fact which I mentioned, namely the Struggle for Existence, will now be considered. That there is such a struggle on the part of each individual for the possession of life, and for success in leaving progeny, is shown by the fact that in many forms only a small fraction of the young reach the adult stage, and that of these, only a few live long enough to die, as it were, of old age. Of course, the term Struggle for Existence does not necessarily imply a struggle between individuals, though this is by no means uncommon, but it includes also the struggle of the individual against unfavorable conditions of various kinds, as climate and lack of food. This Struggle for Existence is the inevitable result of the high rate at which all organisms tend to increase in number. This increase, which tends to occur in geometrical ratio, would, if applied to the descendants of a single pair, crowd the earth in a comparatively short period, if it were not to a very large extent counteracted by destruction. An apt illustration of this is the rabbit pest of Australia. Thus we see that heavy destruction overtakes each species, in the young or the adult, during each generation, or if not that often, at recurring periods in the life of the species.

This must follow as a consequence of the tendency to increase at a high rate, while the actual increase is but slight. There seems to be a certain relation between the amount of destruction to which the eggs and young are liable, and the number of these produced. The same is the case in regard to the seeds of plants, so that the average number of any animal or plant depends only indirectly on the number of its eggs or seeds.

The causes which check this natural tendency of each species are in great part obscure, but something is known of a few of them. One of the most effective is the great destruction of the eggs and very young in animals, and of seeds and seedlings in plants. In the case of the latter, Darwin found that of 357 seedlings which came up on a given plot of ground, 295 were destroyed. The amount of food available often acts as a check, and frequently we find that the destruction of one form being a source of food for another, thus becoming a prey to other forms, is another important check. Climate is, in most cases, the most effective check. Its action may be direct, as in the case of extreme cold or drought, or indirect, by causing scarcity of food, thereby bringing on a harder struggle between individuals. Darwin estimated that the winter of 1854-55 destroyed four-fifths of the birds in his own grounds, an extremely heavy destruction. But the indirect action of climate is the more important, as is shown by the fact that we may grow many foreign plants in our gardens if we protect them from competition with indigenous forms, but if we do not, the foreign forms disappear while the indigenous forms flourish.

In looking closely into this Struggle for Existence one finds a remarkable complexity in the relations existing between all animal and plant forms. An example is, that in several parts of the world insects determine the existence of cattle. A peculiar example is described by Darwin, namely, that on a large, widely extended heath in a certain part of England cattle determined the presence of Scotch Fir. On this heath was a single clump of old firs, but nowhere else throughout the whole heath had any grown up. A part was enclosed, and after a few years it became a miniature forest of firs, but beyond the enclosure there was not a single one. On examination Darwin found throughout the entire heath seedlings and young plants of the fir, but these had

been cropped close to the ground, some of them showing as many as twenty-six annual rings of growth.

The Struggle for Existence is, however, most severe between the individuals, and varieties of the same or closely allied species. This follows since they have nearly the same structure, and, therefore, as a rule, the same habits and constitution. An example is the decrease in number of the Song Thrush in Scotland, due to the influence of the Missel Thrush.

I must now mention the fact that inheritance plays a very important part in the process of Natural Selection, since any variation which is not inheritable could not be preserved by Natural Selection. That variations are inherited, and that the number and character of these is very varied, is beyond dispute. Darwin considered the inheritance of every character as the rule, the non-inheritance as the exception.

Having examined the facts forming the foundations of Natural Selection, that process itself will now be considered somewhat more in detail.

Unless variations occur which are profitable to the individual and the species, Natural Selection can do nothing, but when these do occur, Natural Selection by the conservation of these through several generations, produces modifications in the individual or species, which tend, as a rule, towards an advancement in organization. No great physical change, as of climate, nor any special degree of isolation, is necessary in order that Natural Selection may improve some of the inhabitants of a district. The forces of the different varying organisms, as a consequence of this continual struggle, are nicely balanced, as shown in some of the wonderful co-adaptations between different forms. It is also shown in the fact that in an ordinary period of time no appreciable difference in the relative numbers of the inhabitants of an area is apparent. Now, since no country or area is known in which the inhabitants are perfectly adapted to one another and to the conditions of life there present, any slight modification which would be of slight advantage to any one form, would disturb this nicely balanced state, and therefore, as a consequence, those forms which were unable to adapt themselves to the new conditions would become extinct, and the remaining forms would be modified in some way to offset the advantage gained by

the first form. This process is, of course, a slow one, at least, in the great majority of cases, under nature, which is to be expected, when one remembers that any great, sudden change, favorable to one particular form, would result in the speedy destruction of most other forms.

In Natural Selection only those characters which are *useful*, are *necessarily* preserved, and by the term useful is meant useful to that particular form of organism, for Natural Selection does not preserve variations in *one* species for the benefit of *another* species, but only for the benefit of the species presenting the variation. These variations may appear trifling to us, but it is a difficult matter to select all the characters useful to any particular species. Therefore we should not be surprised when we find the existence of a species depending on the color of the skin, which at first sight appears to be of very little importance. But many variations, which are neither useful nor injurious, appear through Correlated Variation, and may be preserved, but not through the action of Natural Selection. Again, variations sometimes occur in larvæ, and through Natural Selection produce modifications in the larva, which lead to modifications in the adult organism.

All destruction of living beings is not due to the Survival of the Fittest, as there takes place much fortuitous destruction, which would not be avoided were the organism much better adapted to its conditions of life than it is.

Since most animals and plants keep to their proper homes, an example being migratory birds generally returning to the same place, each newly formed variety would at first be local, and after first establishing itself locally, would gradually enlarge its range. Thus a newly formed species, though now found ranging over a wide area, did not arise simultaneously throughout that area. This brings us to the following fact, that any variation to be successfully preserved must occur in a large number of individuals, and these must be living in a comparatively small or confined area. This is the case for two reasons. First, the larger the number of individuals varying, the greater will be the probability of the occurrence of useful variations and, since these are the principal materials on which Natural Selection acts, the better will be the chance for Natural Selection to

improve the species. Second, if the variation only occur in a few individuals, it will disappear after a few generations at latest. The causes producing this effect are the struggle for existence, fortuitous destruction, and the intercrossing of varying and non-varying forms. One readily perceives that the fewer the number of varying individuals the less chance any variation will have of surviving the action of these forces. An interesting illustration of the effect of intercrossing, is found in the Domestic Pigeon. Darwin, arguing at some length, shows that the various breeds of the Domestic Pigeon are descended from the same ancestral form as the Rock Pigeon, *Columba livia*, which latter however has remained much nearer than the former to the ancestral stock. Darwin found that two breeds of the Domestic Pigeon, viz., white fantails and black barbs, when allowed to intercross produced offspring, which exhibited characteristics in the coloring of the plumage, which are strongly characteristic of the Rock Pigeon. Yet these same forms if prevented from intercrossing bred true, producing perfect white fantails and black barbs so long as intercrossing was prevented. Hence we find the effect of intercrossing to be a tendency towards reversion to ancestral forms.

In view of the immediately preceding facts, we understand why, in the process of Natural Selection, new species take their origin chiefly from the largest and most varied species.

For terrestrial forms Darwin considered that a large continental area, which had undergone in places alternate subsidence and elevation, would have been most favorable for the production of forms fitted to endure a long time and to range widely. When the continent was entire the struggle between the numerous individuals would have been severe, and resulted in the preservation of the best forms. When by subsidence the continent was broken up into comparatively small areas, immigration into these areas would cease, as also the intercrossing occurring on the confines of the ranges of the various forms. As a result, we would find that in many forms, accumulations of profitable variations had occurred, thus giving rise to new forms which would occupy those places in the polity of the area previously unoccupied. These new forms constitute at first ill-defined varieties, which in time become clearly defined and well established. Next there

occurred the re-elevation of the submerged parts, and there would again take place throughout the entire continent a severe struggle, in which the weaker forms would perish and the stronger survive. These latter, having shown by the fact of their survival their adaptation to the conditions of life then present, would now gradually extend their ranges. As a consequence of this, new variations would appear, and these would then have to undergo a similar experience to that above described. However, although Darwin thought successive periods of isolation and intermingling were most favorable to the production of new species, still he did not consider them as indispensable, nor as having been the conditions under which all species, through Natural Selection, have arisen. The extinction of species constantly accompanies Natural Selection, but affects chiefly the smaller varieties and species. The reason is that the Struggle for Existence, fortuitous destruction, close interbreeding, and the occurrence of fewer profitable variations, affect these much more relatively to their numbers than they do the larger species.

One of the most important principles underlying Natural Selection is that of *Divergence of Character*. Through this principle, varieties which differ only slightly from each other become species which differ quite strongly. A species once established can only increase its number of varieties by its variable descendants seizing on those places, in the polity of Nature, which are not yet occupied. To do this these descendants must present certain variations from the parent form in order that they may be fitted for the new conditions. Now we have seen above that the struggle between varieties is less severe the more they differ from one another, hence the most distinct varieties will survive, gradually supplanting those closely related. But distinct, well-defined varieties are only slightly removed from the rank of species.

The tendency to Divergence is strengthened by the fact that in a given area, the more diversified the inhabitants, the greater is the number of inhabitants that area will support. Darwin found a piece of turf three feet by four which supported twenty species, which belonged to eighteen genera, thus showing their great diversity of character. Moreover, the greater the diversity the greater is the perfection of organization present, and, as a

consequence, the greater the ability to survive the struggle. One of the results attendant on the Divergence of Character is the extinction of parent forms and those most closely related to them. This is shown by the existence of only very few ancient forms at the present day, though the earth was probably as rich in species formerly as now.

Although, as a rule, the process of Natural Selection results, in most forms, in great perfection of organization, still we find many forms which are quite lowly organized. This may result from the fact that in simple conditions of life a high degree of specialization is of no particular advantage, or possibly that favorable variations did not arise. Because this latter happened to be the case, extinction did not necessarily follow, since the struggle of these forms against the higher forms is not severe. Nor even is this the case between the different species themselves.

This concludes Darwin's treatment of the Principle of Natural Selection in so far as it forms the subject of this paper. He now goes on in his *Origin of Species* to treat of the difficulties and objections urged against his theory, meeting them successfully in most cases. And lastly, he brings before his readers facts in Morphology, Embryology, the Geographical Distribution of Flora and Fauna, and the Succession of Organic Beings in Geological Time, which facts in the main strengthen his theory.

CARLYLE AS A HISTORIAN.

BY MISS H. S. G. MACDONALD, '98.

[A paper read before the Modern Language Club.]

BEFORE an estimate can be formed of Carlyle in his capacity as historian, some standard of comparison must be found. But what is the measurement of a historian? In what term shall he be reckoned? That standard which most naturally suggests itself, namely the accomplishment of his fellow-workmen, will not avail here, for the gauge of other writers does not fit Carlyle. The rugged Scotchman will not flatten out parallel with any smooth compiler of chronicles. As his genius is unique, so its gauge must be peculiar to it. Hence it remains only to compare, though necessarily here in a most incomplete way, Carlyle's work as a historian with Carlyle's theory of what a historian should be. Full expression of this is to be found in his treatises on History, his critical essays, biographical sketches, and histories themselves, the two latter regarded not as two but one in kind. For world history and a single life's history are to him essentially the same thing,—a looking at the same scene at varying distances. At close range, where the nearest figure occupies most of the view and other objects are appreciated only in their relation to it, we have biography depicting, to use his own words, "the inward springs and relations of its subject's character, the effect of his environment on him and of him on it:" an ideal to which no biography will ever be found to have fully attained until

"The moon is old, and the stars grow cold,
And the books of the Judgment Day unfold ;"

an ideal nevertheless to which Carlyle has made no mean approach in his own writings, as well in the slender outline of Burns' life as in the full coloring and elaborate detail of his Frederick the Great. In the shorter sketch the *action* is distinctly indicated, the reason that the *re-action* does not find equal prominence is found in his hint of the "inward springs and relations of the

subject's character." "Burns," he says, "was nothing wholly." Hence the force which should have expended itself in some strong reaction on his own immediate environment, was dissipated through divided, inappreciable channels. The larger work illustrates his intention more elaborately, including hereditary with contemporary influences. So minute indeed will he be with the "springs of character," that he begins this biography with the state of its subject's family five and a half centuries before his birth. Even a phase of world history, since it is counted of like kind with biography, must be expected in his hands to illustrate the ideal; and in a measure may be admitted to do so. For has he not striven faithfully to exhibit the inward springs of the sansculottes' outbreak, the fateful combination of bodily suffering, intellectual agitation and social embitterment; as also the relations of a multitude of pre-revolutionary conditions, whether aiding or only indicating the final catastrophe? Starvation, unjust taxation, class legislation are easily recognized as stimulating causes. But Carlyle remarks no less the idlest vapors of frivolity as symptoms, if not subsidiary causes, of a moral low pressure area into which sooner or later earnestness and reality were bound to swirl with cyclone force. But from the bird's-eye view of World History—to return to its relation to Biography—it is not the details of a single figure, but the general proportionment of many, with their setting of external circumstance, that the eye takes in. It must be therefore on the joint basis of his portrait and landscape work that an estimate of the historian is founded.

Carlyle's standard for his craft provides both for matter and manner. As to the matter he makes but one demand: Truth,—Truth positive as well as negative; not alone omission of all that is false or unproven, but the inclusion of All that is necessary for a true estimate of the case or life depicted, at the expense, if needful, of Respectability. Which precept, since it is so eagerly followed—yes, outrun by writers of the weaker sort to their own discredit and the demoralization of their readers—might at first sight be called in question, yet one which in the hands of such a giant moralist philosopher as Carlyle is justified by its exemplification. Declaim as he may against the restraints Respectability would impose on free utterance, yet his own taste, perhaps I

should say his own moral sense, is too healthy for him to riot in needless details of the base or horrible. Here is what the strength and intellect that could mould the life of Frederick the Great into six volumes has to say about the mire from which it was exhumed: "To resuscitate the Eighteenth Century, or call into men's view, *beyond what is necessary*, the poor and sordid personages and transactions of an epoch so related to us, can be no purpose of mine on this occasion. The Eighteenth Century, it is well known, does not figure to me as a lovely one, needing to be kept in mind or spoken of unnecessarily. To me the Eighteenth Century has nothing in it, except that grand, universal suicide, named French Revolution, by which it terminated its otherwise most worthless existence with at least one worthy act—setting fire to its old home and self, and going up in flames and volcanic explosions in a truly memorable and important manner. A very fit termination, as I thankfully feel, for such a Century." As to how much of this uncongenial matter is to be used in his composition, he declares: "So much of it as by nature adheres, what of it cannot be disengaged from our hero and his operations; approximately so much and no more." A reasonable demand, and one which Respectability itself will surely concede. For those who reflect truly, any fragments from the picture of human life cannot escape presenting some elements unworthy the ideal to which it is the aim of maligned Respectability to hold society and its individuals. But the quality of the reflection is borrowed from the mould of the mirror. We are all ugly in a crooked glass. The history being true cannot be immoral. But the telling of it may be; and it is precisely in this that Carlyle so transcends those historians who through personal bias, carelessness, false-respectability or what cause soever, inferring events from only partial causes, veil, where it is their privileged calling to reveal, the justice, beauty and inevitableness of the laws which govern our corporate as well as individual being. He himself speaks indeed not so much in the spirit of a historian, if the term indicate merely a relator of past events, as in that of a prophet, rebuking nations in the name of truth and righteousness for their shams, injustices and follies; justifying their disasters by their crimes; illustrating by the story of their national life his inspired text that no lie can abide

for ever. Yet that for this purpose he aims only at greater accuracy in facts, the prodigious extent of his reading and the laboriousness of his research bear testimony.

In keeping with this appetite for truth in the telling of a story is his taste in the selection of a subject. Here too he has set up his standard and his works crowd close about it. The stream of Eighteenth Century culture, wit, polish, rolls before him. He scans it well. He scorns it heartily. But here or there let an original, natural man, a spontaneous event break through its smooth, false surface and—Carlyle to the rescue! He grasps the struggling reality with a brother's grip. He drags it ashore, labors with it, resuscitates it, and finally spreads it in sheets or volumes for the behoof of all mankind. Only let the subject be a reality and Carlyle admits it worthy the historic pen. What is the merit of Frederick of Prussia that has entitled him to six volumes attention from a prophet? Simply that he is perceived to have "managed *not* to be a Liar and Charlatan in his Century." Mirabeau claims a memoir from his pen in virtue of an originality which had "swallowed all formulas." Granted originality in the subject, his taste is catholic. Ploughman, poet or founder of a Norse dynasty, rough revolutionary or polished man of the world like Goethe, pious John Knox or arch-knave Cagliostro, he finds them all palatable, or at least says so. For the last, however, he serves him with such copious dressing of apology and defence as persuades the reader that the flavor is after all somewhat high for his liking. Indeed originality perverted, since it is the furthest possible remove from reality, cannot be to his taste. Above all things his own robust, wholesome inclination is towards men who, like himself, are truth-lovers, enemies of all manner of quackery.

In order to the lucid setting forth of such sovereign truth, Carlyle has not been sparing of recommendations as to the *manner* of historical writing. The artist in history, he claims, must have in every detail a consciousness of and regard to the whole. The Diamond Necklace will serve as an example in narrow compass of his own application of the principle. Here a half-dozen biographical sketches representing as many social grades and varied temperaments, from the voluptuous Cardinal or that Becky Sharp of the French Blood-Royal, Jeanne de

Lamotte, to the unlucky German jeweller with his trivial ambition or the scoundrelly gendarme and his co-conspirators, are all harmonized into one connected bit of life. Their relation to the main theme, and their consequent interaction is never out of sight. The unity the novelist affects shows itself inevitably in the conscientious historian.

Again, his demands are precise with regard to delineation of character. The historian must present a living unity not a catalogue of attributes, and for this purpose should employ characteristic incidents rather than descriptive epithets. His own application of the method may be found in its most condensed form in the Kings of Norway. Very sketchy indeed is the portrait of Harold Fairhair. Yet in the few bare incidents of his winning of Gyda, his prompt steps to avenge Rolf the Ganger's raid, his choice of an adviser and disposition of the latter's succession after his murder, and his rough humorous defiance of English Athelstan, we have outlined to the life the bold, unquenchable barbarian touched by that spark of imaginative vigor which was needed to create a king among a race of pirate-princes. On the other hand his portrait of Olaf Tryggvesson, more highly wrought and that with affectionate care, does not adhere to rule, is not so *living*. Incidents there are which justify a reputation for courage, even for generosity, as his forbearance towards Ironbeard's daughter, his would-be murderess; but none that show the hero a "witty, jocund man," as his biographer pronounces him, "of joyful, cheery temper," with "a bright, airy, wise way of speech." While such multiplied laudations as: "a great, wild, noble soul;" "a magnificent, far-shining man;" "a high, true, great human soul," remind the reader by contraries of their author's pronouncement in his Essay on Burns, that "it is exposition rather than admiration our readers require of us."

But apart from Carlyle's theory of historical writing and his more or less correspondence to it, it may not be unfitting to refer to one or two out of many points which strike his reader as characteristic of the man's method of writing history. In the first place, then, I think that every unscholarly member of the reading public who takes up, say, his French Revolution, will agree with me that we should enjoy it more if we only knew

more history to begin with. Referring to the struggle in La Vendée, for instance, the author runs you in one sentence up the scale of comparison with the wars of the Albigenses, Crusades and the Palatinate; and you feel in your ignorance that a liberal acquaintance with the several epochs is wanting to do justice to the parallel. Or you fancy yourself studying the outbreak at Nanci and concentrate your whole understanding on it, to find, when your attention has stiffened with the strain, that it must be instantaneously focussed first on the wavering legend of the Niebelungen, then on far off Charles the Bold, his burial place, his diamond; and this by way of illustrating and simplifying the eighteenth century trouble at Nanci. Universal history, he has told us, needs before all things to be compressed; and so one of the knottiest intrigues of the century finds itself reduced to an epithet in the larger drama of the Revolution, and the unlearned reader is sorely vexed to interpret the recurring title, *Necklace-Cardinal*, until he goes beyond his volume and lights upon the essay on the *Diamond Necklace*. These are but a few random instances of the manner of a man who, writing out of the abundance of his own learning, seems to expect more from his readers than they are furnished with. Those whom any display of erudition they do not share irritates, will resent the manner, will recall his censures of those authors whose faculties are mainly directed to "two things, the Writing and the Writer," and grumble that this show of knowledge has nothing to do with the matter in hand. But in spite of all oddities of style, no honest reader can fail to recognize that it is the substance of his work which holds all Carlyle's powers in service; that it is never with him the Writing and the Writer which absorb his best energies, but that he is possessed, mind and heart, by the actual thing he tries to express, while his allusions and comparisons are only the tribute of his learning to the reality he reverences. Even that most aggressive mannerism, his repeated and again repeated use of certain pet phrases, cannot be fairly interpreted as a partiality for his own writing, but rather a part of his homage. For, the fittest phrase, according to his idea, once found, he never thereafter presumes to alter it for one less complete. True, the reader will sometimes question the taste of these expressions, for, though often

bold, strong and intense as all the originality of genius can invent, they do not seldom also grin grotesquely from the pages of his most solemn works like gargoyls on some grave cathedral. Thus to the satirist, not the historian, must be pardoned the extravagance of perpetually figuring the serious efforts, however futile, of sincere men to pacify their insane country, as an "attempt to perfect a theory of irregular verbs," or the repeated representation of worthy mediocrity under the emblem of a gig. Such personal eccentricities of the man, Carlyle, it must be frankly admitted consort ill with the stateliness of history.

One other trick of style may still be noted, since it leads back to our original proposition. Carlyle, at times, not only manifests the spirit, but assumes the style of a prophet. More than once in the earlier parts of his French Revolution he pauses in the recital of events to disclose gravely in the future tense what shall come of them, the fulfilment of the forecast being duly noted at the proper time in such sentence as, "The Majesty of Spain, as we predicted, makes peace." Yet even this heavy-weight pleasantry, with such other oracular humor as his curiously wrought phrases often contain, only increases the conviction of his complete absorption in his subject, since even in his higher moods he cannot forget his relation to it. And, as there is always more earnest than jest about a Scotchman's joke, it may serve as one among many indications of the intense earnestness with which he regarded his mission as Seer, not mere onlooker at the panorama of life, an earnestness which finds utterance at the close of one work in the confession: "Ill fares it with me if I have spoken falsely: thine also it was to hear truly." This character of prophecy would seem in fact to be his own ideal of history; but he is forced to lament that she has in our day fallen so far from her true estate that neither this age nor the next can restore her. "It is not one serious man," he mourns in the Proem to Frederick the Great, "but many successions of such, and whole serious generations of men that can ever again build up history toward its old dignity." In him, with all his oddities and whims, History may congratulate herself that she has in our time gained at least one such serious man.

MATHEMATICAL MISCONCEPTIONS.

BY G. L. WAGAR, '98.

[Read before the Mathematical and Physical Society.]

IT seems a prevalent evil that mathematical misconceptions follow closely our first mathematical conceptions, but woe to him through whom the misconception cometh; rather, I should say "woe to him who is so taught that his conceptions of mathematics are false," especially if he wish to proceed to any extent in mathematical study; for these, misconceptions must be uprooted, old learnings unlearned, familiar paths forsaken, and new conceptions acquired, all of which is exceedingly annoying, both because earlier moments have been squandered, and because a hard struggle must ensue to force from their firm positions these early impressions.

Happily, wrong impressions are given much less frequently now than in former days, as our standard for Public School teachers is constantly being raised. Still there is room for improvement; and I wish to indicate some of the wrong paths into which I was led in my early days, and into which are directed still the aspiring youths in some localities.

First, very little teaching was done; we were made to memorize rules, and then shown how to do the exercise following each rule, occasionally being asked to explain our method of doing a question. I say *question*, instead of *problem*, for we rarely did problems,—we did questions. Let me illustrate: Long columns of figures were given us to add, long questions in subtraction, multiplication, division, etc.; but in every case we must be able to recite the rule, and must know the lines referred to as *minuend* and *subtrahend*, as *multiplicand*, *multiplier* and *product*, and must be able to distinguish by position the *divisor*, *dividend* and *quotient*. Here, for instance, is the Rule for Addition:

"Write down the given numbers under each other, so that units may come under units, tens under tens, hundreds under

hundreds, and so on ; then draw a line under the lowest number. (A very important part of the rule.)

“ Find the sum of the column of units ; if it be less than ten, write it down under the column of units below the line just drawn, but if it be greater than ten, then write down the units' figure (i.e., the last figure on the right hand) of the sum under the column of units, and carry to the column of tens the remaining figure or figures.

“ Add the column of tens and the figure or figures you carry as you have added the column of units, and treat its sum in exactly the same way as you have treated the column of units.

“ Treat each succeeding column (viz., hundreds, thousands, etc.,) in the same way.

“ Write down the full sum of the last column on the left hand.

“ The entire sum thus obtained will be the sum or amount of the given numbers.”

But perhaps few misconceptions arose while learning the four fundamental rules, addition, subtraction, multiplication and division ; on the whole, in time, we became expert in these rules so long as no “ reading questions,” as we called them, were given us. We could do and prove the most difficult questions in any of these exercises, but were never taught at this stage to apply our knowledge to the solving of problems requiring one or more of these operations. Hence arose the misconception that manipulating numbers cleverly was the be-all and end-all of arithmetic.

At last, however, we knew the elementary rules, and were able to pass to the next stage, the learning of the *Weights and Measures*. What times we had with Long Measure, Square Measure, and Cubic Measure ! How hard it was to distinguish Halifax or Old Canadian Currency from English Money ! How we all delighted in United States Currency, for the numbers were all tens, and in our sympathies we were thoroughly Yankee so far as learning these tables was concerned. Then Troy Weight, Avoirdupois Weight and Apothecaries' Weight were muddling—especially how to spell and pronounce the two latter. Wine Measure, Beer Measure and Dry Measure were so much alike that often when asked to repeat Dry we forgot our temperance principles and gave Beer or Wine. The measure of time was com-

paratively easy because it was simply a repetition of already familiar knowledge, but the Miscellaneous Table was almost a *pons asinorum*. Let me repeat, or rather read it :

12 units	make	1 dozen.
12 dozen	“	1 gross.
12 gross	“	1 great gross.
20 units	“	1 score.
24 sheets of paper .	“	1 quire.
20 quires	“	1 ream.
100 pounds	“	1 quintal.
196 pounds	“	1 barrel of flour.
200 pounds	“	1 barrel of pork or beef.

But all these had to be mastered before we could proceed to “Reduction,” so we worked away faithfully and at last were ready to begin Reduction Descending. First the Rule:—“Multiply the number of the highest denomination in the proposed quantity by the number of units of the next lower denomination contained in one unit of the highest, and to the product add the number of that lower denomination, if there be any in the proposed quantity.

“Repeat this process for each succeeding denomination, till the required denomination is arrived at.”

Then we were taught how to do the questions, for, by the way, the rule seemed to help us little after all our efforts at memorizing. Here is a sample question :

$$\begin{array}{r}
 \text{Reduce} \quad \begin{array}{c} \text{£} \quad \text{s.} \quad \text{d.} \\ 709 : 16 : 8 \end{array} \text{ to farthings.} \\
 \quad \quad \quad 20 \\
 \hline
 \quad \quad \quad 14,196 \text{ s.} \\
 \quad \quad \quad 12 \\
 \hline
 \quad \quad \quad 170,360 \text{ d.} \\
 \quad \quad \quad 4 \\
 \hline
 \quad \quad \quad 681,440 \text{ f.}
 \end{array}$$

Then we must be able to *explain* the working, for public examinations were often given, and it was a very clever thing to surprise the admiring parents by such a wondrous display of knowledge. The explanation was after this fashion :

“Multiply the 709 pounds by 20, because there are 20 shillings in a pound, and add in the 16 shillings ; the result is 14,196 shillings ; multiply the 14,196 shillings by 12, because

there are 12 pence in a shilling, and add in the 8 pence ; the result is 170,360 pence ; multiply the 170,360 pence by 4, because there are 4 farthings in a penny ; the result is 681,440 farthings," which you see carries a most unpardonable misconception as pounds multiplied by 20 do not give shillings and shillings multiplied by 12 do not give pence. But what of that ? The children were gratified, the parents satisfied, and the teacher ignorant.

From Reduction Descending we passed to Reduction Ascending (a much harder exercise by the way), then to the Compound Rules, which were easy enough except when Long or Square Measure was to be used. The $5\frac{1}{2}$ and $30\frac{1}{4}$ were constant sources of annoyance until we had had much practice, but finally we learned the rule for dividing by these numbers, and as we now got correct results the teacher in his or her ignorance left us alone in our glory, thus missing one of the nice points in teaching in this part of the work ; and occasionally a teacher even taught the wrong thing at this stage. The following case came under my own notice. The teacher, a young lady holding a Primary Certificate, was teaching Compound Multiplication to a Third Class, and the question was this : Multiply 7 mls., 17 rds., 4 yds. by 10. This is the work as it stood on the blackboard when the question was done :

mls.	rds.	yds.	
7	:	17	:
		4	:
		10)
70	:	177	:
		3)
			5 $\frac{1}{2}$)40
			2
			2
			11)80
			7 — 3

And this is how the working proceeded :

TEACHER.—“ Ten times four is what ? ”

ANS.—“ Forty.”

QUES.—“ What shall I do with the forty ? ”

ANS.—“ Divide by $5\frac{1}{2}$ to bring it to rds., because there are $5\frac{1}{2}$ yards in a rd.”

QUES.—“ How shall I do this ? ”

ANS.—“ Twice five are ten and one are eleven ; twice forty are eighty ; eleven goes into eighty seven times and three remains over.”

QUES.—“ Three what ? ”

ANS.—“ Three yards.”

The teacher actually taught that the three remaining over was three yards instead of three half-yards, and the children with this result held up hands, smiling in their pride that they had got the same result as the teacher.

After finishing the Compound Rules we had a drill on reducing Old Canadian to the New Canadian Currency and *vice versa*, doing both by rule, not by reason. But now we were ready for G. C. M. and L. C. M., and more rules must be learned. However, after learning the rules, the questions were considered "snaps," straight work, nothing more. Fractions were hard only because we must memorize definitions for proper, improper, simple, mixed, compound and complex, and learn about ten or twelve rules.

I remember the following as very difficult questions :

1. $5\frac{7}{4} + 13\frac{5}{32} + 4\frac{9}{2} + 2\frac{23}{80}$.

2. $(2\frac{3}{4} + 3\frac{2}{3})$ of $2\frac{5}{7} + 3\frac{1}{5}$ of $(16\frac{5}{8} + 3\frac{1}{4}) + 1\frac{2}{3}$ of 11 of $2\frac{1}{2}$.

3. A boy ate $\frac{2}{3}$ of a cake, how much less did he leave than he ate? (We wondered why he left any, for by so doing he furnished the material for a difficult problem.)

4. $12\frac{1}{7} - \frac{2}{34} + 7\frac{6}{51} - \frac{1}{3}$ of $\frac{1}{7} + \frac{2}{5}$ of $3\frac{3}{4}$.

5. $6\frac{1}{4} + \frac{7}{12}$ of $\frac{9}{14}$ of $3\frac{1}{3} - \frac{45}{60} - 5\frac{3}{4}$.

6. $6\frac{1}{4} + \frac{7}{12}$ of $\frac{9}{14}$ of $(3\frac{1}{3} - \frac{45}{60}) - 5\frac{3}{4}$.

7. $\{(\frac{1}{2} + \frac{1}{3})$ of $(1\frac{1}{3} + 2\frac{2}{4})\} \times \{(2\frac{1}{4} - 1\frac{1}{2})$ of $(3\frac{1}{10} - \frac{3}{7})\}$.

8. $\frac{\frac{1}{2} + \frac{1}{3} + \frac{1}{4}}{\frac{8}{9} + \frac{5}{6} - \frac{1}{2}}$.

The difficulties all arising from the mechanical way we were taught to do our work and the failure on the part of the teacher to tell us what was meant by the terms of an expression.

Then came the famous *52nd Exercise*. This was an exercise composed of reading questions based on fractions. Well do I remember my own experience with this exercise. The very first question floored me, so I went to the teacher for help. She told me she hadn't time in school to show me how to do those questions, but if I would get an exercise book and in it mark each day the number of the question or questions with which I had difficulty, then she would take this book home with her and in the morning return it with the difficulties solved. This was all

very well until even the solutions bothered me, but when I again sought or besought the teacher for an explanation of the working, her answer invariably was, "Now, if you'll only go to your seat and think it out yourself, I'll call you a brick." Well she might put me off this way, for I found out after, that she kept a key to the arithmetic, and the solutions in my blue exercise book were copied word for word by her from her precious volume, and she herself was as ignorant as I of the why and the wherefore. I waded through this "slough of despond" by memorizing the solutions I could not understand, and at last was able to breathe freely again as I entered the realm of Decimals. Here, again, everything was done by rule, and no connection was seen between Decimals and preceding work. The placing of the decimal point in division of decimals was somewhat troublesome, so we usually did the division and then looked at the answer to see where to place this point, foolishly supposing that the getting of the correct digits was more important than the knowing how to place the decimal point correctly. Some slight attempt was made at the Rule of Three and the Double Rule of Three, but we accomplished very little here as the placing of the terms was confusing, and it was usually a question in permutations before we secured the proper arrangement to bring the correct answer.

Happily, I at last got into the High School and came under the direction of one of the leading mathematical teachers of our Province. I refer to Mr. C. Fessenden, B.A., now of Peterborough, then of Napanee. Misconceptions had to fly and truths dawned like a revelation. I found that there was a why for doing things in mathematics; and when the old notions had been uprooted, he lay the foundation firm and substantial on which I am trying to build to-day.

JAMES ANTHONY FROUDE.

BY JOHN M. GUNN, '98.

[Read before the Modern Language Club.]

IF we accept that theory of Literature which tells us there is an ebb and a flow, a rising and falling within regular intervals, we must conclude that History reached its high-water mark in the early years of this century. It is a remarkable coincidence that the last decade of the eighteenth century gave to English letters eight of our greatest modern historians; Milman and Tytler were born in 1791, Alison in '92, Grote in '94, Arnold and Carlyle in '95, Thirlwall in '97, and Macaulay in 1800. Forty years later, these men were engaged on their best work, and about the same time there came to Oxford a young man destined to be no mean worker in the same field. His name was James Anthony Froude.

Mr. Froude was born in Devonshire in 1818. His father was an Archdeacon of the English Church, and a man of strictest orthodoxy. James was the youngest of six children, all of whom seem to have been unusually gifted, his two brothers becoming very distinguished men in later years. His education was begun at Westminster School, and continued at Oriel College, Oxford. From Oriel he went later to Exeter College, where he held a fellowship for a few years. His youth seems not to have been of the happiest. At home he had chafed under the severe Anglicanism of his father, whose intolerance of doubt was only equalled by his contempt for nonconformity. And when he took orders himself in 1844, it was not because of any affection he bore to the Church of England, but out of respect for the wishes of his father, for whom he always had the deepest love.

When Froude arrived at Oxford, the University was already in the throes of the great Tractarian controversy, which his brother, Richard Hurrell Froude, in association with Keble,

Pusey and Newman, had been largely instrumental in starting in 1838. Into this movement James Froude threw himself enthusiastically, for his own mind was now in a state of great unrest, and longing for some satisfactory ground to rest upon; and the new movement, voicing as it did, such strong dissatisfaction with the condition of the Anglican Church, gained his sympathy at once.

Hurrell Froude had influenced Newman some years before, as the latter tells us, to modify the strong antipathy he had in early life for the doctrines of Roman Catholicism. And now the younger brother in turn fell under Newman's spell. From Newman he got his style, which is essentially that of the great Cardinal, as Prof. Goldwin Smith has pointed out, not only in its easy grace, its clearness and persuasiveness, but in its mannerisms and artifices as well. To the end of his life, Froude continued to have a great admiration for Newman, though he could not agree with his new beliefs.

When the great shock came to the Tractarians in the secession of Newman and several of his friends to Roman Catholicism, Froude was left in a state of bewilderment. Unable to follow his old leader further, and yet unable to remain in the Anglican Communion, he drifted into a kind of scepticism. However we may regard his action, we cannot doubt his sincerity, for he gave up his fellowship and bright prospects at the University, and resolved to devote himself henceforth to literature. The first fruits of this change were two books: "Shadows of the Clouds," published in 1847, and the "Nemesis of Faith," two years later, which are partly autobiographical, and are intended to explain his course of conduct. The change delighted him. "My living is resigned—my employment gone," he writes. "I am again free, again happy, and all the poor and paltry network in which I was entangled, the weak intrigues which, like the flies in summer, irritate far worse than more serious evils—I have escaped them all. . . . All I really grieve for is my father."

Froude's earliest literary work was done chiefly in the magazines, as had been the case with Carlyle, whose influence was now to be a great moulding force throughout the remainder of Froude's life. Very much what Boswell was to Johnson, and

what Eckermann was to Goethe, Froude now became for nearly thirty years to Carlyle. He had already conceived a great admiration for Carlyle through reading some of his works, and when the two met the friendship seems to have sprung up immediately. In Carlyle's Biography, Froude writes: "It was while Carlyle was preparing for this Irish tour (1849), that I myself became first personally acquainted with him. . . . I had written something not wisely in which heterodoxy was flavored with the sentimentalism which he so intensely detested. He had said of me that I ought to burn my own smoke and not trouble other people's nostrils with it. Nevertheless he was willing to see what I was like. James Spedding took me down to Cheyne Row one evening in the middle of June. . . . They told me that I might come again. I did not then live in London, and had few opportunities, but if the chance offered I never missed it." Again in the same work, he says: "I had not yet (1855) settled in London, but I came up occasionally to read books in the Museum. I called, as often as I ventured, in Cheyne Row, and was always made welcome there. But I was a mere outward acquaintance, and had no right to expect such a man as Carlyle to exert himself for me. I had, however, from the time when I became acquainted with his writings, looked on him as my own guide and master—so absolutely that I could have said: 'Malim errare cum Platone, quam cum aliis bene sentire'; or in Goethe's words, which I often indeed did repeat to myself: 'Mit deinem Meister zu irren ist dein Gewinn.' The practice of submission to the authority of one whom one recognizes as greater than one's self outweighs the chance of occasional mistake. If I wrote anything, I fancied myself writing it to him, reflecting at each word on what he would think of it, as a check on affectations." In 1860, Froude made his home in London, and from that time until Carlyle's death, they were almost daily companions. We may also gather from one of Mrs. Carlyle's letters to Froude how he was regarded in their home. Froude had one evening taken his friend, Bishop Colenso, to Cheyne Row to introduce him to the Carlyles, and had expressed later to Mrs. Carlyle the fear that she might have found him a tiresome guest. In reply she admits that there was some ground for his apprehensions, but adds significantly: "I was really not bored that day *you* came

with him; *you* were there; and without meaning to say anything pretty (which is far from my line), I am always so pleased to see you, that were you to come accompanied by the—the—*first gentleman in England*, I should rather than that you didn't come at all." This intimacy continued to the end of Carlyle's life, and when the grand old prophet passed away it was Mr. Froude who, with Profs. Lecky and Tyndall, took the remains of the great Scotchman to their last resting place among his beloved peasant folk of Ecclefechan.

To Froude also, Carlyle entrusted some time before his death his *Reminiscences*, and Mr. Froude, since their publication, has been subjected to the severest criticism. This criticism, however, has been growing uniformly milder, and the *Biography* is now considered Froude's greatest work. Perhaps the best justification is that given by the author himself. Carlyle had given him these *Reminiscences*, he tells us, without any reservation, to use as he saw fit. For some time he hesitated about giving them to the world in their entirety, knowing well the strictures upon himself that would inevitably follow. But, on the other hand, he knew that the public would be eager for everything available of his great master, and that eventually all would come to light through the voluminous and unreserved correspondence carried on for many years and with many persons by both Mr. and Mrs. Carlyle. A great trust had been reposed in him, carrying with it a great responsibility. He concluded, therefore, that the whole story, however dark in places, should in justice to Carlyle be published in his own words, and not left to the unloving and irreverent hands of strangers.

It has seemed well to dwell on Froude's relationship with Carlyle, for we can trace a likeness to the latter in every feature of his disciple's mind and work, except in his style. Carlyle was a man of eccentric genius, and as such found many imitators. But imitation, conscious or unconscious, by such an ardent admirer as Froude confessed to have been, is not usually a benefit to the disciple. There is a greater danger of exaggerating the faults than the merits of the master. Froude had the same spirit of hero-worship, the same hatred of cant and shams, the same pessimistic dissatisfaction with the present, and extravagant glorification of the past, which had characterized Carlyle.

And these features all appear prominently in Froude's first historical work "The History of England from Wolsey to the Armada," which was finished in 1869. Froude had both a theory and a practice in History, and these were by no means identical; the practice, as usually happens, falling far short of the theory. In discussing Carlyle's historical work, Mr. Froude gives us his theory. History, we are told, is an account of the actions of men, including their thoughts, opinions, motives and impulses, and approximates to perfection only as it comes nearer and nearer to portraying faithfully all these things. The inner nature of the characters is the really essential thing, and the historian assumes that he knows this. But to represent men faithfully in this way, to think and feel as they did, requires genius like that of the greatest dramatist and the obligation to truth as well. "The imaginative and reproductive insight," to quote his own words, "is among the rarest of human qualities. The moral determination to use it for purposes of truth is rarer still—nay, it is but in particular ages of the world that such work can be produced at all." "Very few writers," he says later, "have possessed the double gift of accuracy and representative power." Certainly Mr. Froude himself was not one, as we shall presently see.

Carlyle had gloried in making a great hero, such as Cromwell or Frederick, the central figure of his great historical works. Froude did the same thing, and selected Henry VIII. for a similar purpose in his history—a most unwise choice, as most historical students would agree. He had been first drawn to Henry probably by the fact that the king had defied Rome, and had taken such a bold stand against the Papal jurisdiction in England, a thing which no doubt appealed strongly to such a fervent hater of ecclesiastical domination as Froude had always been. And having made his choice, he consistently followed out his aim to make a heroic figure of Henry. All the merits and all the failings of our historian appear in this work, and we cannot do better than refer to them in this connection. We have here all those qualities which have made him unsurpassed among modern English prose writers: his wonderfully charming graces of language and style, his masterly delineation of character, his magnificent power of placing the dead past before our very eyes, with all its color and movement and life. But we find also, un-

fortunately, all those serious faults which mar the whole of our author's work.

These faults of Mr. Froude seem all to have sprung from a single source. In writing history he has a secondary object in view—nay, it often seems the primary one—namely, to convey to his readers certain ideas and impressions in regard to his subject that he has previously formed in his own mind. From this statement, the nature of his failings may be easily guessed. He came to his work not with the calm judicial mind of Gibbon's ideal historian—the man without country or religion—but he is everywhere and always an advocate—a special pleader. It is easy to imagine what this would naturally lead to, and did lead to in Froude. Carried away by enthusiasm for his chosen cause, he is guilty of misquotation, misstatement of facts, wrong interpretation of events, and a startling indifference to the accuracy of his details. But it must not be supposed that these faults of Mr. Froude are wilful and deliberate attempts to mislead his readers. They are rarely, if ever, as bad as that. They arise rather from a spirit of carelessness that is scarcely less reprehensible. Mr. Saintsbury shows that misquotations, in some cases, have weakened the cause which Froude was evidently advocating himself. In his eagerness to give his work the general effect he wished to produce, the importance of details was overlooked. Some facts were all but suppressed, others were highly colored; all were presented to the reader in the light Mr. Froude thought most favorable to his purpose.

By more particular reference to the History these faults may be better understood. The object was to make Henry a hero, and two methods were adopted: Henry himself is exalted beyond all reasonable warrant, and then his enemies and victims are systematically maligned. Froude became the apologist for Henry's crimes, painting as a pattern of kingly nobleness one of the most brutal tyrants known to history. With the same object he blackens the characters of other men and women of the time; Sir Thomas More, Fisher and Cardinal Pole, Queen Mary, and the Queen of Scots, all get scant justice from the historian's hands. This fault is so pronounced that Prof. Goldwin Smith remarks: "Froude does not know the epoch, nor the men with whom he is dealing."

In 1874, Froude followed his great *History* with a work on "The English in Ireland in the 18th Century," a book which called forth severest censure from the Irish Parliamentary party and its sympathisers.

In 1874 and '75, Mr. Froude was sent by Lord Carnarvon on Government missions to the Cape, and as a result of this and subsequent visits to the colonies, we have "Oceana" and "The English in the West Indies," books containing sketches of travel, and political reflections. These have all the charms of their author's other works, but were no more secure from criticism. Mr. Froude found fault with the English colonizing system, comparing it unfavorably with that of the French and Dutch. English colonists, he asserted, were bent simply on making a fortune with which they might return to England and end their days in comfort. He also criticised severely the financial and administrative methods of the colonies. This naturally aroused opposition and resentment, especially among the colonists themselves. Mr. Froude admitted afterwards, on visiting Australia, that the people seemed to have settled there with a determination to stay. He expressed his gratification at what he saw, and predicted a great future for the country.

For three years after Carlyle's death, in 1881, Mr. Froude was engaged on the *Reminiscences and Biography*, which caused such a sensation in the literary world at the time of their publication, as few books have ever done. But while most of our author's works have been censured for their indifference to truth, these have been criticised for publishing more truths of the *Carlyles* than the critics thought proper at such an early date.

Among Froude's other works were the *lives of Cæsar*, of *Bunyan*, and of *Beaconsfield*, and the "Short Studies on Great Subjects," that appeared from time to time throughout his life.

"The Two Chiefs of Dunboy" is an Irish historical romance, published in 1889, and Mr. Froude's only attempt at pure fiction. It shows that the rare narrative gift, the imagination, and the powerful portrayal of character that are so marked in his historical work, would also have made him a great writer of fiction, had he turned his talents in that direction.

Two or three years before his death, Mr. Froude was appointed by Lord Salisbury to succeed Mr. Freeman as *Regius*

Professor of Modern History at Oxford. Even this did not pass unchallenged in some quarters, but Mr. Froude during his tenure of the professorship seems to have justified the most sanguine expectations of his friends. From this appointment till the end, Mr. Froude was engaged on his last two works, "Erasmus," published just before, and "English Seamen," just after his death, in 1894. "Erasmus" is a most fascinating volume—being lectures delivered while holding the Oxford Professorship, but it is marred throughout by the same blemishes as are found in his earlier works. "Nowhere," says *The Quarterly Review*, "has Mr. Froude more felicitously displayed his rare literary skill. But nowhere has he more infelicitously displayed the inaccuracy which was his besetting sin."

In his estimates of men and things Froude was a pessimist. He could find real sincerity in almost none of our modern public men. With Carlyle, he had a strong dislike for Mr. Gladstone, whom he considered a striking example of the evil of oratory—a demagogue wheedling the people into all manner of unwise courses by his mellifluous eloquence—and as Froude used to say contemptuously, "popularizing himself by addressing the crowds from his railway carriage." Toward Beaconsfield he was rather more tolerant, but in his earlier years he considered him also a charlatan. For Mr. Chamberlain, however, he had a high admiration, and expected a great future for him.

This pessimism may be accounted for by the facts of Mr. Froude's life. Throughout his whole life, he had one long, hard struggle against adverse criticism, merited and unmerited. From his first leanings toward heterodoxy in his undergraduate days to his appointment to Oxford, not a single prominent act of his life passed uncensured. From his earliest contributions to the Tractarian movement to the publication of "Erasmus," not a single product of his pen passed into public favor save through the fiery ordeal of severest criticism. Such an experience could scarcely fail to produce a pessimist. In this feature also he resembled Carlyle, and this was doubtless one of the strong bonds of sympathy that drew them together. And in the case of each this pessimistic temper increased as they advanced in years. Everything with them was out of joint; national ruin was staring them in the face. In a letter written by Mr. Froude

in 1889, are words which echo exactly Carlyle's sentiments of twenty years before. Says Mr. Froude in this letter: "Age makes me indifferent to many things which once seemed interesting; and I grow daily more satisfied to sit still and see the world go by on its own way. It will not go a road which, in my opinion, will lead to the right place. The order of the day is disintegration—spiritual, moral, social and political. The process may be a harrowing of the ground preliminary to some new harvest in ages to come. But it is no beautiful thing to the present and the coming generation, and the cant about progress disgusts me."

Such, in brief outline, was the man and author, James A. Froude. How shall we estimate him? Not as a great world-hero, sure of immortality, nor as a transcendent genius born to lead men into higher paths and to nobler achievement. He was rather a humble successor of those great ones who had preceded him, and in his chosen field, himself "a workman that needeth not to be ashamed." In his personal character we find much that is admirable. He was a man of ardent patriotism, and worked always for the advancement of the empire—not only for the little island on which he lived, but also for the Greater Britain beyond the seas, in which he manifested the most lively interest. He was an eager, enthusiastic and conscientious worker. In social life he was kindly, but undemonstrative, and attracted many friends.

To say that Froude had faults is but to admit that he was human. His contempt for ecclesiastics, his violent and often unwarranted animosities toward men and movements of various kinds, are the unlovely sides of his character. This much, however, may be said truthfully, that Froude's faults are generally of the head rather than of the heart—mistakes of judgment rather than the manifestations of a mean disposition.

If his name live, it must be as an historian, but he was an historian of a strange kind. "With him," says Mr. Augustine Birrell, "the sermon was always more important than the text." Accuracy of detail was sacrificed in the desire for a certain desired general effect. Indeed some friendly critics have said that Froude should not be judged by the ordinary standards of history. "Froude wrote history," says Mr. Patchett Martin, "as a liter-

ary impressionist ; not as a philosophic chronicler. . . . He never disguised that his sympathies were strongly enlisted on one side. . . . And, if we consider this, we can hardly fail, I think, to appreciate not only his brilliance, but his devotion to what he regarded as truth."

Possibly the best summary of Mr. Froude's merits and demerits, as well as the best explanation of his popularity, is the one given by Prof. Goldwin Smith, with which this paper may very fittingly close :

"The gifts of pictorial and narrative power, of skill in painting character, of clear, eloquent and graceful language, Froude had in a degree which places him in the first rank of literary artists. That which he had not in so abundant measure was the gift of truth. Happily for him, nine readers out of ten would care more for the gifts of which he had the most than for the gift of which he had the least."

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