LON H. COLBORN & THE CENTURY
OF SCIENCE

BY RICHARD L. ROSENZWEIG
We sat in quiet anticipation as Mr. Colborn silently set the long table in the front of Room 462 with an assortment of glass beakers, connected glass tubing, a large stainless steel cone, and five heavy glass stoppered bottles. It was the first day of Lon H. Colborn’s basic chemistry class at Pittsburgh’s Taylor Allderdice High School in September of 1956. Without a word, he poured the clear contents of two bottles into a large glass beaker. The beaker turned dark, began to boil, and then the room shook as if a cannon had fired. Mr. Colborn was gone in a cloud of white smoke.

“Chemistry,” he said as the smoke cleared, “is the key to the secrets of the universe.”

After a pause, he dipped a glass rod into another beaker of clear liquid and placed it into the smoking beaker which erupted into momentary blue and red flames and left the beaker as clean and clear as before. “If you are to succeed in this class, you will have to work harder than you ever did before,” he said as he arranged several large glass beakers, an inverted metal cone, and some glass tubing. With a rather dramatic flourish, he pulled the glass stoppers from the four heavy bottles and simultaneously poured the contents into the largest beaker. The mixture hissed and boiled through the tubing, turned a bright red, then a deep purple, and within seconds gushed into the inverted steel cone into which he dumped the dark contents of the fifth glass bottle. With a rumble that rattled every apparatus on the long table, the cone erupted with multicolored pellets the size of peas which sprayed on the students in the front row, stuck to their clothes, popped furiously for a few seconds, and disappeared.

We sat in amazed silence as this slight balding man with wire-rimmed glasses paced the front of the room. Colborn’s basic chemistry class was composed of those who wanted the challenge, since there were easier alternatives to fulfill the high school science requirement. “By next year,” he said, “you will have forgotten the chemistry you learn in my class, but you will know how to think and attack a problem.”

He set the ground rules. Everyone had to buy a black and white, bound Mead composition notebook for class notes. Two hours of study every night was the minimum. His classes would be fast-moving, full of material that we wouldn’t absorb during class, but if we got it down and read that night from two or three sources on the topic of the class, we probably wouldn’t fail.

For the rest of the first class Colborn talked about the importance of education and science, advised us deadpan that 90 percent of the people walking on Tilbury Street outside the classroom window suffered from constipation, told us about his advanced class which he offered the second semester, and provided anecdotes about the achievements of his former students.

Colborn had thrown down the gauntlet. His manner in that first class was perpetual motion: peremptory and outrageous, but characterized by a supreme confidence of purpose that inspired in us a desire to meet his challenge.

Lon H. Colborn died on December 25, 1998, at 102 years old, with a mind and demeanor unchanged from my first encounter with him in his chemistry class. Mr. Colborn, as his former students always referred to him, no matter their age or station, was a great teacher and motivator. A member of a family settled in Western Pennsylvania since before the Revolution, Colborn was an industrial chemist who became a high school science teacher with a national reputation. By his own estimation, his greatest achievements came as a teacher at Taylor Allderdice High School from 1932 to 1957.

In addition to teaching the basic chemistry class, Colborn devised the Qualitative Analysis class in 1935 for five of his best students, which he expanded to 21 in 1936, and kept at 18 thereafter. For his “Qual” class, Colborn selected students on the basis of their performance in his basic chemistry class, a general knowledge test, and his intangible assessment of each student’s natural ability and motivation.

Qual met every day for one and one-half hours—twice as long as a regular class. For this privilege, students gave up lunch period and ate at their lab tables.
ABOVE: COLBORN IN 1957. PAGE 34-35: AT PARENT'S NIGHT, WITH HIS OLD ALLDERDICE MESSAGE ON THE BOARD. "KNOW SOMETHING, DO SOMETHING, BE SOMETHING."
Many of Colborn's Qual students kept in touch with him through the rest of their formal education and careers, and even in their retirement. In the grade books he kept each year, he documented their progress with notations and added correspondence, pictures, and clippings about each student.

In the spring of 1957, after weathering the basics of Colborn's unconventional introductory chemistry class, I was invited to be a member of what would be his last Qual class at Allerdice. The course focused on five groups of metals. Colborn gave a lecture before we got to work on each group, and then supervised several weeks of lab work during which each student attempted to identify an unknown metal in solution through the use of reactants and a centrifuge. The objective was, by semester's end, to be able to identify one or more unknown metal elements from any of the five groups, set out the lab procedures, and document every chemical equation involved.

By 1956, Colborn's nontraditional teaching garnered national recognition. Carnegie Institute of Technology (now Carnegie Mellon University) awarded him an honorary master of science degree to Colborn. It was only the ninth honorary degree the institution had bestowed since its founding in 1900, and newspapers across the country carried the story. The public presentation of his degree included the following citation: "For a full generation, Mr. Colborn's outstanding skill and dedication in discovering pupils of exceptional gifts, and in nurturing into sturdy growth their full capacity for the self-reliant pursuit of excellence in learning has contributed to the fostering of excellence in our schools, in our colleges and in our democracy."

An editorial in the Atlanta Journal of June 27, 1956, applauded Carnegie Tech for reaching "down through the ranks of great names in science and engineering to a quiet man of 60, a Chemistry teacher, a public school teacher these past 34 years.... What teaches us better to laud the fire-givers and lamp-lighters, to mark down the synthetic heroes, than such singling out of an all-but-anonymous teacher of the sort that puts the mark of striving on so many lives?"

Colborn accepted the honorary masters degree with dignity and pride, but often complained that it should have been an honorary doctorate like those granted at the same time to Richard King Mellon and three other national figures of wealth and influence. However, as a result of the honorary degree, Colborn became nationally known. He attracted the attention of the executives of Olin-Mathieson Chemical Co. at a time when leaders in government and industry perceived a challenge by the Soviet Union to America's preeminence in science which threatened national security and the nation's economic strength. In 1957, Olin provided a grant for Colborn to take his unique advanced chemistry class to Neville High School in Monroe, La., where the company maintained a large production and research facility. The Olin grant provided a fully equipped laboratory and a generous salary.

In a front page story on Colborn on August 24, 1958, the New York Times quotes Bill Ellis, a student in the first advanced chemistry course in Monroe that spring: "This man has created a new hero on the campus to compete with the football player. The hero is the student who can win admittance to his class and survive." All 46 students who took Colborn's course at Neville High School in 1958 and 1959 went on to college, earning more than $175,000 in scholarships.

At Colborn's urging, Ellis studied chemical engineering at Carnegie Tech and received a Ph.D. in chemical engineering from the University of Maryland. Ellis rose to the chief executive officer of Northeast Utility System, and is now a senior fellow in the School of Forestry and Environmental studies at Yale University and a member of the Carnegie Mellon Board of Trustees. Like me, Ellis reconnected with Colborn in 1996.

Recalling the important role his former teacher played in his life, Ellis told me that "Mr. Colborn arranged for my admission and a scholarship at Carnegie Tech, told me what I'd find there, the challenges I'd encounter, the excitement I'd enjoy, and the prospects the education would open up. I have told Mr. Colborn I have much to thank him for, but saying 'thank you' every day wouldn't be enough."

Colborn stayed with the Olin program as it expanded to five communities in North Carolina, Illinois, Virginia, and Alabama. He supervised the teachers he helped to recruit for the advanced chemistry and physics courses in each location. These teachers, like Colborn, were given a free hand to develop their courses individually, with fully equipped modern laboratories provided by the school districts with assistance from Olin.
Once more, I do, as Cato the Roman philosopher did, address you as “Fellow Sufferers.” This is my sixth attempt at exploring your mind on the basis of the General Knowledge you possess. Don’t get enraged at the questions because to do so would only remove the thin veneer of civilization and expose the savage. A little poem I learned in my teens seems good advice at any time. Read it and then hurry on with the answers.

IN BATTLE OR BUSINESS, WHATEVER THE GAME,
IN LAW OR IN LOVE, IT IS EVER THE SAME.
IN THE STRUGGLE FOR POWER OR THE SCRAMBLE FOR PELT,
LET THIS BE YOUR MOTTO: RELY ON YOURSELF.
AND WHETHER THE PRIZE BE A RIBBON OR THRONE,
THE VICTOR IS HE WHO CAN GO IT ALONE.

<table>
<thead>
<tr>
<th></th>
<th>T or F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>4</td>
<td>T</td>
</tr>
<tr>
<td>5</td>
<td>T</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>7</td>
<td>T</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
</tr>
<tr>
<td>9</td>
<td>T</td>
</tr>
<tr>
<td>10</td>
<td>T</td>
</tr>
<tr>
<td>11</td>
<td>T</td>
</tr>
<tr>
<td>12</td>
<td>F</td>
</tr>
<tr>
<td>13</td>
<td>T</td>
</tr>
<tr>
<td>14</td>
<td>T</td>
</tr>
<tr>
<td>15</td>
<td>T</td>
</tr>
<tr>
<td>16</td>
<td>F</td>
</tr>
<tr>
<td>17</td>
<td>T</td>
</tr>
<tr>
<td>18</td>
<td>T</td>
</tr>
<tr>
<td>19</td>
<td>F</td>
</tr>
<tr>
<td>20</td>
<td>T</td>
</tr>
<tr>
<td>21</td>
<td>T</td>
</tr>
<tr>
<td>22</td>
<td>T</td>
</tr>
<tr>
<td>23</td>
<td>T</td>
</tr>
<tr>
<td>24</td>
<td>T</td>
</tr>
<tr>
<td>25</td>
<td>T</td>
</tr>
</tbody>
</table>

COLLEGE DISTRIBUTION: UNDERGRADUATE: U. of Pittsburgh-135; Carnegie Tech-99; Harvard U.-20; Penn State U.-17; M.I.T.-10; Oberlin College-6; Princeton-6; W. & J.-6; Yale-5; Cornell-5; U. of Michigan-5; U. of Pennsylvania-5; Rabbinical College-4; Duquesne U.-4; Columbia U.-4; Cal Tech-4; U. of Chicago-4; Rensselaer Polytech-3; U. of California-4; Jefferson Medical-3; Allegheny College-3; Ohio State U.-2; U. of Minnesota-2; Antioch College-2; Vassar-2; New York U.-2; U. of Illinois-2; Purdue U.-2; U. of Denver-2; Amherst-2; Brandeis-2; Indiana State Teachers (Pa.)-2; Northwestern U.-2; U. of Kentucky-1; Radcliffe-3; U. of Wisconsin-2. (Only 1 entrant for all that follows) U. of Miami (Ohio), U. of Cal. at Los Angeles, U. of Virginia, U. of Indiana, U. of Buffalo, U. of Missouri, U. of Southern Cal., U. of Rochester, Valparaiso U., Alfred U., Wayne U., Brown, U. of Western Reserve, U., Mount Holyoke College, Reid College (Oregon), Dartmouth College, Williams College, Penn. College for Women (Chatham), Pembroke College (Brown), Wellesley College, Hamilton College, Adrian College (Michigan), Smith College, Westminster College, Stevens Institute, Oklahoma A. & M., Hahneman Medical (Phila.), Case School of Applied Science. GRADUATE WORK ABROAD: University of Paris, University of Birmingham (England), University of Leyden (Holland), University of Zurich, Kaiser Wilhelm Institute (Berlin), Oxford University (Rohs Scholar), University of Oslo (Norway).

DISTRIBUTION OF 332 QUALITATIVE ANALYSIS STUDENTS BY PROFESSION: Chemistry (includes some majors)-92; Chemical Engineers-31; Metallurgical Engineers-8; All other Engineers-54; Physics-17; Pre-Medical-18 (Quite a few undergraduates in Chemistry; each year more students wanting to enter Medicine and drafting more and more away from Chemistry, Physics, Mathematics, and Engineering); Mathematics-6; Liberal Arts-39; Business Administration-18; Law-10; Teaching (Public Schools)-6; Pharmacy-4; Biology-4; Nursing-3; Rabbi-4; Protestant Ministers-2; Architecture-2; Dentistry-2; Economics and Political Science-2; Psychology-2; Home Economics-2; Social Science-1; Art-1; Language-1; Drama-1; Accounting-1; Medicine-50. SCHOLARS AWARDED DOCTOR OF PHILOSOPHY OR ITS EQUIVALENT: Bernard Block-Physics-Carnegie Tech; David Boedeker-Chemistry-Pitt; Herbert Cantor-Chemistry U. Denver; Jerry Cohen-Psychology-Penn State; Kalman Cohen-Psychology-Oxford (Rhodes Scholar); Howard Corey-Chemistry M.I.T.; Stanley Dice-Chemistry-U. of Zurich; Sheldon Eidelstein-Political Science, Princeton-Harvard; Eva Estermann-Chemistry, U. of Cal.; Hannah Easterman-Languages-Smith-U. of Cal.; Robert Fallat-Chem. Eng. U. of Cal.; George Feitz-Chemistry, Carnegie Tech; Anne Foner-Physics-Carnegie Tech (Married Tech Ph.D. in Physics—Both work at Oak Ridge Atomic Plant); Simon Foner (brother of Anne)-Physics-CarnegieTech; Eli Freedman-Chemistry-Cornell; Richard Freedman-Chemistry-U. of Ill.; Simeon Friedberg-Physics-Carnegie Tech, U. of Leyden, Professor of Physics at Carnegie Tech.; Herbert Goodman-Economics-Harvard; George Harrison-Chemistry-Pitt; Phillips Medal Winner; Harold Jacobs-Psychology-U of Missouri; Hubert Joy-Chemistry-Chicago and Carnegie Tech.; William Kaufman-Elec. Eng.—Carnegie Tech; Carl Mihal-Physics-Carnegie Tech.; Joseph Kleinman-Chemistry-U. of Ill. and Pitt, Kaiser Wilhelm Institute; John Klotz-Biology-Pitt and D.O. Ordained Lutheran Minister; James Lancaster-Physics-U of Birmingham; Albert Lasdau-Physics-Harvard and Carnegie Tech; Robert Lorch-Chemistry-Minnesota; Leonard Lerman-Chemistry-Cal Tech, post-doc Chicago and Denver; Myles McConnon-Chemistry-Wisconsin; John Michener-Physics-Carnegie Tech; Melvin Peisakoff-Math-Princeton (Ph.D. in 5 years from high school, first in class of 600; Alan Perlis-Chemistry-Cal. Tech., [continued on page 42]
On his 68th birthday, in 1964, Colborn took a position as an assistant professor at Slippery Rock State College in Pennsylvania, where he supervised student teachers; he remained in that position for five years. Then, from 1969 to 1973, Colborn performed physics and chemistry shows —volunteering his time—for more than 10,000 sixth grade children throughout Western Pennsylvania. These shows replicated the demonstrations from the first day of his basic chemistry class at Allderdice, lots of noise, smoke, and liquids changing colors and becoming solids and disappearing. He saved a book of letters from the sixth grade of Hillview Elementary School with his picture on the front, with the title “The Wizard of Colborn” under the picture. He was 77 when he gave his last demonstration for the sixth graders.

Colborn had begun his own college career through the generosity of a local physician who loaned him $1,500 to attend the University of Pittsburgh, where he received a B.S. in chemical engineering in 1920. During his four years at Pitt, Colborn recalled that he spent only $1,600, subsisting often on the free lunch that accompanied the 50-cent beer at an Oakland saloon. He worked as a barber, bellhop, and newsboy.

Colborn was the first in his family to go to college, but was proud of his pioneer forbears. In 1770, Colborn’s great-great-grandfather, with 17 families from New Jersey, settled what was known as the Jersey Settlement in what became Turkeyfoot Township in Somerset County. Colborn’s grandfather, George, was killed in the Civil War.


After graduating from Pitt, Colborn worked as a chemical engineer for Standard Chemical Co. in Canonsburg, where he supervised the extraction of uranium, radium, and vanadium from carnitite ore mined in Colorado.

Colborn had a chance meeting with Marie Curie in 1921 when she arrived in Canonsburg to pick up a single gram of radium that had been produced according to the process of refining carnitite ore that she and her husband Pierre developed. They received a Nobel Prize for the work. Although many Standard Chemical workers who refined radium in the Oakland section of Pittsburgh died of radiation poisoning, Colborn suffered no ill effects.

He recalled Curie’s high button shoes, stockings falling over them, and lack of ornamentation—“a twinkle in her eye rather than on her finger.”

Curie apparently had a profound influence on Colborn; he was impressed with her dedication to her work and obvious enthusiasm for knowledge. Long after leaving his engineering job, he kept a piece of carnitite ore from Standard Chemical in a cabinet in his classroom. I remember that he demonstrated to us in his basic chemistry class, recalling Madame Curie, how it would “etch”—by its low grade radioactivity—the imprint of a key on photographic paper.

Colborn taught in several schools in Western Pennsylvania, including Claysville in Washington County, Rockwood in Somerset County, McKeesport, and Miles Bryan High School in McKees Rocks. At Rockwood in 1925, he taught biology. When he confronted the evolution/creationism issue several months before the Scopes “Monkey Trial,” the school board opposed the teaching of evolution, but the Pennsylvania Department of Instruction to whom he wrote supported him in...
teaching the balanced view with a full treatment of Darwin's scientific theories. Colborn took a special interest in the Scopes trial and saved a box of news reports about it.

Colborn obtained a master's degree in chemistry in 1931 from the University of Wisconsin, then took a teachers' test for the Pittsburgh Public Schools. His was the highest score that year, and he began at Taylor Allderdice in 1932.

I renewed my contact with Lon Colborn in 1996, visiting him at home in Grove City. In a series of recent visits, he spoke to me of the achievement of many of his former students. His one unfulfilled ambition, he told me, was to return to do in Pittsburgh what he done in the South under the sponsorship of Olin. None of the corporations he approached in Pittsburgh, however, were interested.

Colborn’s chemistry class was by far the best educational experience I ever had. During his last Allderdice Qual Class in the spring of 1957, Colborn traveled to Monroe, La., to meet with Olin. The trip required him to miss a day of teaching, and he did not trust his basic chemistry classes to a substitute teacher.

He asked me to do two of his classes, arranged it quietly with my other teachers, and probably never told the school administration. I recall preparing a lesson on oxygen by reviewing Colborn’s class notes from the previous semester and re-reading two or three sources on the subject to teach two 40 minute classes. The students accepted my presence and authority because I was a Qual student.

The recollections and expressions of gratitude of Colborn’s former students that I have collected over the last two years would fill many pages. Bernard Fisher (Qual 1936), the internationally renowned pioneer in the field of breast cancer, considers Colborn the greatest teacher he ever had, far above the others, a dynamic no-nonsense teacher who was passionate about what he was doing.

Jack Markowitz (Qual 1949), retired business editor of the Tribune-Review and former business editor of the Pittsburgh Post-Gazette, recalls Colborn as “sight of build, bright-eyed, restless as a sparrow as he darted about a laboratory table or perched on a high stool by the windows....” Markowitz added that Colborn “had the knack of winning classroom attention by force of personality,” which brought the “subject to life.”

Bob Cooper (Qual 1947), retired space vehicle engineer for Rockwell, remembers the “general knowledge test” Colborn used to help him choose his Qual students. “Colborn figured that if you had well-rounded knowledge you could do well at chemistry.”

William King (Qual 1939) recalls that he was Colborn’s assistant for his lab demonstrations, one of which was held in the school auditorium for the entire school. King graduated from Carnegie Tech in chemical engineering, stayed in Pittsburgh at Gulf Research, and in retirement has been a leader in the growth and development of the Historical Society's Pittsburgh Regional History Center.

Arthur Lassman (Qual 1939), a lifelong friend of Colborn who visited Colborn on his 101st and 102nd birthdays, recalls him as “a unique teacher who expected the best effort from everyone, and interspersed his lectures with humor and philosophical commentary.” Lassman found it unusual how he sometimes called him “Lon” and at other times referred to him as “Colborn.”

“If I had to make a choice of one or the other, I think it would be ‘Colborn’, for in my lifetime and in that of countless of his former students, we can gratefully say that we attended high school in ‘the Colborn years,’ the likes of which we cannot conceive to be equaled in any era.”
Other former students express similar sentiments. Frances Aaron Hess (Qual 1949) was one of his favorite students. Hess and I visited Colborn in June of 1998. After the passage of nearly 50 years, he greeted her by asking how "Frannie the Magnificent" was (the same nickname he'd given her in high school). Hess recalls that from Mr. Colborn she "learned to love the rigorous discipline which the scientific method imposed." In her own career as a history teacher at Allderdice, she "tried to challenge and stimulate students as he had done for me; this has undoubtedly carried over to my role as a mother and grandmother."

Frances Hess' brother, Marcus Aaron II, is also a Colborn veteran (Qual 1945). On his first day in basic chemistry, Aaron was invited to participate in the "magic show." Colborn asked him to touch a lighted taper to bubbles of hydrogen and oxygen, without ear protection. The resulting explosion was too close and too loud, and Aaron attributes a partial loss of hearing in his left ear to this initiation.

Now a prominent Pittsburgh lawyer, Aaron notes that Colborn's methods would not pass muster under today's safety standards, including the eating of lunch while handling chemicals in Qual lab. Aaron recalls that in the basic chemistry class Colborn's challenge to everyone to think and analyze "was helped by the fact that the course was self-screening, attracting only those anxious to be pushed in their learning.... The result was an intense learning environment where Mr. Colborn was teacher, provocateur and ringmaster all in one."

Since Aaron is a non-scientist, he says that he is officially classified as one of Colborn's "failures," but he insists that Colborn's methods were just as valuable for those following non-scientific careers. "The analytical skills and the desire to ask questions which he espoused carried over to my ultimate profession, the practice of law."

From 1935 to 1957, Colborn taught 393 Qual students. Depression-era parents supported his efforts, and the school principal had little choice but to accede to Colborn's methods and demands, except in 1948 when Allderdice Principal James D. McClymonds cancelled Qual class, calling it too expensive and unnecessary. Colborn kept a Qual gradebook for 1948 which listed 19 proposed Qual students. On the cover he wrote "1948—Black Crepe Year." Pressure from parents caused the full reinstatement of Colborn's Qual class for 1949, with only three of the disappointed 19 getting a second chance, including Jack Markowitz, mentioned above.

For each Qual class Colborn kept a standard tan composition notebook in which he recorded each student's name, the "unknowns" assigned during the semester, exam grades, final grades, and notes on achievements, honors, colleges and graduate schools attended, degrees, marriage announcements, employment, letters, and news clippings. These notebooks were the source of the list of Qual Students featured with this article. Leslie Elkins, Colborn's granddaughter, has given the notebooks and accompanying papers to the Historical Society's Archives.

Colborn's Allderdice Qual class from 1935 through 1957 was the catalyst for particularly gifted students whose achievements are perhaps unmatched in any American high school in any period. Allderdice was a large school with many good teachers, and students uniquely motivated by education-minded parents, many of whom were first or second generation Americans who had experienced the hardship of the Depression. In May of 1956, Colborn compiled the data from these notebooks into an eight page summary. He could account for 332 of the 357 Qual students he taught for the 21 years from 1935 to 1955. (The 36 additional students from 1956 and 1957 are not included; nor are those from the early 1950s who had not completed their educations.) Of this number, 52 received Ph.D. degrees and 50 attained M.D. degrees; 92 chose careers in chemistry, 50 in medicine, 31 in chemical engineering, 62 in other areas of engineering, 17 in physics, five in mathematics, four in pharmacy, four in biology, three in nursing, two in dentistry, two in psychology, two in economics, six in teaching, 10 in law, and 18 in business. Four became rabbis and two Protestant ministers. Three won the Westinghouse Science Talent Search first prize, and seven won the American Chemical Society Prize.
In my visits, Colborn spoke the most of Alan J. Perlis (Qual 1939), who went on to Carnegie Tech (Class of 1943) and who earned a Ph.D. from M.I.T. in 1950. He then taught at Purdue before joining the Carnegie Tech faculty in 1956 as an assistant professor of mathematics and director of the Computation Center. In 1965, Perlis became the head of the world’s first Computer Science Department, at CMU, and in 1971 became the chair of the Yale Computer Science Department, where the university holds an annual symposium in his honor.

Colborn also spoke of James Langer (Qual 1950) several times. Langer is married to Elinor Aaron (Qual 1952, sister of Frances and Marcus) who sent him a yearly holiday greeting. Langer is a physicist at the University of California at Santa Barbara, president-elect of the American Physical Society, and serves on the board of overseers of the Carnegie Mellon physics program. On the occasion of Colborn’s honorary degree, Langer wrote him a letter of congratulations from the University of Birmingham in England, where Langer was pursuing his doctorate in physics: “The easiest way for me to tell you ‘congratulations’ and ‘thanks’ is just to point out that I am here at this moment, whereas I should certainly have been an unsuccessful painter had I not taken your chemistry course. In any case, my choice of science as a career has led me to successes that I never dreamed of when botching up Group II in the fourth floor annex.” Langer attributes to Colborn “his first glimpse at the secrets of the universe.”

Colborn told me that his most brilliant student was Jacques Wachtel (Qual 1935), who did pioneering work on penicillin after earning his Ph.D. in chemistry from Yale.

In addition to his Qual students, Colborn inspired many in his basic chemistry class to pursue careers in science. Stephen Lippard, one of Colborn’s best students who could not take Qual because he took basic chemistry in the spring of 1957 just before Colborn left Allderdice, now heads the chemistry department at M.I.T., where our daughter and son-in-law did their doctoral work under his direction.

As his well-kept records and the recollections of his students reveal, the life and career of Lon H. Colborn affected many individuals. Mr. Colborn often downplayed his own abilities, and said he left engineering for teaching because he realized he would never be a top engineer. What he did acknowledge was his ability to motivate others to their fullest potential. Like Marcus Aaron, I pursued a non-scientific career and was one of Colborn’s “failures;” however, Colborn’s chemistry was by far the best educational experience I ever had, and colored for the better the formal education that followed. As a lawyer, I was not intimidated by scientists, and was comfortable in presenting to a jury, for example, such things as carbon dating of methane by use of radioactive isotopes to establish the age and likely source of methane gas in a landfill.

This article, completed before his death and with his help, is my tribute to Mr. Colborn who, beneath his often dour and insulting manner, cared deeply about his students and reveled in their successes. He expected a lot and was irritated at me for not completing this article sooner; Mac McAllister, his friend and executor, read it to him two days before he died.

The magnitude of his influence as an educator and a motivator is found in the achievements of those he touched. Due to his instruction and example, his students have inspired countless others through teaching, mentoring, and parenting, and have thereby multiplied the influence of Lon H. Colborn a thousandfold in this twentieth century of science.

NOTES: