



When PSSC came to Long Island

by Cliff Swartz

In the summer of 1957, Trudy Goldhaber told me about a new kind of high school physics course that was being created at MIT. Trudy wanted to bring it to Long Island and asked me to lead the effort. The following year several of us from Brookhaven Lab ran weekly workshops for the physics teachers in Suffolk County. We had about 50 participants, only 6 of whom had had more than one year of college physics. Only one had studied calculus. (He was released from teaching the following winter because he couldn't control his students.) The workshop consisted of marching through the paperback edition of PSSC, including some of the labs. It was an enjoyable experience, although one teacher was particularly lacking in physics ability, while at the same time being most enthusiastic. The other teachers always saved room for him right up front where he could ask the most stupid questions. These questions were so stupid that frequently I didn't know the answers. As I came to realize, Wilt Baty was a master teacher and I learned a lot from him.

During our coffee breaks the teachers told me about the real-life problems they faced in the classroom. "It isn't physics I'm having trouble with," one teacher told me. "It's what to do with the youngster who throws your books out the third story window."

"Get me a class," I answered. "Let me find out."

The next week they came in with a proposal. The principal of the centralized district would let me teach one class all year long, if I would teach the new PSSC. Of course, I jumped at the chance. I could go to the school for the first two periods, and then go to the lab. They made a big publicity event out of it: "Brookhaven Scientist to Teach in Local School." However, they hadn't checked with the state education department. Of course, this would not be allowed. I had never had a methods course and certainly was not certified. The impasse was resolved by arranging to have a certified teacher in the classroom at all times. He sat in the back all year and never said a word. The principal was so proud of his coup that he paid a lot of money to have a double room outfitted for me. One half contained a lecture ramp, and the other half had small stations and tiny sinks. There wasn't room to swing a pendulum, stretch a slinky, or fill a ripple tank. As for the lecture hall, I managed to get the students out of their seats on frequent occasions.

At the end of the year many of my students asked if they could buy their books. Finally the word came down from the school administrators. There was no way that this could be done. Furthermore, if a student lost a book there would be a \$5 fine. On the last day the whole class lined up at the office, each with a \$5 bill and their own copy of PSSC.

For ten years or so the teachers who had been in the Brookhaven Lab workshop met once a month, usually at the new Stony Brook University. We heard a lecture by one of my colleagues in physics and then sat around and exchanged war stories. Most teachers found that students had trouble with the new course the first time they taught it, but students in the following years found it easier.



There were lots of objections to PSSC when it was new. Many teachers and parents thought that it was too difficult or didn't spend enough time on fundamental (and familiar) formulas. There was a research project report in *The Science Teacher* showing how students in a PSSC class did not do quite as well on a test as a control group did. The statistics of the study were bad, and, furthermore, the comparison test was one that had been designed for the traditional course. In New York State there was a prejudice against any curriculum development that came from outside the state. However, the Education Department formed a committee to survey the situation. For the first time in the history of developing curricula, they invited a professional from the discipline. In this case they invited a physicist – me – and with the good and unanimous cooperation of the other committee members we revised the New York State physics syllabus so that it was possible to teach PSSC and still meet Regents exams.

During the first couple of years of PSSC the student grading system caused some trouble. The testing specialist (from Educational Testing Service) wanted test results to be distributed as a Gaussian with a mean of 50%. However, in most schools the students taking PSSC were from the upper decile in grades. Neither students nor their parents were used to having exam grades of 50%. I had one student who was an ace at taking the standard multiple choice exams. At the other extreme there was a student who did not do well on multiple choice questions. He was too slow and tended to think things over. However, the slow student thrived in the laboratory and invented ingenious variations. A couple of years later the bright student flunked out of MIT. The slow student got a Ph.D.