

IRVING LANGMUIR

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ROYAL trumpeters sounded a fanfare in the Music Hall of Stockholm on the evening of December 10, 1932. Two American flags dipped in salute as Dr. Irving Langmuir came down the steps from the platform to receive the Nobel Prize in chemistry from King Gustav V of Sweden. A moment later, returning to the platform where distinguished guests were seated, the American chemist took the place reserved for him among the Nobel laureates. Thus the Swedish Academy proclaimed to the world that science had weighed the achievements of Dr. Langmuir and had found them richly valuable.

A smaller world, composed of the two or three hundred workers with whom Dr. Langmuir has been associated in his daily work, has also been appraising his worth for a number of years. Their appraisal has been of the sort that one gets from the immediate members of one's family. The qualities of a great man soon become legendary to the world at large, but not to the workers in his own laboratory and office, and for fourteen years I have been hearing their verdict. His associates, many of whom are themselves inventors of foremost rank, say that "Langmuir is like none of the rest of us." One needs to hear the tone of sincere admiration with which this phrase is spoken, however, to understand its full significance.



A SKI PARTY ON BUCK MOUNTAIN, LAKE GEORGE
Dr. and Mrs. Langmuir are in the center of the picture.



DR. LANGMUIR EXAMINING DATA IN THE RESEARCH
LABORATORY, NOVEMBER, 1932

From the staff members who bring to Dr. Langmuir's office the problems that nobody else can solve, to the librarian who has just cataloged his 145th published paper, the employees of the Research Laboratory agree that nobody else is like him.

Dr. Langmuir's older brother tells us¹ that "Irving owes his enthusiasm, freshness of outlook, and tremendous curiosity to his mother, and his surefootedness and common sense to his father." Granted that genius must be born in men and women, the scientific genius of a Langmuir, as of anyone else, would yet go to grass if it were not cultivated by the most rigid mental discipline. Stern toward workers whose mental processes are vague and whose theories are badly thought out, I fancy that Dr. Langmuir has always been far more stern toward himself. Few people are willing to take the trouble to train their minds as he has trained his. Few people are willing to acquire the scientific background that he possesses, which includes as much knowledge of physics as of chemistry, together with an expert facility in mathematics and a broad grasp of engineering. If he is impatient with other people because of their mental stodginess, I suspect it is because he has never tolerated stodginess in his own mental faculties; just as he has learned to forego pancakes so that he may be a successful mountain-climber.

Forty-six years ago Irving Langmuir was a little boy who was forever trying to find out how things worked. His older brother writes:

¹ LANGMUIR, A. C., "My brother Irving," *Ind. Eng. Chem., News Ed.*, 10, 305 (1932).

I was a student of chemistry in 1887 and one of my first preparations was chlorine gas, which fascinated me, and I gloried in its smell. Walking home one night I carried a 4-oz. stoppered bottle of the gas and offered it to Irving, aged six, to smell. In his enthusiasm for science he did not smell but inhaled the contents of the bottle and nearly strangled then and there. Fortunately pneumonia did not develop but my father closed down hard on any more chemistry. Still, after a few years, chemistry gradually crept back, and Irving and I performed many an experiment, mostly of a spectacular variety.

Irving studied in some of the elementary schools of Paris while his parents were living there. About that time, in 1893, his mother, writing to an American friend, said:

"Irving thinks exercise is of much more importance than his studies, and I guess it is just as well, for his brain is too active and I really think if he studied vigorously we could not send him to school. His brain is working like an engine all the time, and it is wonderful to hear him talk with Herbert on scientific subjects. Herbert says he fairly has to shun electricity for the child gets beside himself with enthusiasm and shows such intelligence on the subject that it fairly scares him."

When he could not find Herbert, Irving would back his 8-year-old brother Dean into a corner and talk science to him until he cried for help.

In a recent paper² Dr. Irving Langmuir wrote:

The importance of arousing even a young boy's interest in independent work can hardly be overemphasized. My real interest in science was derived from my brother Arthur, who encouraged me to have a workshop at the age of nine, and later a laboratory when I was only twelve. Until I was fourteen I always hated school and did poorly at it. At a small boarding school in the suburbs of Paris, however, being an American and having a friend who was influential with the head of the school, I was freed from much of the absurdly rigorous discipline to which

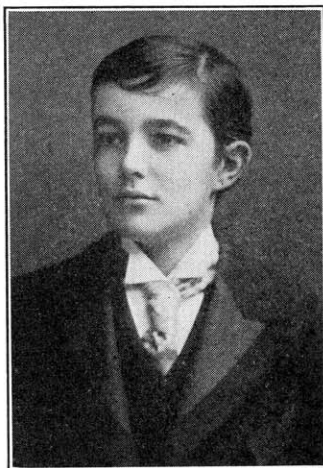
the French boys were subjected. Thus I could spend time alone in the school laboratory and was encouraged by one of the teachers to learn to use logarithms and solve problems in trigonometry, subjects not required by the curriculum.

I have been fortunate in having many wonderful teachers. Prof. R. S. Woodward, at Columbia, in connection with his courses in mechanics, was extremely stimulating and encouraged me to choose and solve my own problems for class work instead of those required in the regular course. I should like to see spontaneous work of this kind take a much more prominent part in our educational system.

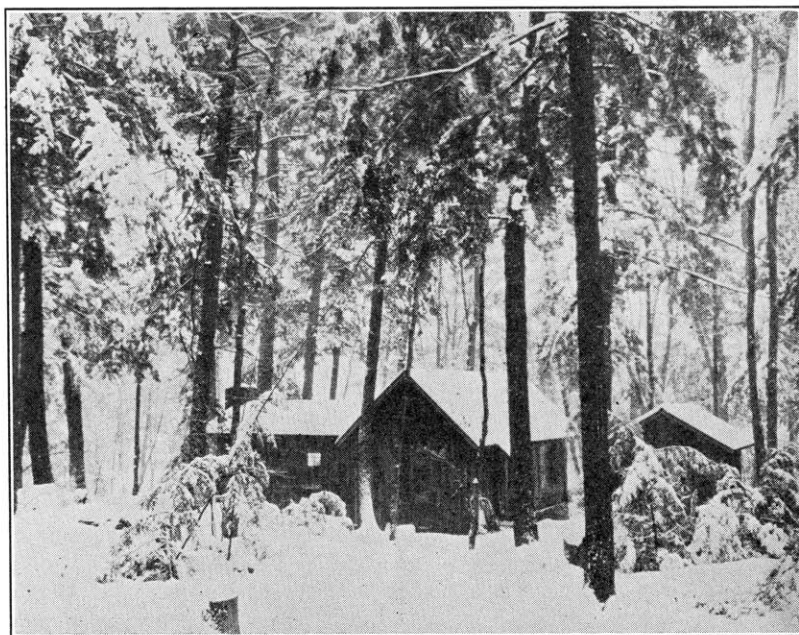
The events of his student years are described vividly by his brother in the article from which I have already quoted. In 1899 he entered Columbia from Pratt Institute in Brooklyn, choosing the courses in metallurgy so that he might get an adequate training in mathematics, not obtainable at that time in the chemical course. After graduating from Columbia in 1903 with the degree of metallurgical engineer,

he spent the following three years as a student with Professor Nernst in Germany.

Professor Nernst received the Nobel Prize in chemistry himself in 1920, so when Dr. Langmuir met his old professor in Berlin a few weeks ago one wonders which of them contrived to pay the more graceful compliment to the other. I venture a guess that the German's superlatives may have been more elaborate than his pupil's, for Dr. Langmuir never attempts what the English school-boy calls "ladling out the treacle." An ardent admirer of greatness in other people, his praise is discerning and wholly without personal bias, is always simply spoken, and is apt to be contained in one sentence. The laboratory worker who wins from him



IRVING LANGMUIR AT FOURTEEN



"THE HUT"—

WINTER CAMP OF

DR. AND MRS. LANGMUIR

AND THEIR TWO CHILDREN

AT LAKE GEORGE, NEW YORK

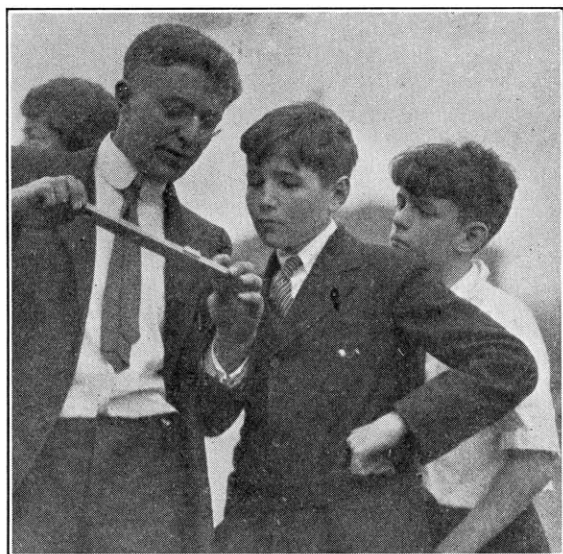
² LANGMUIR, I., *Ind. Eng. Chem.*, **20**, 332 (1928).

just the two words, "Very fine," has won a compliment greatly to be prized.

Among the letters of congratulation that have come to Dr. Langmuir from German friends of his student days, there have been as many written by old skiing friends as by chemists. One of them writes, "I remember that you made the almost unbelievable day's trip on foot from Göttingen over the Brocken to Andreasberg, and arrived late in the evening at our hotel." That was a 52-mile walk! Another writes, "Do you remember that we slept together in a hut one horribly cold night on a skiing trip?" To this day, when Dr. Langmuir is worn out with overwork on the 120th, or 130th, or 140th paper that he has been writing, he and Mrs. Langmuir pack up their skiing togs, take their skis, and start off in gay mood for the nearest snow. In recent years they have climbed the highest peaks of the Adirondacks and the White Mountains in the dead of winter, and have taken cross-country trips in Canada so ambitious that it would make other people's legs ache just to picture the distance. Asked one night by Colonel Lindbergh which he liked the better, flying or skiing, Dr. Langmuir caused the other dinner guests to gasp by the prompt



DR. LANGMUIR ON THE LAWN OF HIS HOME IN SCHENECTADY



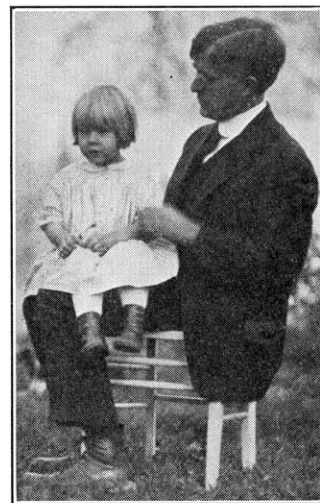
DR. LANGMUIR SHOWING HIS NEPHEWS, DAVID AND ROBERT LANGMUIR, THE USE OF A SLIDE-RULE

Dr. Langmuir organized the first troop of Boy Scouts in Schenectady.

frankness of his reply "Skiing." Since Dr. Langmuir owns his own plane which he pilots himself and enjoys hugely, it remains for Colonel Lindbergh to climb Mt. Marcy on skis with him before they can settle the question between them.

While Dr. and Mrs. Langmuir and their two children, Kenneth and Barbara, were spending the Christmas holidays in Switzerland, it seemed strange to their friends at home to see their house empty at Christmas time. Their house, large as it is, is barely large enough at Christmas when people in a town like to gather in the homes where they find the warmest welcome. Fragrant with Christmas greens fastened in every nook and corner, with games at the dining-room table and more games in the living room, with a German *Baumkuchen* of vast proportions, with homemade Christmas toys and decorations made by Mrs. Langmuir's ingenious fingers, with Dr. Langmuir as absorbed in the games as a small boy and keeping every one "on the go," Christmas is really Christmas at their house.

In summer time the same hospitality reigns at their camps at Lake George. Indeed Dr. Langmuir, who is his own carpenter at Lake George, whenever time permits, had to spend a week-end last summer making a new dining-table for the porch, ever so much larger than the old table, so that it would be large enough for all the guests at their week-end parties. In the spring, after the ice has left the lake, the family move from their snug



DR. LANGMUIR AND HIS DAUGHTER BARBARA IN 1921

winter camp on the mainland to spend their summer week-ends and vacation in their camp on an island. There on hot Saturday afternoons one can see the Langmuir motor-boat, the "Penguin," out on the lake while the family and their guests take turns at riding the aquaplane towed behind the boat. In the fall their shouts can be heard on the wooded slopes of the mountain where they are cutting ski-trails for the winter's sports. In winter there is no weather too cold for their skate-sailing and ski-trips—and always "Father" is the moving spirit behind the outdoor adventures.

Dr. Langmuir is fond of hobbies, and believes that each person should have several of them. He says of himself, "Perhaps my most deeply rooted hobby is to understand the mechanism of simple and familiar natural phenomena." Newcomers at Lake George who do not know him often feel that they should investigate when they see the "Penguin," with one lone occupant, remaining in the same spot on the lake for hour after hour on a windy day. As they draw near and see Dr. Langmuir sitting contentedly with "funny little rags" tied to long strings that float on the water, and not,

as they had supposed, in despair over engine trouble, they steer their own boats off in another direction and go away even more mystified than they came.

The clue to the mystery is that for years Dr. Langmuir has been intensely interested in making a study, in summer, of the relationships between wind velocities, waves and currents, and in winter of the phenomena connected with the formation and the disappearance of ice in the lake. At a dinner given in his honor at The Chemists' Club in New York on the evening of his departure for Sweden, his brother said:

Last October I was with Irving in a motor-boat on Lake George and I noticed that he was timing the waves with a stop watch. He said that he thought he had worked out the most accurate and convenient method for the determination of wave-lengths and wave-heights and had developed a formula which would indicate the height of a wave if you determined the time interval between two successive white caps. By this method one could find the height of waves seen through field glasses a mile away.

He is leaving us this midnight on the Bremen en route for Stockholm. Let us wish him a rough trip, for both Irving and his wife are good sailors. I am quite sure you will find him tomorrow on the bridge, stop watch in hand, following the course of the great waves of the Atlantic.
