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ALBRECHT VON HALLER

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Albrecht von Haller

A Physician—Not
Without Honor

By
Charles Bert Reed, M. D.



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FOREWORD

Now the work being finished, there remains only the pleasant duty of naming those whose friendly interest has made it worth while.

In the preparation of the paper valuable assistance was given by J. C. Bay of the John Crerar Library. He brought to light much important material from his own and the Crerar collections which could be utilized in text and illustration.

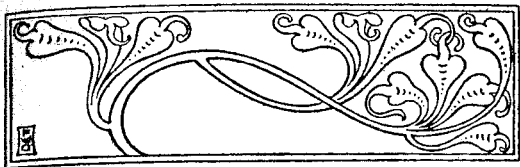
Prof. Thompson and Dr. Harpole also read the manuscript and contributed valuable suggestions from professional standpoints.

To Payson S. Wild I am deeply indebted for books and pamphlets sent from abroad, and especially for the skillful metric translations which add so much to the spirit of the paper.

Finally, it would be ungracious to let this opportunity pass without thanking the mem-

bers of the Chicago Literary Club for their generous appreciation and unstinted encouragement. To the intellectual stimulation of this fellowship it is due that my essays in literature have been a constant source of pleasure and mental growth. I trust the consciousness of this good deed may not be their sole reward.

C. B. R.



ALBRECHT VON HALLER



HE insurrection of the human mind against authority is a fascinating theme. Like a mighty shuttle the necessity for mental freedom sweeps across the loom of tradition. Yet somewhere in each fateful advance appears a certain knot or coil where the web of effort is intricately entangled. It is this knot which differentiates and symbolizes the epoch, and by reason of its definite recurrence and high historic importance the knot serves well to evoke the figure of the Weaver—the man who stands forth as the living embodiment of the idea and the master of its evolution.

In the Fifteenth Century this knot was called the Renaissance. It was a true rebellion in literature and Erasmus was pre-eminently its representative.

The unrest of the Renaissance broadened and deepened until it passed over into the

next century, where it merged into and augmented the "drums and tramlings" of a new conquest—the Reformation. This uprising was spiritual, the conflict centered in Germany, and some fundamental essence compelled one man, Luther, to withstand the world in arms.

Next came the struggle for political liberty in the Seventeenth Century. It was conducted on the Continent by William, Prince of Orange, but attained its greatest strength and intensity in England. Naturally Cromwell dominates this era, which ended with the flight of James II in the "great revolution" of 1688.

The intellectual agitation of the Eighteenth Century was prolonged into the Nineteenth, where it culminated, and the results became more clearly discernible. It was then generally recognized that the problems of the inner man and of a spiritual nature were less pressing and imperative, even from an orthodox standpoint, while man himself was far more independent in pursuit of truth. He acquired a new and infinitely deeper knowledge of Nature's workings, and Nature herself became more and more a matter of human interest. The tendency was toward work and industrial efficiency—toward the essential quality of things in their objective relationships. The advance was slow, but after much dust and heat it

terminated in the victory of science under the leadership of Darwin.

Our own times are devoted to the elaboration of the same eventful principles. Science and materialism still maintain their hard-won ascendancy, but both are warmed and animated by the highest form of idealism. This century has already initiated the upheaval that will mark its place in the history of thought. As a result of this cosmic stress the spirit of man shall come into its own, freed from medieval statecraft and medieval superstition. The epoch now in making will be signalized by posterity through the final extinction of paternalism, through the unshackling of parliaments and peoples, through the emancipation of the individual, especially of woman, and by the projection, if not the solution, of the problems which develop from these belated steps toward social justice. Time alone can designate the leader.

Numerous instances might be found in history to amplify and illustrate this theory, and while it may not be wise even empirically to derive a law from evidence so slight, yet we may at least call attention to the remarkable regularity with which the history of humanity can be divided into epochs, each epoch being ruled by a single, dominant idea—its *motif*—and personalized by a leader who represents the spirit of his time

and consciously or unconsciously enacts it. Even as the mighty planets evolved from a mist and, according to Bode's law, sweep through the heavens at definitely proportioned intervals, subject only to the perturbations inherent in their system, so Time and Nature distill from out the lees and froth of common humanity some wondrous character of a potent and reviving property. He appears on the stage at the very crisis of affairs and compels success. Why such universal travails of the soul have their Luthers, their Cromwells, and their Darwins, is beyond conjecture, but the fact is patent.

The Eighteenth Century was no less notable than its fellows for an extraordinary intellectual activity, and here, strangely enough, Nature presented a striking parallel in human progress to the Bode-an law of the heavens.

Between the Mars of the Seventeenth Century and the Jupiter of the Nineteenth appeared a group of asteroids. Where one would expect a solitary world of inconceivable magnitude to pursue its solemn journey through space, it was found that twenty or more giant figures—shall we call them fragments—reflected the light of this glittering, fractured, many faceted, but highly auspicious age. Most of these men are familiar to us and have received their due of praise from a grateful posterity, while others of

equal or even superior grandeur have been lost to sight.

When one considers the hot passions of this time, not described, but in the white heat of performance, the name of Voltaire is involuntarily pronounced. To the majority of present-day readers, he is the bright luminary of the so-called "Philosophic Century." This can hardly be unexpected, for everybody in the full tide of the period had to do with Voltaire, from serious fate-compellers, like Frederick the Great, to the veriest poetaster who sent his verses to him for correction. Nor is it admissible in any degree to minimize the importance of his work, nor to deny that whatever spiritual accomplishments were most generally valued in that age were fittingly represented by the protégé of Ninon de l'Enclos. Nevertheless it is important for our argument to note that, in spite of Voltaire's pervasive activity, his bitterest antagonism was directed against the dogmatic domination of organized religion, and so it is more logical to regard him as a belated champion of the Reformation than as the standard-bearer of the Aufklärung.

For swift influence on the general intelligence of the world this ubiquitous warrior probably has no equal, but we cannot agree with Carlyle, that to abstract Voltaire and his handiwork from the strange, ungodly

age of Louis XV, would produce a greater difference in the existing figure of things than the want of any other individual up to this day could have occasioned. However, the claim is worthy of consideration.

The "Aufklärung" or "Enlightenment" was one of the most interesting stages in history. It represented the emergence of scientific thought as a compelling force in the understanding of Nature, and no period has been so luxuriant in the increase of knowledge, nor so affluent in stores of specific intelligence. It was, in effect, the self-confident revolt of the trained human intellect against tradition for tradition's sake, and against whatever that intellect holds to be superstition or prejudice. In this search for truth every veil was torn away and realities were denied even the softening haze of dreams.

The century began inconspicuously, but underneath was a ferment destined to produce a decomposition of the social system. The time was working on the soul of man.

Into the chaos of rebellion against the Church in the Sixteenth Century and the political regeneration of the Seventeenth were introduced the stimulating theories of the philosophers. While Descartes must not be overlooked, it was the English thinkers—Bacon, Hobbes, Hume, and Locke—whose ideas spread to the continent and set

the stage for a new drama of the mind. Metaphysics was rejected *in toto*. Individualism, reason, utility, toleration, and the separation of the functions of government, provided the basis for a materialistic and experiential doctrine. Reason and experience were the sole guides of conduct—"the political Bible of the Eighteenth Century."

Against the entrenchments of authority the fight was waged, and along the embattled front gleamed no falchion so keen, so terrible, so destructive, as Voltaire's. But it was destructive. In this lies at once the strength of his reputation and the weakness of his claim upon later generations. The destroyer is ever the foremost figure, dramatic and conclusive, that clutches the minds of men. The name of Tamerlane and his pyramid of 70,000 human skulls is not unfamiliar, but who remembers Johannes Faust? As Sir Thomas Browne says: "Herrostratus lives that burnt the temple of Diana; he is almost lost that built it."

Thus while it may seem invidious to distinguish among the numerous sceptered souls who have claim to eminence, it is time to name the man who represents most fully the swirling thought-currents of that ebullient age.

In modern times few outside of scientific circles recall the name, much less the

achievement, of that universal genius, Albrecht von Haller, surnamed the Great. If we were to choose one man to stand as the protagonist of the mental energy of this epoch, who could fulfill the conditions so well as he, with the greatest brain of this, or possibly any time? His versatility, eagerness, activity, and profundity; the immense range of his curiosity and interests, and his commanding place in all things social, literary, scientific, and political, make him easily a hero.

If we think of the Eighteenth Century merely as an age of incisive thinking, of materialism and anthropolatry, an age of conscientious clearness, of polish, of self-conceit, as well as skepticism, then Carlyle is right and Voltaire is its chief exponent and representative. But while the conflict with authority was carried on outwardly by the polemics of Voltaire and the literary industry of the Encyclopedists, the predominant features, the essential facts of the movement, were the peremptory spirit of free enquiry, together with laborious research and broad systemization. The results of these efforts were utilized by Voltaire and his associates as sturdy weapons of offense. The best minds were inflamed by an inexhaustible and universal curiosity. It was not sometimes in politics and sometimes in religion, as formerly, but in relig-

ion, in politics, philosophy, man and society, moral and physical sciences, all, everything, became at once the object of study, doubt, and system. In all this it was Haller who was the High Priest; he not only attended the altar, but developed the ceremonials. He was the paragon and epitome of the period. He lived his religion and exemplified it. Voltaire only preached. Haller was unconscious while Voltaire was—quite the reverse.

In this advent of European manhood and triumphal learning, old systems were overturned and new ones erected in every department of knowledge. Government was submerged and the human mind rose up as the principal and almost the sole actor.

If we accept these ideals of the "Aufklärung" as historic and valid, then it is only necessary to review Haller's intellectual performance to show wherein and how fully he represented them.

His life divides naturally into three parts.

First, his youth of imagination and poesy, the period of subjective mind and exaggerated emotionalism.

Second, the growth into scientific maturity, the dominance of the intellect and reason, in which subjective impulses still fed and flagellated the faculties; and finally, the combination of both to produce that supreme executive ability which crowned his age.

Near one of the sources of the Rhine, which slakes the thirsty German land, was born the genius who supplied the vast flood of literary and scientific thought that dominated not only Germany and all the neighboring states during his active years, but also left ineffaceable traces of his power on succeeding generations.

The blue waters of the River Aar wind round the feet of the sandstone heights of Bern; Bern with its fountains, its den of bears, its wonderful clock, its headsman's axes, and its seven hundred and fifty halters which Charles the Bold was compelled to yield into the hands of the citizens for whose necks they were prepared. High it stands above other cities, but not so high as the snow-capped giants of the Bernese Alps which ring it round and gird it about with shifting glories of orange and pink.

In the Eighteenth Century Bern was not so important in literature as Zürich, with Pestalozzi and its family of Scheuchzers; nor in mathematics as Basel, with its Bernoulli; nor yet as Geneva, famous for Calvin and Rousseau; but Bern was destined, although unwillingly, to acquire distinction from Haller.

Haller's father was a student of varied tastes. He had written some poetry. He held office in the council and belonged, therefore, to the aristocracy—the aristoc-

racy which ruled in oligarchic Bern, but-tressed and secure from the proverbial inconstancy either of the court or the multitude.

Albrecht von Haller was born in 1708. Like many other men of genius, his infancy was sickly and feeble. He had rickets, which retarded his physical, even as it accentuated his mental, development. Driven in upon himself for entertainment he studied, read, and drew designs at the precocious age of four. From the window of his lonely house beside the Aar he looked out on the mighty forest and received from it and the majestic Alps his first spiritual impressions. Then, too, the political and social unrest must have stirred and stimulated his susceptible mind. The War of the Spanish Succession had just ended and over all the highways of Europe drifted the broken and homeless fugitives. Emigrants and expatriates wandered desolately, but each paused long enough to tell his tale to some inquisitive citizen of Bern. Such an environment must have aided largely to expand the horizon and mould the character of young Haller.

As with Mozart, Macaulay, Goethe, Leibnitz, and others, the most extraordinary things are told of Haller's ability and greed for knowledge. During his childhood he outstripped all his companions. By the end

of his ninth year he was thoroughly familiar with the Greek Testament. He made a lexicon of the Greek and Hebrew words in the Old and New Testaments, with their different roots and meanings. He made a grammar of Chaldee. He assembled the lives of 2000 celebrated people, on the model of Bayle and Moreri, whom he had read. Unlike most boys he preferred long and exhaustive treatises with interminable sentences and no paragraphs. His unusual industry, his fiery zeal to educate himself, and his unlimited patience seemed to make nothing impossible. He, also, "took all knowledge for his province."

He early began to exhibit the exceptional understanding, the unfailing memory, the tireless industry and the impulses thereto, that characterized his entire life. He entered upon his emotional period at the age of twelve. At this time, while sick with smallpox, he was inspired with love toward the young lady who read aloud to him, and to her he dedicated his first poem. It was written in French, and appropriately named "The Resolution to Love."

After the death of his father, Haller moved nearer the city and entered the gymnasium. His thesis for admission was in Greek, although Latin was sufficient. He wrote much and after the manner of all aspirants to eminence he aped sedulously the

form of some admired exemplar. Homer, Horace, Ovid, and Virgil were his familiars. Homer for romance and Virgil as the model for his verses. Being chained to his room often and long by reason of his feeble constitution, he took refuge in poetry, which he read and practiced in all the tongues he knew. He wrote poems of occasion, tragedies, translations of Ovid, Horace, and two books of Virgil, together with an epic of 4000 lines on the "Origin of the Swiss Union of States."

At the age of fourteen he left Bern and went to live with a friend of his family at Biel. This friend was a Cartesian and a doctor of medicine. By his influence the boy was turned from theology, for which his father had intended him, to science, yet the arbitrariness of his friend's philosophy offended the youthful Haller. After a year at Biel the desire to begin his career became too strong and, in search of medical instruction, he went first to Bern and thence to Tübingen. The empty life of the students in the latter city disgusted him and he travelled to Holland to study under the renowned Boerhaave, at the University of Leyden.

At that time Boerhaave was in the fullness of his power. His learning spread over medicine, chemistry, botany, theology, physics, and mathematics. The skillful ap-

plication of his knowledge added much to his fame, while his persuasive eloquence affected Haller deeply. It was Boerhaave who guided him to highest truth. It was Boerhaave who filled his mind with noble and graceful images, and he always acknowledged his debt as incalculable. At Leyden, too, he met the younger Albinus, a famed anatomist, and Ruysch, also an anatomist, who became his teacher although ninety years of age. He visited the Botanical Garden, the most celebrated in Europe, botanized in the neighborhood or visited adjoining countries and such cities as Berlin, at this time famous for its giant guards. All this, however, did not prevent attacks of homesickness, to which he and his family were peculiarly susceptible. The result of one such emotional disturbance was a poem called "Remembrance of Home." It was a deep outburst of longing for his native city, the object of his life-long devotion. Unhappily, this love for his native city was not returned nor appreciated, and his whole brilliant career was watched with shaded eyes and envious hearts by the ignorant and bumptious citizens of Bern.

His medical course was near its end and in 1727 he presented his thesis. It was a confutation by dissection of the supposed discovery of a new salivary duct which had been advanced by Coschwitz, the eminent

surgeon and anatomist. Haller, the boy of nineteen, proved it to be a vein. A month before he graduated and left Leyden he composed a hymn of great beauty entitled "Morning Thoughts." It is in praise of the omnipotence of the Creator, and it is said to be one of the most impressive poems in the German language.

He now sought to enlarge his knowledge of science and the world by foreign travel. Drawn by the fame of Newton and the renown of the English philosophers he went directly to London. On the first day he visited Turks Head Tavern, which we hope, though we cannot be sure, was the one wherein *the* Literary Club was founded thirty-six years later. First to the coffee house, and afterward to the hospitals. What more is needed to show his mental leanings at this time? Then too he was curiously attracted by the life of the watermen on the Thames, and many interesting observations on persons and places, politics and science, are set forth in his diary. He met Sloane, president of the Royal Society and founder of the British Museum; Cheselden, the noted surgeon, and Daniel De Foe. The freedom of speech and writing, the apparent wealth and good government, the sturdy character of the people, and their praise and respect for learning, impressed him deeply. He happened to arrive just at the time of

Newton's funeral and was greatly moved by the vast concourse who mourned the dead scientist.

A month later he went to Paris. Here he met Winslow ("Foramen Winslowii") the well known anatomist, and Le Dran, the foremost surgeon. His enthusiastic but un-circumspect pursuit of anatomy involved him in trouble with the authorities and he left hurriedly after five months' stay.

From Paris he travelled to Basel, where with Joh. Gessner, a fellow student from Leyden, he joined the class of Bernouilli in mathematics. In a time when mathematics was a specialty Bernouilli was the most celebrated thinker, and the stimulation of this brief association remained with Haller for many years. In Basel, too, the muse was not to be denied. There was no waiting at the altar for fire to descend, but his whole white-hot soul flamed out in song. His spirit, however, had broadened. The poets of England had left their influence. Besides endowing him with a richer rhetoric and a more musical phrase, he was impelled to show that the German tongue was just as effective as the English in conciseness and depth of philosophical expression. The poetry of the period dealt in all the questions of the "Aufklärung," the "Origin and Nature of Man," "The Unity and Division between Faith and Knowledge,"

"The True Faith," "The Greatest Innocence," "The Origin of Evil," and "The Value of Culture." On every side was the shock of contest—the incessant din of theological controversy, and Haller expressed these ideas in verse. All were reflective and deeply melancholy, so much so that one of his friends wrote, "Your serious, death-bed thoughts have greatly edified me."

In 1728 with one companion he went into the Alps "to see nature and not man nor his works." Here he conceived the idea of identifying, grouping and tabulating the plants of the Swiss Alps. The plan matured twelve years later, but the journey had another and more immediate consequence. Haller had long admired those torn and ruptured cliffs, the sea of snowy ridges, and jagged peaks that dwell above the waves of mist. Gradually his affection grew and strengthened until it was transfused into his very being. His spirit poured itself out in song, so melodiously and yet so ruggedly that it seemed to flow from a fountain in the rock and to carry with it a portion of the poet's own lofty soul. This, his most famous poem, was called "Die Alpen." To be the poet of the waste places of creation—to adopt as his own the orphans of that mighty mother, or rather to wed and introduce to the world her neglected daughters, was now a mission with Haller. Never did

the thought leave him that God made everything beautiful and for a purpose. The glacier and the gentian, the foaming cascades and snowy crystals—one and all confirmed our young scientist in his worship of the mysteries of nature.

This Rousseau-like poem compared the low morality of his native town with that of the elder Swiss heroes; he describes the inhabitants of the Alps not as peaceful Arcadian shepherds, but as children of nature, honest and unsophisticated. He praises their high ideals and good-natured, if rude, festivities. He pictures a beautiful landscape surrounded by the Alps as a natural defense against external evil. Winter approaches and you enter a hut high up in the mountains. Three generations gather around the fireplace—a young poet of nature sings his simple melodies, and three older ones follow in turn. One speaks of the wonders that lie about them, and the others tell stories of heroism in the ancient battles and praise the intrepidity of Tell. The poem was not only the first in the German language to call attention to the beauties of nature, but it converted the Alps from things of horror and fear to places of physical and mental recreation which have attracted more attention and affection with each succeeding year. Nor does it seem too much to claim as a direct influence of this work that we have

in English literature those wonderful Alpine pictures in Shelley's "Prometheus," in Wordsworth's "Prelude" (sixth book), in Coleridge's "Hymn before Sunrise in the Vale of Chamounix," and the matchless Alpine landscape in Byron's "Manfred." Haller's verse was by choice Alexandrine, with strongly marked caesuras and little or no metrical freedom. He broadened and deepened his effect by careful choice of words and an artistic mingling of his material. The richness of his talent shows best in this poem. We have the privilege of quoting a few lines translated by Payson S. Wild:

"When now rude Boreas his windy realm forsaketh,
And swelling buds attest all nature's quickening;
When earth her bosom bare a thing of beauty maketh
With jewels hither borne on Zephyr's genial wing;
Then fare the sturdy folk forth from their vales
detested,
Where lingers yet the ice in turbid rill and burn,
And clamber up the heights eftsoon with green
invested
To seek in melting snows the early fronds of fern.
The kine their stables quit, and greet with joy the
hills,
Which spring, in their behalf, with grass and herb-
age fills.

"Now hardly hath the lark proclaimed the morning's
breaking,
And light of lights appeared above horizon's rim,
When forth the cowherd hies, of mistress fond
leave taking,
Who scarce his absence bears, nor yet delayeth
him.
His sluggish herd of cows, full bellied, gently low-
ing,

He driveth on and up along the dewy way;
Now here they stray, now there, where fresh tre-
foil is blowing,
And crop with eager tongue the tender shoots of
May.
But he himself reclines by some clear waterfall,
And with his rustic horn loud echoes doth recall."

About this time Haller finished another poem which typifies the mental interests that then prevailed. It is entitled "Thoughts upon Reason, Superstition, and Unbelief." The poem was written from the usual Orthodox standpoint. Like much of Voltaire's verse, it was composed during an illness while fever was at its height—the time, as he confesses, when his verse flowed most freely. Another poem, entitled "The Duplicity of Human Virtue," was the result of an attack of measles. Happily he did not restrict himself entirely to these intellectual and religious problems. In order to show the range of his art let us quote a couple of stanzas from Taylor's translation of the "Invocation to Doris," whom he afterwards married, and compare it with the work of some of our modern sentimentalists:

XI

When beauty yields to constant swain,
Consents to wear the myrtle chain,
She lives for him who lives for her,
But seems to chide the asking eyes,
Still promises what she denies,
And sweetly wavers — to confer.

XII

When — but let not tongue aspire,
To tell the melting of desire.
'Tis what the tongue can never paint,
Nor sweetest smile, nor swimming eyes,
Nor the pressed bosom's softest sighs —
E'en fancy's glowing dream is faint.

It was in 1730, with this poem of twenty-two verses, that Haller inaugurated in Germany the movement which was to reach its height fifty years later in the ringing melodies of Burns.

During the next winter he gave lectures and demonstrations on anatomy at Basel, in place of his teacher. In the spring he returned to Bern, where his thorough knowledge, broad scholarship, and influential connections seemed to assure him an immediate success. His practice increased, but he kept up his botanical enthusiasm. Ten miles a day he averaged over hill and valley in search of specimens, which he identified and wrote up in the evenings or during meals. Meanwhile his vast and various powers were fed with the most extensive, the most accurate, and the most elaborate study of botany, anatomy, and medicine. Not a moment was wasted. He reread the Greek and Latin writers wherever he happened to be — at the table, on promenade, and on horseback, and the major portion of his wedding day was spent upon an abstruse problem in Differential Calculus.

In 1732 his verses appeared in book form anonymously. He was then twenty-four years of age, and with a few inconsequential changes in words or form the volume reached the twelfth edition before the end of his life, and was translated into every European language. His anonymity was but thinly disguised and appreciation came at once from all sides. This volume was a landmark in German poetry.

He now began to reflect on his travels and to compare other cities with Bern, and even his patriotism could not excuse the astonishing difference. All about him was the nepotism of a corrupt aristocracy. Provincialism was supreme—non-progressive and complacent. It was a time of religious confusion and ecclesiastical intolerance. The schools were devoted more to theology than to religion, more to pedantry than to learning. The envious and the theological assailed his verses with a personal hostility. Without paying much attention either to the critics or his enemies, he now couched his first lance against Voltaire, the object of his keen and life-long aversion. His reply to the "Letter to Uranie" was the result of an antipathy in one particular between men who might have found many points of sympathy. Both, in early youth, believed in the controlling church as compared with rebellious, independent thought. Both,

in youth, wrote sharp satires about the moral and civic degeneration of the fatherland. Both went to England and became imbued with admiration for the great author of "*Principia*" and for the English philosophers, whose theories they accepted and whose methods they approved. Both exalted religion above dogma, but Haller was a reverent and sincere thinker, a "God-intoxicated man" and a devout seer of science, while Voltaire was an image breaker, an exploiter of self. Voltaire was a whirlwind of cynicism with no respect for anything in Heaven or on earth, except the uniform caesura of the Alexandrine. "He slew not with authority but with satire—not with the rod but with laughter."

It was a difference not only of opinion and temperament, but of type, for Haller's qualities were more comprehensive. He had business to do in the veins of earth as well as in the azure heights of air. His predecessors sought to study man from above—from the great throne—he included the tiny footstool and failed not to scrutinize the minutest subdivisions of matter.

It was with the appearance of the second edition of Haller's verses in 1734 that a new epoch begins. His powerful imagination is restrained, but it gives noble proofs of its vigor. Its protean excursions are controlled by a judicious and critical intellect. He

passes from subjectiveness to objectiveness. He rises from poetry to science. From the vague emotionalism of Plato, filled with spirit promptings, he merges into an Aristotelianism that acquires for men not only much knowledge but shows the way for gaining more.

For three years he had practiced medicine but his success created widespread jealousy, for his ideas of disease were based on anatomy and physics, and his therapeutics on chemistry and botany, which was reason enough for his opponents to consider him a ridiculous original. He became even more active in science both as a teacher and research man. He had already acquired a European reputation in botany when in 1773 he issued the first of his long and brilliant series of Anatomical Studies. It was a dissertation on the diaphragm which, both at home and abroad, brought instant recognition of his extraordinary capacity.

By "at home" we mean neighboring cities, for at Bern the unfriendliness of the citizens toward their "Wunderkind" was undiminished. But though unappreciated at Bern the Academy of Science at Upsala awarded him a Fellowship. This was no permanent satisfaction to Haller. He was eager to enter upon a responsible career in which his scientific enthusiasm could have full scope. He therefore applied for the position of

directing doctor of the great city hospital at Bern, which had just become vacant. This post was refused, not for lack of knowledge, address, or skill, but, forsooth, because he was a poet and did not confine his mind to medical subjects.

However, to placate his friends, who were furious at this rejection, the Council authorized the erection of an anatomical theatre and put him in charge. In a short time another position became vacant. It was the chair of eloquence and history at the University, indeed, but to Haller anything was an opportunity. If he could not secure an influential place as professor in medicine or botany, why not in history? He was more familiar with classic literature probably than any one in Bern, and he had added history and numismatics as hobbies which he had worked out with his usual earnestness. He applied for this place only to be rejected again, for, as one said, "the professorship of history belongs not to a doctor." His application thesis was a public speech in Latin, drawing a strong contrast between ancient and modern culture. Again the denial was accompanied by a *placebo*. He was made city physician with a salary of about \$200 per year. His work in the Anatomical Theatre was of course gratuitous.

After a while he received a reluctant but

welcome recognition from his townsmen. He was made librarian to the city. To this task he consecrated himself and conducted it as if it was the only interest of his life. He knew the oldest and best editions, he rearranged everything, replaced worn-out inscriptions with care and skill, brought order out of chaos, and made a catalog.

Yet his professional ambition was far from satisfied. The professorship of history became vacant again and Haller was again rejected. Meanwhile the Eighteenth Century was bringing to excellence in Germany the new university system of education, and Haller was watching with greedy interest the foundation of the University of Göttingen which George II, King of England and Elector of Hanover, had created in the hope that it would surpass the universities of Halle, Leipzig, Wittenberg, and Helmstedt.

At the proper time he dropped a hint to a friend, who was physician to King George, that a position in Göttingen would not be amiss. Two years later he received his appointment as professor of anatomy, surgery, and botany, and nothing so well illustrates the condition of medicine at that time as this grotesque combination of subjects.

He left Bern in 1736 with his wife and three children, just as his townsmen were circulating rumors that the call to Götting-

gen was a mere pretext to extort something more desirable from the Council. Four weeks after his arrival at Göttingen his wife sickened and died, and under the emotional stress of this disaster his mind lapsed again into verse. The "Trauerode," a lyric poem, upon the death of Mariane, is justly commended by Schiller, and it is a privilege to present the first and second stanzas which have been done into English by Payson S. Wild:

"Thy death, beloved, shall I sing?
Ah, Mariane, what a theme!
When sighs my words are mastering,
And thought is but a troubled stream,
That longing which for thee I feel,
My constant needs intensify;
The wounds within refuse to heal—
Again I seem to see thee die.

"My love too eager was, I know;
But thou deservedst it and well;
Thy form is mirrored in me so
That all thy beauty I must tell.
Each telling of this love for thee
Some former joy recalls to mind;
In part thou livest still in me,
A tender pledge Love left behind."

These lines were almost his last important contribution to poetry, but the end was attained. His verses had not only established his own reputation but they had exercised a deep and far-reaching influence upon his adopted country. The German state was slowly emerging from chaos, fash-

ioned and moulded by the hand of her greatest king. The German language was much less a part of the vital consciousness of the people. Everything that presumed to permanence was written in Latin. Even the king declared it was a waste of time to learn German. So while English prose had just reached its splendid maturity under Dryden, more backward Germany was barely ready to receive from Haller a Chaucerian demonstration of the adequacy of the vulgar tongue for poetic expression. It was over a hundred and fifty years before this same language which Haller disengaged from a mass of jumbled crudities became a true medium for artistic expression. It was Nietzsche who made it a swift and glowing prose.

The next seventeen years is best considered by a review of Haller's achievement. As a modern alchemist he abandoned time-worn methods and materials, he exchanged metallic salts for animal tissue, and inorganic for structural evolution; he left the mystery of the philosopher's stone to the vague gropings of the metaphysicians—Theurgics, Rosicrucians, and other speculative cults—while he transmuted the gross metals of ignorance into the golden truths of science. He began the fascinating, but interminable, quest for the sources of human life.

In 1738 appeared his "Observationes Bo-

tanicae," which brought him a world-wide reputation and a long dispute with Linnaeus, his sole competitor in the botanical field. This arose over his antagonism to the artificial nomenclature of the celebrated Swedish botanist, and his effort to secure a more natural classification based on what might be termed "consanguinity." For the time the great Swede was victorious, but after Linnaeus' death and the consequent decline of his authority, the French botanist, Jussieu (IV), took up the problem along the natural lines suggested by Haller and established the system that prevails to-day.

In 1739 Haller made a botanical excursion to the Harz Mountains. Upon his return he was urged by friends to make his home in Bern. They suggested that he might be made dictator. Although not greatly hopeful of this preferment, he did believe that his long absence and his accumulated honors might have diminished in a measure the hostility of his fellow citizens. And so he returned, ostensibly to marry again, but he made so many botanical trips into the neighboring Alps that his motives might well seem confused. He was married in June and returned to Göttingen in July. The following April his wife died in childbirth and his anguish again found relief in verses, which the critics coldly pronounced inferior to those addressed to Mariane. No

dictatorship nor any smallest encouragement came from Bern, and in nine months, somewhat to the wonder and dismay of his friends, he married for the third time. These years of mental change, of uplift and distress were, however, extraordinarily fruitful in a literary sense. During this time his output was largely botanical. Before 1744 appeared his celebrated work on the flora of the Swiss Alps, which remains to-day an unsuperseded classic, on account of its clear descriptions, its scientific accuracy, and its beautiful copper-plate illustrations. He published also a description of the five hundred plants in the Göttingen garden, produced a rearrangement of Rupp's "*Flora Jensis*," and contributed a mass of botanical papers to the transactions of the Nürnberg Society of Naturalists and the London Philosophical Society.

Three plants bear his name: A South American species, *Halleria*, named in his honor by Von Humboldt, who called him the greatest naturalist of his time; the *Anemone Halleri* in Piedmont, and *Arabia Halleri*, which he found in the Harz Mountains.

Meanwhile Haller had not neglected the other sciences, and soon began to pour forth a constant stream of revealments in anatomy and in physiology, which he called "the Soul of Anatomy." No matter under what guise

soever he found them, he endeavored to spread abroad those secrets of nature which his brain had divined and his hand had uncovered. From 1743 to 1753 he put out his astonishing collection of anatomical plates in six large volumes. All previous expositions were re-tested and much new material added. The unknown region of the blood vessels was now mapped for the first time. He was the first correctly to demonstrate the mechanics of respiration as we know it now. He first studied and accurately described the diaphragm, the retina, the testicles, certain parts of the human heart, the large intestines, the anatomy of hernia, the growth of the bone, the brain of birds and fish, the eye of fish, and the development of chicken embryos. Some of his discoveries still bear his name, as the Rete Halleri, Coni Vasculosi Halleri, Vasculum Aberrans Halleri, Circulus Venosus or Circle of Haller, and the Tripus Halleri or triple branching of the coeliac artery. The magic of it all dwelt in the artificer; in other hands the material was but dross.

In 1747 his new work on the Fundamentals of Physiology appeared in eight volumes. It was made up from his own lectures, and like most of his formal scientific productions, was written in Latin. The style is said to be tranquil and marked by balance and accuracy. Each page is divided

about midway, the upper part being text and the lower given over to references, and to the authorities which he accepted, qualified, or denied. The book was immediately adopted by other universities than his own and translated into many languages. For over one hundred years it remained the standard textbook. Every item had been carefully revised through personal experimentation, much new matter added, and the whole systemized and simplified.

In 1751 he issued his novel theory on the irritability of muscles, which exercised an influence on the development of medicine equalled only by Harvey's great discovery. For in the deep obscurity which surrounded all expression of animal life, in the arbitrary and often fantastic hypotheses which were explained by the existence of the soul, Haller's accurate observations came as a strong ray of sunlight. Already Willis, Baglivi, and Glisson had taught that all fibres of the human body were irritable and upon this normal irritability the health depended, but no one knew when the condition would appear. Haller demonstrated that every part of the body has a phenomenal function which is inherent and peculiar and goes with it even if the part is removed. Some are only elastic, as the sinews and arteries, others sensitive, as the nerves; the muscles too have their quality—a contractibility which could

be called forth by direct irritation independent of the nerves.

Meanwhile Haller's faculty for organization was not left unexercised. He created an obstetrical clinic for the instruction of doctors and midwives—the first in Germany. He assembled a surgical society in Göttingen and raised surgery to the rank of a profession. He made changes in the clinics so that disease could be observed and remedial agents proven. In pharmacology he was the first to make experimental proof of drugs on animals and at the bedside. Wittingly or unwittingly he was aiming at what we now call experimental pathology.

Whether we regard the Eighteenth Century as a time when the scattered and débris-covered treasures of past conflicts were gathered together and refurbished, or as the arrangement, disposal, and digestion of the intellectual harvest in preparation for the future, is a matter of opinion. At all events it was an era consecrated to classification. Condillac had systemized psychology; Linnaeus brought order in botany; Wolf created embryology; Harvey discovered the circulation, and Malpigi the blood cells and glands. It remained for Cuvier to develop zoölogy, and for Haller to create experimental and comparative physiology and erect therefrom a science.

The brilliant results of Haller's researches

are more conspicuous if we recall that in his time modern chemistry was unknown and the high-powered microscope undreamt of. The work was all done by patient anatomical investigation and simple vivisection, aided by a fine imagination and a clear-thinking brain. It was the true scientific spirit—the eagerness to demonstrate truths without regard to their tendency or influence.

A petulant tribute to his genius for research is given by Magendie, the celebrated French physiologist, who said: “Whenever I discovered something new and began to consult the literature, I always found it in Haller—I often cursed the book in which I found everything.”

It is needless to say that while engaged in special pursuits his enthusiasm for general science and literature was undiminished. In 1738 he issued his commentaries on his old master, wherein he showed that Boerhaave recognized no authority but nature, no proof but dissection, no demonstration but experiment. It was translated into English, French, and Dutch, and appeared in many editions. In 1752 he published a learned work on methods of medical study and discussed critically 4000 medical works which had appeared since his graduation.

He founded the celebrated Göttingen Gelehrte Anzeigen and edited it himself. He founded the Göttingen Society of Science

and wrote on the origin of the earth, mountains and volcanoes, and made geological journeys. He founded the Göttingen Literary Journal, devoted to the advancement of science and the interests of the young university.

In the Eighteenth Century men took pen and paper as one takes the veil and scapular. They lived that they might write. Their existence was a perpetual work of observation and expression, and in consequence every product of the press was received with avidity and earnestly discussed by a society that was both cultured and literary. The Nineteenth Century changed all that and now men organize their lives with a view to literary performance. They write that they may live. The result is—as Oscar Wilde aptly observed—“that journalism is unreadable and literature is unread.”

Haller's participation in the Journal increased from year to year until in 1747 he took over its entire direction. In the preface for this year he puts down his ideas as to its aim and methods—“Incorruptible love of truth, the highest scientific ability, kindly recognition of every service, but also sympathetic severity towards the shallow learning which extols itself and tries to build altars on the scorn of others, and is especially antagonistic towards the learned thefts which are the unforgivable sins in the practice of

science." Yet he did not limit his critical activities to the realms of adjacent science, but embraced with his abnormal compass the whole region of human knowledge, theology, philosophy, historical literature, mathematical, physical, and travel literature: all came under his critical eye and emerged with larger endowment and new atmosphere. About this time the German edition of "Clarissa Harlowe" appeared under his supervision and marked the beginning of the Romantic movement in Germany.

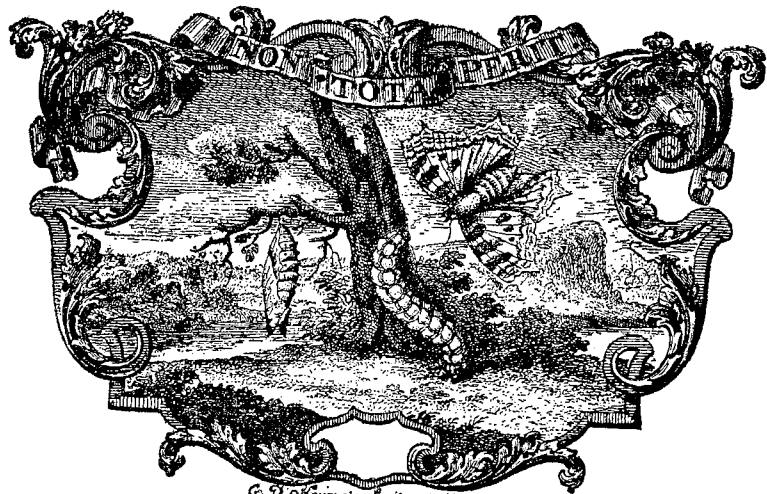
His output in letters fills seven large volumes. There are 13,000 items to 1600 different correspondents written in French, German, English, Italian, or Latin, all of which he used with native ease. To friends and enemies alike he poured out his life, and enemies he had in plenty. With Hamburger, for instance, he disputed for years over his theory of the respiratory process, Hamburger maintaining the then popular idea that the lungs are expanded and contracted by means of an inherent and spontaneous elasticity.

His most malicious and inveterate foe, however, was De la Mettrie, whose book, entitled the "Man Machine," was a direct attack upon Haller, to whom also it had been unwarrantably dedicated. Haller's reply took the form of a letter to a friend who published it, and De la Mettrie rejoined

with a counter-attack so infamous and so insulting to the high-strung, sensitive soul of Haller, that it brought the ardent young Lessing to his defense seething with indignation. De la Mettrie translated literally Haller's poem to Doris and then used it as an illustration of his highly sensual theory entitled "L'art de Jouir." The blow was so brutal and so shameful that Haller did not at first comprehend it. Then, after a public denouncement of De la Mettrie and all his work, he returned to his beloved science and soon forgot his humiliation.

It will interest the worthy race of bibliophiles to know that during his stay in Göttingen he collected a library of 20,000 volumes, each bearing a book-plate, of which he had eight different designs. Some bore the motto "non haberi sed esse," a prophetic phrase which represented not only his own ideals but expressed the attitude of the world towards its great scientific benefactors, who commonly die in a poverty and neglect for which subsequent generations do not always make amends. For the most part he used the term "non tota perit," which described in brief his modest opinion of his own services.

As the end of his Göttingen residence drew near it was generally recognized that in the sweep of his abilities and the jurisdiction of his influence he stood without a peer.



G. D. Roumou, Scul. 1793

The catalog of his distinctions reads like the list of the Greek ships before Troy. He was body physician to the King of England and Fellow of the Royal Society of London. A patent of nobility had come from King George (II) of England, and his fellow citizens of Bern charged that it had been purchased by the ever penniless Haller. He was associate in the Academy of Science at Bologna and of the Surgical Academy of Paris. Of eight foreigners elected to the Academy of Science at Paris he was one. He had fellowship in the Arcadian Society of Rome, the Academy of Natural History at Halle, the Academy of Science at St. Petersburg, the Bavarian Academy of Science at Munich, the Botanical Academy at Florence, the Physical Society at Zürich, the Edinburg Academy, the Medical Society of Paris, etc. In fact every scientific body of the world granted him a certificate of membership. But what were all these honors to a man who craved a bedesmanship in the city of Bern. The professorial chair he had once so eagerly sought was now thrust upon him from London, Oxford, Utrecht, Halle, St. Petersburg, and Vienna. Frederick the Great urged him repeatedly to join the bright galaxy of *literati* at Berlin, and at last even Bern, purblind Bern, began to covet his laurels while she stealthily sneered at the man.

To students Haller was a powerful attraction and they flocked to him from every European state. To each he gave personal attention, and in each he endeavored to stimulate a love for real scientific work. All revered the scientist and loved the man as a teacher and friend. Blumenbach, the founder of modern anthropology, Bichat, Zinn, Meckel, Zimmerman, and Wrisberg, all anatomists, stood at the head of the long line of enthusiastic young workers whom he led into the labyrinths of science, and whose subsequent careers of honor and renown he followed with a personal pride. Hundreds of lesser men profited by the impulses sent out from his one great soul. But his health was bad. Throughout his stay in Göttingen he was sickly. He had indigestion, insomnia, headache, and was subject continually to fevers that racked his great body while they energized his brain. Always, too, he was homesick; homesick for the Bern of his youth. Frequently he wrote to know if his fellow citizens still hated him, and ever he longed for a chance to return. But amid all the rumors that spread his name abroad there came none to Bern sufficiently disparaging to alleviate the envy arising from conscious mediocrity.

At length an opportunity occurred. In 1753, when he was forty-five years old, the Bernese Council invited him to accept an

office which ranked fourth in importance in the republic and permitted him also, at his request, to become inspector of the salt works. It was sufficient. Rejecting all proposals that meant wealth, honor, and advancement at London and Vienna, he returned to Bern. Voltaire's return to Paris was one of the historic events of the century. "No great captain," says Morley, "returning from a prolonged campaign of difficulty and hazard, crowned by a most glorious victory, ever received a more splendid and far-resounding greeting." How was it with Haller? When the most eminent scientist then living—and the man whom Lessing, Wieland, Klopstock, Schiller, and Goethe have exalted as the first great German poet, returned to his native city, were the buildings decorated and roses strewn in his path? Not at all. The burghers were unmoved, no voice was heard, no cap was waved. Haller entered Bern as a suppliant.

The third and last epoch began—the age of wisdom and statecraft. New duties aroused new enthusiasm. He organized the Academy at Lausanne and inaugurated the Philosophical Seminary at Bern. He drained the waste lands around Roche, managed the epidemic that broke out among the people, and sent a report of the same to the Paris Academy. He classified the plants of the neighborhood, made meteorological observa-

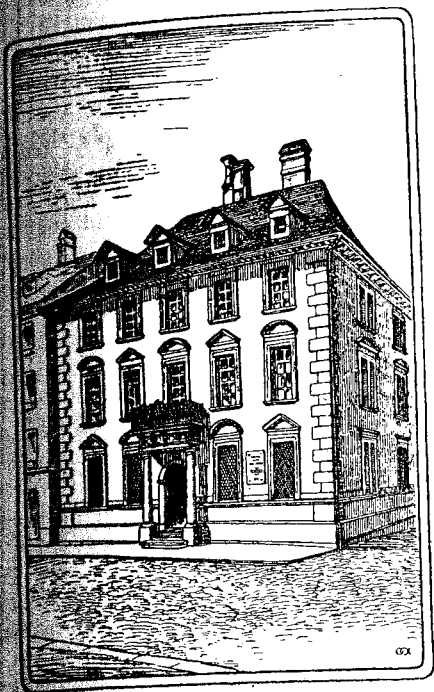
tions, collected the laws and ordinances and delimited the district. He made difficult trips over the mountains, both scientific and executive. He kept in constant correspondence with famous contemporaries, like Bonnet, the philosopher.

In a measure, of course, he was happy. The sunrise pleased him, the sunset soothed him, his conscience was clear, and if only he had been able to win the affection of the Bernese citizens he would have been content, but after ten years of this sacrifice his poverty and large family made him think again of Göttingen, where the chancellorship of the university and a large salary were offered him.

To Bonnet he writes: "At Bern I am regarded coldly or with disdain. I can serve God here with all my strength, but anatomy, physiology, and botany are useless at Bern, and I can serve my country only at a disadvantage. Nevertheless, the smiles of my country attract me, and I am as flattered as a woman by the least favor and forget to weep."

He had announced his decision to go back to Germany when the jealous Council bestirred itself and granted him a pension of four hundred crowns. This meager recognition was sufficient and he renounced Göttingen forever.

Twenty years passed by in Bern and though



HALLER'S RESIDENCE IN BERN, FROM KRON-
ECKER'S "HALLER REDIVIVUS"; LOANED
BY J. C. BAY OF THE JOHN CRERAR LIBRARY

he walked firmly, organic decay had begun. Yet ever with his pen like some enchanter's wand he guided the thought and ordained the practice of scientific Europe. In these two decades he produced the final volume of his anatomy, his collected surgical disputation, the first five volumes of his "Disputations of Select Practice," a preface to the Bern edition of the Bible, a foreword to Rosel's "History of Frogs," and continued always his contributions to the *Gelehrte Anzeigen*. These consisted of innumerable abstracts of Swedish or other foreign works on agriculture, natural history, art, physics, and mathematics, with comment and criticism. He took an active part in the dispute concerning the authenticity of Ossian's poems, and he reviewed the works of Voltaire and Rousseau. Finally he published his monumental *bibliothek* in four volumes on botany, anatomy, surgery, and medicine. It contains 52,000 references to books and pamphlets, all examined, appraised, and annotated by Haller. It was called by his contemporaries an "abyssus eruditionis," and is still indispensable to the medical historian.

During his last days his humble home became a center of European interest, and attention by high and low. Gustavus (III) conferred upon him the order of the Polar Star, and an incessant stream of people—

travelers or merely curious folk — paid homage to the genius of the place, but while these visitors promulgated his glory to the listening world they sadly interfered with his work. Voltaire called upon him and they corresponded for some years, but without overcoming their mutual aversion. Cagliostro, the arch adventurer of the age, journeyed to see him, and Casanova, a luminary of like character but less phosphorescent, has handed down a story that excellently typifies the two eminent contemporaries. "M. de Voltaire," said Haller, "is a man worth knowing, though, in spite of physical laws, many have found him greater at a distance than near." This honest if undiplomatic opinion the gossipy Casanova hastened to repeat to Voltaire, who was more discreet but no less acute. "One must bow the knee to this great man, nevertheless," he declared emphatically. "I agree with you," answered Casanova, "and I honor you for doing him this justice. He should be censured for not being equally fair to you." "Ah, well!" rejoined Voltaire, "perhaps we are both mistaken." The last word however was Haller's, for when the Emperor Joseph II visited him he asked among other things: "Are you writing any poetry?" "Indeed, no," said Haller; "that was the sin of my youth; only Voltaire writes verses at the age of eighty."

Yet in spite of social distractions and bodily suffering his work went steadily on. As Plato had his "Critias" and Bacon his "Atlantis," so at this time Haller embodied his philosophy in three prose romances: "Usona," "Alfred," and "Fabius and Cato," which he frankly stated were intended to counteract the influence of the "Social Contract." They were translated into French, English, Italian, Dutch, and Hungarian, but times had changed and curiosity about the romances was quickly satisfied.

The torch of Haller was extinguished by the clouds of the approaching storm and stress. The distant mutterings of the French Revolution were beginning when old age and sickness overwhelmed him. Pain from cystitis and gout was ever with him, and this, together with sleepless nights, had forced him for years to use opium. Obesity and dropsy came on, dizziness and disorders of sight followed, that made writing difficult. So while an unrelenting ardor for science drove him onward, the giant was slowly tottering to his fall.

In 1777, at the age of sixty-nine, those eager, inquiring eyes closed forever and what was known as the "Haller period of medicine" came to its end. The whole intellectual world went into mourning; numerous elegies solemnized his obsequies, but

the citizens of Bern showed not the slightest interest in his scientific work, his literary past, or his death. Even his great library went to Austria.

In so vast an achievement it is difficult to single out and present those intimacies of life which lend such charm to biography. Moreover, while the danger of making the narrative dry and bare has ever been present, yet it was the object of this paper to show Haller not as the delightfully human personage which the reports of his contemporaries reveal, but rather to revive his right to live as one of the great prodigies of the Eighteenth Century. To give to human mind a direction which it shall retain for generations is the rare prerogative of a few imperial spirits. It should be interesting therefore to inquire into those qualities of intellect and temperament which have given to Haller this commanding position.

According to Theodore Gompertz ("Greek Thinkers") two types of mind distinguish the world's great thinkers. In one we find an insatiable thirst for fullness of knowledge and insatiable acquisition of new materials, while the second constantly strives for inner freedom from contradiction—for systemization and harmony. Insatiable thirst for knowledge and the logical, orderly mind differ only in degree—they are not necessarily antagonistic, but it is strange, nevertheless,

that the two states are rarely present in the same individual.

Thinkers, like Descartes, who erect a homogeneous thought-structure stone by stone and idea upon idea, and detail workers like Aristotle, who are ceaselessly engaged upon special investigations, represent two varieties of a common genus. Hemmeter, for convenience, calls the detail worker an "encyclopedist."

With constant acquisition of knowledge the encyclopedist in time will need and develop some kind of classification. Classification and systemization were the peculiar intellectual feats of Aristotle and Humboldt, but, as Hemmeter says, neither did research work of permanent value. In Haller, however, we find an insatiable thirst for fullness of knowledge, an unusual joy in and power of observation, united to faculties eminently fitted to classify and systemize. Furthermore he was a research worker of incomparable excellence. His memory was astonishing, his industry prodigious, and his learning perhaps never equaled.

His service to literature was epochal, his discoveries in anatomy and physiology were momentous, but what impressed the rational as well as the speculative minds of his period most powerfully was the brilliant success of his method. The multitude and variety of his demonstrations finally con-

vinced the most reluctant that exploration and investigation should supersede the subtle manipulation of unverifiable words. This was Haller's most signal contribution to science.

Amid the intellectual sublimation of the Eighteenth Century the influence of the ancient philosophers was already weakening. It was beginning to be realized that the powers inspired by Plato and the schoolmen were systematically misdirected and resulted in no benefit to mankind. Questions revolved interminably. Controversies started but never ended. Mills ground but there was no grist. Activity was mistaken for progress. Into this confusion was projected the dynamic intellect of Haller, which drew to its mighty purpose all available material from every available source. His manifold spirit brooded fatefully over the manifold world of science, and system was evolved, enlightened utility was born, and God-like enthusiasm burst forth.

In estimating his genius we must not overlook the influence upon his development of the agitated age in which he shone, for, with apologies to Macaulay, while we extol Haller and carp at Thomas Aquinas, we must remember, if their nativities had been exchanged Haller might have been the most subtle Aristotelian of the schools, and the Dominican might have led forth

science from the house of bondage. With a mind deep as the lakes of his native land Haller sought the truth, not like the adroit Voltaire, clutching her by the hair and thrusting her forward in a kind of boisterous triumph, but as she should be sought, devoutly, tentatively, and with the air of one touching the hem of a sacred garment; not as a prisoner of war, but rather as a goddess.

So this transcendent genius lived and labored and finally lay upon his death-bed. The fingers of one hand rested upon the diminishing pulse in the other. At length he said, calmly: "It no longer beats—I die." But the profession of faith inscribed upon his book-plate, "*Non tota perit*," remained true, and his work still lives in all the departments of knowledge which he so eminently distinguished. He was the genuine representative of his period, the exemplar of a giant race—a monarch in the universal dynasty of mind.

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