

The Jewish Heritage of the Genetics Genius

by Raphael Bashan

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Among the scientists who came from all corners of the world to participate this week in the memorial service for the State's first President to be held at the Weizmann Institute in Rehovot, one stands out with the appearance of a typical genius: lean, somewhat pale, timid, very simply dressed, a high white forehead, clever eyes, definitions as sharp as a razor, and the tremendous knowledge of a brilliant scholar. He is Professor Joshua Lederberg, one of America's greatest scientists, winner of the Nobel prize for medicine, and a descendant of a veteran family of Safed in the Galilee.

Q. Do you remember the day you received the Nobel prize, Professor Lederberg?

A. (Glances at his watch, and smiles lightly) It occurred exactly 9 years ago. A reporter came to my home and informed me that he has unofficial word that the Nobel prize for medicine would be awarded to me that year. At first I thought it was a hoax and said to him, "To tell you the truth, I have no reason to believe that the award will be given to me!" But the reporter was certain of his information, and I had nothing left to do but hope that the matter would not become public until it was verified. As for

myself, I left the city and went into hiding for two days. Finally the official word came through.

Q. How did the Nobel prize affect your life?

Viruses Convey Inherited Characteristics

A. Well, you are transformed from a private person to a public institution. Had I not received the prize, you surely would not know who I am nor would you wish to interview me. (Sincerely) I am certain that from a scientific point of view the Nobel prize has no effect on the quality of a researcher's work, and I do not believe that the awarding of the prize is liable to provide a bridge between the wide public and those dealing in pure research. The prize simply turns the spotlights of publicity on its recipient, and with that the matter more or less comes to an end.

Q. What was actually the reason for your getting the prize?

A. I received it together with Professor Edward Tatum and Professor George Beadle, for work entitled "The research of basic genetic processes in bacteria". (Gives description of the research work).

The Parents Dreamt That I'd be a Rabbi

Q. You received the Nobel prize at a very young age. Was it difficult for you to reach your high position in science?

A. (Thoughtfully) I shall relate to you some biography. First,

I must disappoint you. I was born in the United States and not in Eretz Yisrael, as has been written. That's unfortunate. My parents emigrated in 1922 from Eretz Yisrael to New York. At the age of 8, I travelled with my mother and brother Seymour to visit our large family here. The financial situation at home was not very good. My father was a rabbi in a small community in the Washington Heights section of New York. He is an educated and learned man, and did his work sincerely and devotedly. But he never had any money! On the other hand, the house was always full of books, and my mother always had money for learning and reading, but don't ask me from where it came. My parents provided me and my brother Seymour all the opportunities to study and to broaden our horizons.

Q. What did your parents wish you to be? What profession did they want you to choose?

A. (Smiling) Most certainly they wanted me to be a rabbi.

Q. And when did you decide to be a scientist?

A. I think at the age of 5 or 6.

Q. Were you an outstanding student?

A. (With genuine modesty) It's possible to say that I was quite good. Upon completing high school, I transferred to Columbia College and finished with honors. At the age of 18 I received a fellowship, and continued to do research with Professor Ryan

who told me, "My young man! Your field is genetics research." During the Second World War I was in uniform and worked in the Naval Hospital. Afterwards, I returned to the Columbia Medical School and continued to conduct research on the genetic properties of bacteria. The work for which I received the Nobel prize I did together with my two colleagues during a period of 6 months. The report of the work was first presented officially at an international scientific conference at Cold Springs Harbor. Of course, I was then very young, and some of the veteran, renowned scientists couldn't stand the fact that a young man like myself should present them with such a revolutionary theory. I recall an especially heated discussion ~~at~~ which I had with Andre Levov, Nobel prize winner and head of the Pasteur Institute in Paris, who indicated grave doubts concerning my theory.

My mother will tell you everything

- Q. I would like to hear more of your family background, and of your ties to Israel.
- A. Perhaps you should go to my mother. She'll tell you everything.

I went to the Tel Aviv apartment which Joshua Lederberg bought for his parents. There I found the Rebbetzin Esther Lederberg: a vigorous woman, smiling, forceful and educated, with well-tended blonde hair, a "yiddishe mamma" type -- of the old style, prepared to do everything for the children. On the apartment walls: copies

of all the diplomas, certificates and awards received by her sons Joshua, Seymour, and Dov. Outside, in a wheel-chair, paralyzed and silent, sits Rabbi Lederberg, father of the sons. She began in fluent Hebrew, "Just so you'll know who we are, I'll begin with history!"

"My maternal grandfather," says Rebbetzin Esther Lederberg, "was Reb Shmuel Shulman of Safed who had a wonderful hobby: a spectacular painting of the Western Wall made entirely with passages from Lamentations. In 1885 he sent the painting to Vizer the Great in Istanbul. The Vizer was so enchanted with the picture that he showed it to the Sultan himself. What did the Sultan do?! He ordered that my grandfather be brought to reveal the secret of the wonderful painting. My grandfather explained to the Sultan how it was done, and then asked a favor: that His Excellency the Sultan allow him to print the picture and distribute it to the whole Diaspora. The Sultan agreed. Seeing that things were going so well, Reb Shmuel asked a further favor: the Sultan should give permission for 500 Jews to enter Eretz Yisrael in order to join the colonies in Yehuda and the Galilee. And what do you think? The Sultan agreed and the Jews entered. And in the history books one can read that where Dr. Herzl failed, Reb Shmual Shulman from Safed succeeded. That was my maternal grandfather."

An eight-year-old wanted to be 'like Einstein'

"I'm myself, am a daughter of Rabbi Aharon Goldenbaum, a Gur chassid from Safed. Before the First World War, the Turks began to hunt for my father. He fled to America, and was appointed Rabbi

of the Roumanian Synagogue in Brooklyn. He sent us money and waited for us to join him. Due to the war and its aftermath, we were detained in Eretz Yisrael, and in 1924 I married Rabbi Lederberg. In order to make a living we opened a clothing store in Haifa's old commercial center, beside Israel Feldman's store. We would purchase 'green shirts' from the British army surplus, and even Hamashbir bought from us. In 1925, we went to America, and my husband became Rabbi of the congregation in Montclair, New Jersey. I already knew that Joshua wanted to be a scientist when he was still a young child. His teacher informed me that when he was 8 years old she had asked the pupils to describe what they wished to be when they grew up. Joshua wrote: I want to be like Albert Einstein!

Bialik met the boy in Tel Aviv

"We moved from place to place, until we settled in Washington Heights, New York. My husband was rabbi there, and for 23 years (she glances at the wheel-chair outside) worked very hard. I learned English, and was President of the 'Mizrachi Women' in the region. In 1933, I went for a visit to Eretz Yisrael. Joshua was nine, and his brother Seymour was still a small boy four-and-a-half years of age. We travelled in a car to the "Middle East Fair" and saw everything. Suddenly, the driver said to me, "Do you see those three people? That's Bialik! That's Dizengoff! That's Klausner!" It seems that their car had broken down. I said to them, "Please, travel with us." They accepted my invitation. I took Seymour on my lap. Bialik held Joshua, and during

the entire trip, looked at his head and said, "What a head! What a head! This youngster will be a great person!"

"Once I was chairlady of a Zionist meeting in New York. Senator Kennedy came to give a lecture. When he saw me wearing a pin with the name Lederberg, he came straight over, shook my hand, and asked, "Are you perhaps a relative of Professor Lederberg?" I replied, "That's my son! And if he wasn't too young to receive the Nobel prize, you are not too young to be President." Kennedy laughed, and I added, "If you are elected President, please send me an invitation to the ~~in~~auguration." And what do you think? That he didn't send?! He sent! But at the time there was a heavy snowfall and I couldn't get to Washington. But Joshua participated in the ceremony.

"From my other sons I also have pleasure, thank God. Seymour is a professor at Brown University, and Dov was making movies. He photographed and also produced. Two and a half years ago he met a Lubavitcher chassid in Los Angeles who spoke to him for a long time. And what do you think happened? My Dov became a Lubavitcher chassid and lived near the Rabbi. Then he began making movies about Lubavitch, and even made a movie about the Rabbi himself. Now he is here with us, and will work on movies here, and with God's help, will settle in Eretz Yisrael."

I returned to the Weizmann Institute.

Q. Does your research work have practical application in day-to-day life?

A. (He describes the practical significance of his work)

Q. Is there any relation between your work and cancer research?

A. (He describes the relation)

More psychiatric cases than clinical cases

Q. You are not a scientist who seals himself off from the outside world. You have a popular weekly science column in the Washington Post, you give many lectures, and you are a member of many public-scientific committees advising the American Government. On which committees are you presently serving?

A. I was recently nominated to the National Advisory Council on Psychiatric. In the United States this is an enormous problem. In our hospitals there are more beds occupied by people suffering from mental disorders than by clinical patients.

Q. I heard that you have also dealt with the LSD problem.

A. (He describes the genetic effects of LSD)

Q. Why do American youth take LSD?

A. (Describes the sociological motivations for taking LSD)

Four Strata to the Pyramid of Science

Q. Which general lines of activity would you propose for science in Israel?

A. (Appreciatively) First, I wish to say that the Weizmann Institute is a scientific institution with an excellent international reputation. Any scientist who has heard of the Rockefeller Institute also knows of the Weizmann Institute, and that's a compliment to both sides. (Slowly and emphatically) The Weizmann Institute, as it is today, could take its place in any scientific center in the world, and bring honor to it. Every professor at the Weizmann Institute could easily receive half a dozen attractive offers from important scientific institutions in the United States if he wished to leave here. This Institute contains excellent scientific minds in all the fields, while at its head stands an unusual man, with vision, daring, and imagination -- Meyer Weisgal. I can definitely understand the Israeli scientists~~s~~ employed at the Institute who are not enticed by the offers from overseas. For to live in Israel and at the same time to work at the top of the scientific world -- what more could a man wish!?

You ask me to which horizons should Israel science be directed. I dislike to give advice to others. I shall ~~first~~ just express a few ideas. In my eyes, science is a pyramid. At the top of the pyramid is pure research. Talented scientists will never accept orders or instructions on what to do. The second stratum is a general university program. If you have good physicists or chemists, let them work in the laboratories, don't interfere, and let them alone. The results will come by themselves. The third stratum is research into all the problems

of interest to the State in the long run. Here the selection must be made by the government in line with the country's needs. The fourth and last stratum: researches specifically initiated by the state, for example, desalination of sea water. The trend, in general, is to transfer funds from the upper stratum, that is the pure research, and to transfer it to the lowest stratum -- the applied research directed by the state. And that should not be done, since if budgets are taken from the pure research, one will not find, in the long run, the scientific cadres to deal with the applied research. Take, for example, the Weizmann Institute. It must be a growing and prospering institution. If it will begin to sand in one place and mark time, it will develop hardening of the arteries, and the extremely important mutual stimulation between scientists will cease to exist. (Warningly) Guard the upper stratum of the pyramid!

Q. Professor, you came from a religious home. Your father is a Rabbi, and your brother is a Lubavitcher chassid. What is your relation, as a scientist, to religion?

A. Religious? No, I am not religious, but the more I mature, the closer I find myself to Judaism. I am not observant, and I do not feel that I must uphold all sorts of Middle Age customs. However, as a scientist I have the special privilege to penetrate occasionally into the crossroads of life and to come out a wiser man, and perhaps to a certain extent, also closer to religious philosophy. (After long meditation) If I'm not mistaken, one of the precepts of Judaism is learning. And what am I doing all my life? Learning!