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BENJAMIN FRANKLIN: AS PRINTER AND PHILOSOPHER.[1]

THE facts about Franklin as a printer are simple and plain, but impressive. His father, respecting the boy's strong disinclination to become a tallow-chandler, selected the printer's trade for him, after giving him opportunities to see members of several different trades at their work, and considering the boy's own tastes and aptitudes. It was at twelve years of age that Franklin signed indentures as an apprentice to his older brother James, who was already an established printer. By the time he was seventeen years old he had mastered the trade in all its branches so completely that he could venture with hardly any money in his pocket first into New York and then into Philadelphia without a friend or acquaintance in either place, and yet succeed promptly in earning his living. He knew all departments of the business. He was a pressman as well as a compositor. He understood both newspaper and book work. There were at that time no such sharp subdivisions of labor and no such elaborate machinery as exist in the trade to-day, and Franklin could do with his own eyes and hands, long before he was of age, everything which the printer's art was then equal to. When the faithless Governor Keith caused Franklin to land in London without any resources whatever except his skill at his trade, the

[1] Address before the meeting of the American Philosophical Society to commemorate the two-hundredth anniversary of the birth of Benjamin Franklin, Philadelphia, April 20, 1906.

youth was fully capable of supporting himself in the great city as a printer. Franklin had been induced by the governor to go to England, where he was to buy a complete outfit for a good printing office to be set up in Philadelphia. He had already presented the governor with an inventory of the materials needed in a small printing office, and was competent to make a critical selection of all these materials; but when he arrived in London on this errand he was only eighteen years old. Thrown completely on his own resources in the great city, he immediately got work at a famous printing house in Bartholomew Close; but soon moved to a still larger printing house, in which he remained during the rest of his stay in London. Here he worked as a pressman at first, but was soon transferred to the composing room, evidently excelling his comrades in both branches of the art. The customary drink money was demanded of him, first by the pressmen with whom he was associated, and afterwards by the compositors. Franklin undertook to resist the second demand; and it is interesting to learn that after a resistance of three weeks he was forced to yield to the demands of the men by just such measures as are now used against any scab in a unionized printing office. He says in his autobiography: "I had so many little pieces of private mischief done me by mixing my sorts, transposing my pages, breaking my matter, and so forth, if I were ever so little out of the room * * * that, notwithstanding the master's protection, I found myself obliged to comply and pay the money, convinced of the folly of being on ill terms with those one is to live with continually." He was stronger than any of his mates, kept his head clearer because he did not fuddle it with beer, and availed himself of the liberty which then existed of working as fast and as much as he chose. On this point he says: "My constant attendance (I never making a St. Monday) recommended me to the master; and my uncommon quickness at composing occasioned my being put upon all work of dispatch, which was generally better paid. So I went on now very agreeably."

On his return to Philadelphia Franklin obtained for a few months another occupation than that of printer; but this employment failing through the death of his employer, Franklin returned to printing, becoming the manager of a small printing office, in which he was the only skilled workman and was expected to teach several green hands. At that time he was only twenty-one years of age. This printing office often wanted sorts, and there was no type-foundry in America. Franklin succeeded in contriving a mold, struck the matrices in lead, and thus supplied the deficiencies of the office. The autobiography says: "I also engraved several things on occasion; I made the ink; I was warehouse man and everything, and in short quite a factotum." Nevertheless, he was dismissed before long by his incompetent employer, who, however, was glad to reengage him a few days later on obtaining a job to print some paper money for New Jersey. Thereupon Franklin contrived a copper-plate press for this job—the first that had been seen in the country—and cut the ornaments for the bills. Meantime Franklin, with one of the apprentices, had ordered a press and types from London, that they two might set up an independent office. Shortly after the New Jersey job was finished, these materials arrived in Philadelphia, and Franklin immediately opened his own printing office. His partner 'was, however, no compositor, a poor pressman, and seldom sober.' The office prospered, and in July, 1730, when Franklin was twenty-four years old, the partnership was dissolved, and Franklin was at the head of a well-established and profit-

able printing business. This business was the foundation of Franklin's fortune; and better foundation no man could desire. His industry was extraordinary. Contrary to the current opinion, Dr. Baird of St. Andrews testified that the new printing office would succeed, 'for the industry of that Franklin,' he said, 'is superior to anything I ever saw of the kind; I see him still at work when I go home from the club, and he is at work again before the neighbors are out of bed.' No trade rules or customs limited or levied toll on his productiveness. He speedily became by far the most successful printer in all the colonies, and in twenty years was able to retire from active business with a competency.

One would, however, get a wrong impression of Franklin's career as a printer, if he failed to observe that from his boyhood Franklin constantly used his connection with a printing office to facilitate his remarkable work as an author, editor and publisher. Even while he was an apprentice to his brother James he succeeded in getting issued from his brother's press ballads and newspaper articles of which he was the anonymous author. When he had a press of his own he used it for publishing a newspaper, an almanac and numerous essays composed or compiled by himself. His genius as a writer supported his skill and industry as a printer.

The second part of the double subject assigned to me is Franklin as philosopher. The philosophy he taught and illustrated related to four perennial subjects of human interest: education, natural science, politics and morals. I propose to deal in that order with these four topics.

Franklin's philosophy of education was elaborated as he grew up, and was applied to himself throughout his life. In the first place, he had no regular education of the usual sort. He studied and read with an extraordinary diligence from his earliest years; but he studied only the subjects which attracted him, or which he himself believed would be good for him, and throughout life he pursued only those inquiries for pursuing which he found within himself an adequate motive. The most important element in his training was reading, for which he had a precocious desire, which was imperative and proved to be lasting. His opportunities to get books were scanty; but he seized on all such opportunities, and fortunately he early came upon the 'Pilgrim's Progress,' the *Spectator,* Plutarch, Xenophon's 'Memorabilia,' and Locke 'On the Human Understanding.' Practise of English composition was the next agency in Franklin's education; and his method—quite of his own invention—was certainly an admirable one. He would make brief notes of the thoughts contained in a good piece of writing, and lay these notes aside for several days; then, without looking at the book, he would endeavor to express these thoughts in his own words as fully as they had been expressed in the original paper. Lastly, he would compare his product with the original, thus discovering his shortcomings and errors. To improve his vocabulary he turned specimens of prose into verse, and later, when he had forgotten the original, turned the verse back again into prose. This exercise enlarged his vocabulary and his acquaintance with synonyms and their different shades of meaning, and showed him how he could twist phrases and sentences about. His times for such exercises and for reading were at night after work, before work in the morning, and on Sundays. This severe training he imposed on himself; and he was well advanced in it before he was sixteen years of age. His memory and his imagination must both have served him well; for he not only acquired a style fit for narrative, exposition or argument, but also

learned to use the fable, parable, paraphrase, proverb and dialogue. Thirdly, he began very early, while he was still a young boy, to put all he had learned to use in writing for publication. When he was but nineteen years old he wrote and published in London 'A Dissertation on Liberty and Necessity, Pleasure and Pain.' In after years he was not proud of this pamphlet; but it was, nevertheless, a remarkable production for a youth of nineteen. So soon as he was able to establish a newspaper in Philadelphia he wrote for it with great spirit and in a style at once accurate, concise and attractive, making immediate application of his reading and of the conversation of intelligent acquaintances on both sides of the ocean. His fourth principle of education was that it should continue through life, and should make use of the social instincts. To that end he thought that friends and acquaintances might fitly band together in a systematic endeavor after mutual improvement. The Junto was created as a school of philosophy, morality and politics; and this purpose it actually served for many years. Some of the questions read at every meeting of the Junto, with a pause after each one, would be curiously opportune in such a society at the present day. For example, No. 5, 'Have you lately heard how any present rich man, here or elsewhere, got his estate?' And No. 6, 'Do you know of a fellow-citizen * * * who has lately committed an error proper for us to be warned against and avoid?' When a new member was initiated he was asked, among other questions, the following: 'Do you think any person ought to be harmed in his body, name or goods for mere speculative opinions or his external way of worship?' and again, 'Do you love truth for truth's sake, and will you endeavor impartially to find, receive it yourself, and communicate it to others?' The Junto helped to educate Franklin, and he helped greatly to train all its members.

The nature of Franklin's own education accounts for many of his opinions on the general subject. Thus, he believed, contrary to the judgment of his time, that Latin and Greek were not essential subjects in a liberal education, and that mathematics, in which he never excelled, did not deserve the place it held. He believed that any one who had acquired a command of good English could learn any other modern language that he really needed when he needed it; and this faith he illustrated in his own person, for he learnt French, when he needed it, sufficiently well to enable him to exercise great influence for many years at the French court. As the fruit of his education he exhibited a clear, pungent, persuasive English style both in writing and in conversation—a style which gave him great and lasting influence among men. It is easy to say that such a training as Franklin's is suitable only for genius. Be that as it may, Franklin's philosophy of education certainly tells in favor of liberty for the individual in his choice of studies, and teaches that a desire for good reading and a capacity to write well are two very important fruits of any liberal culture. It was all at the service of his successor Jefferson, the founder of the University of Virginia.

Franklin's studies in natural philosophy are characterized by remarkable directness, patience and inventiveness, absolute candor in seeking the truth, and a powerful scientific imagination. What has been usually considered his first discovery was the now familiar fact that northeast storms on the Atlantic coast begin to leeward. The Pennsylvania fireplace he invented was an ingenious application to the warming and ventilating of an apartment of the laws that regulate the movement of hot air. At the age of forty-one he became interested

in the subject of electricity, and with the aid of many friends and acquaintances pursued the subject for four years, with no thought about personal credit for inventing either theories or processes, but simply with delight in experimentation and in efforts to explain the phenomena he observed. His kite experiment to prove lightning to be an electrical phenomenon very possibly did not really draw lightning from the cloud; but it supplied evidence of electrical energy in the atmosphere which went far to prove that lightning was an electrical discharge. The sagacity of Franklin's scientific inquiries is well illustrated by his notes on colds and their causes. He maintains that influenzas usually classed as colds do not arise, as a rule, from either cold or dampness. He points out that savages and sailors, who are often wet, do not catch cold, and that the disease called a cold is not taken by swimming. He maintained that people who live in the forest, in open barns, or with open windows, do not catch cold, and that the disease called a cold is generally caused by impure air, lack of exercise or overeating. He came to the conclusion that influenzas and colds are contagious—a doctrine which, a century and a half later, was proved, through the advance of bacteriological science, to be sound. The following sentence exhibits remarkable insight, considering the state of medical art at that time: "I have long been satisfied from observation, that besides the general colds now termed influenzas (which may possibly spread by contagion, as well as by a particular quality of the air), people often catch cold from one another when shut up together in close rooms and coaches, and when sitting near and conversing so as to breathe in each other's transpiration; the disorder being in a certain state." In the light of present knowledge what a cautious and exact statement is that!

There being no learned society in all America at the time, Franklin's scientific experiments were almost all recorded in letters written to interested friends; and he was never in any haste to write these letters. He never took a patent on any of his inventions, and made no effort either to get a profit from them, or to establish any sort of intellectual proprietorship in his experiments and speculations. One of his English correspondents, Mr. Collinson, published in 1751 a number of Franklin's letters to him in a pamphlet called 'New Experiments and Observations in Electricity made at Philadelphia in America.' This pamphlet was translated into several European languages, and established over the continent—particularly in France—Franklin's reputation as a natural philosopher. A great variety of phenomena engaged his attention, such as phosphorescence in sea water, the cause of the saltness of the sea, the form and the temperatures of the Gulf Stream, the effect of oil in stilling waves, and the cause of smoky chimneys. Franklin also reflected and wrote on many topics which are now classified under the head of political economy,—such as paper currency, national wealth, free trade, the slave trade, the effects of luxury and idleness, and the misery and destruction caused by war. Not even his caustic wit could adequately convey in words his contempt and abhorrence for war as a mode of settling questions arising between nations. He condensed his opinions on that subject into the epigram: 'There never was a good war or a bad peace.'

Franklin's political philosophy may all be summed up in seven words—first freedom, then public happiness and comfort. The spirit of liberty was born in him. He resented his brother's blows when he was an apprentice, and escaped from them. As a mere boy he refused to attend church on Sundays in accordance with the custom of

his family and his town, and devoted his Sundays to reading and study. In practising his trade he claimed and diligently sought complete freedom. In public and private business alike he tried to induce people to take any action desired of them by presenting to them a motive they could understand and feel—a motive which acted on their own wills and excited their hopes. This is the only method possible under a régime of liberty. A perfect illustration of his practise in this respect is found in his successful provision of one hundred and fifty four-horse wagons for Braddock's force, when it was detained on its march from Annapolis to western Pennsylvania by the lack of wagons. The military method would have been to seize horses, wagons and drivers wherever found. Franklin persuaded Braddock, instead of using force, to allow him (Franklin) to offer a good hire for horses, wagons and drivers, and proper compensation for the equipment in case of loss. By this appeal to the frontier farmers of Pennsylvania he secured in two weeks all the transportation required. To defend public order Franklin was perfectly ready to use public force, as, for instance, when he raised and commanded a regiment of militia to defend the northwestern frontier from the Indians after Braddock's defeat, and again when it became necessary to defend Philadelphia from a large body of frontiersmen who had lynched a considerable number of friendly Indians, and were bent on revolutionizing the Quaker government. But his abhorrence of all war was based on the facts, first, that during war the law must be silent, and secondly, that military discipline, which is essential for effective fighting, annihilates individual liberty. "Those," he said, "who would give up essential liberty for the sake of a little temporary safety deserve neither liberty nor safety." The foundation of his firm resistance on behalf of the colonies to the English Parliament was his impregnable conviction that the love of liberty was the ruling passion of the people of the colonies. In 1766 he said of the American people: "Every act of oppression will sour their tempers, lessen greatly, if not annihilate, the profits of your commerce with them, and hasten their final revolt; for the seeds of liberty are universally found there, and nothing can eradicate them." Because they loved liberty, they would not be taxed without representation; they would not have soldiers quartered on them, or their governors made independent of the people in regard to their salaries; or their ports closed, or their commerce regulated by Parliament. It is interesting to observe how Franklin's experiments and speculations in natural science often had a favorable influence on freedom of thought. His studies in economics had a strong tendency in that direction. His views about religious toleration were founded on his intense faith in civil liberty; and even his demonstration that lightning was an electrical phenomenon brought deliverance for mankind from an ancient terror. It removed from the domain of the supernatural a manifestation of formidable power that had been supposed to be a weapon of the arbitrary gods; and since it increased man's power over nature, it increased his freedom.

This faith in freedom was fully developed in Franklin long before the American Revolution and the French Revolution made the fundamental principles of liberty familiar to civilized mankind. His views concerning civil liberty were even more remarkable for his time than his views concerning religious liberty; but they were not developed in a passionate nature inspired by an enthusiastic idealism. He was the very embodiment of common sense, moderation and sober honesty. His standard of human society is perfectly expressed in the

description of New England which he wrote in 1772: "I thought often of the happiness in New England, where every man is a freeholder, has a vote in public affairs, lives in a tidy, warm house, has plenty of good food and fuel, with whole clothes from head to foot, the manufacture perhaps of his own family. Long may they continue in this situation!" Such was Franklin's conception of a free and happy people. Such was his political philosophy.

The moral philosophy of Franklin consisted almost exclusively in the inculcation of certain very practical and unimaginative virtues, such as temperance, frugality, industry, moderation, cleanliness and tranquility. Sincerity and justice, and resolution—that indispensable fly-wheel of virtuous habit—are found in his table of virtues; but all his moral precepts seem to be based on observation and experience of life, and to express his convictions concerning what is profitable, prudent, and on the whole satisfactory in the life that now is. His philosophy is a guide of life, because it searches out virtues, and so provides the means of expelling vices. It may reasonably determine conduct. It did determine Franklin's conduct to a remarkable degree, and has had a prodigious influence for good on his countrymen and on civilized mankind. Nevertheless, it omits all consideration of the prime motive power, which must impel to right conduct, as fire supplies the power which actuates the engine. That motive power is pure, unselfish love—love to God and love to man. "Thou shalt love the Lord thy God with all thy heart * * * and thy neighbor as thyself."

Franklin never seems to have perceived that the supreme tests of civilization are the tender and honorable treatment of women as equals, and the sanctity of home life. There was one primary virtue on his list which he did not always practise. His failures in this respect diminished his influence for good among his contemporaries, and must always qualify the admiration with which mankind will regard him as a moral philosopher and an exhorter to a good life. His sagacity, intellectual force, versatility, originality, firmness, fortunate period of service, and longevity combined to make him a great leader of his people. In American public affairs the generation of wise leaders next to his own felt for him high admiration and respect; and the strong republic, whose birth and youthful growth he witnessed, will carry down his fame as political philosopher, patriot and apostle of liberty through long generations.

CHARLES W. ELIOT.

AN EMPIRICAL STUDY OF COLLEGE ENTRANCE EXAMINATIONS.

EVERY one who is acquainted with the present arrangements for admission to college through entrance examinations recognizes the need for accurate information concerning the exact function served by them. The expenditure of energy by students and teachers in the course of specific preparation for these examinations, by students and their parents in worry before and after, by college admission boards in preparing, giving, scoring and recording such examinations is obvious. The opinions of supposedly equally competent observers range from certainty that such examinations have no correspondence with intellectual merit to equal certainty that they are a reliable measure of fitness for college and a chief safeguard of the standards of collegiate work. The practises of the fifty most efficient colleges in the country vary from a practically absolute requirement of such examinations as the condition of entrance to the freshman year to an exemption of almost every candidate from any such examination.

The present report will not offer any opinions concerning the general rationality