



## **PSSC PHYSICS:**

### **By One Who Saw It from Beginning to End**

*by John H. Dodge*

#### ***Background***

The Great Depression was about at its lowest when I graduated from MIT in 1931 with a degree in physics. No work was available to me until, after nearly two years, I received a telephone call late in March 1933 from the Headmaster of my secondary school: The Albany Academy, established in 1813 in the city of Albany, NY. He told me that the physical science teacher had suddenly become incapacitated, and asked if I could come and fill out the school year in his place? Could I! You couldn't see me through the dust. I stayed on for the next few years, for the previous teacher was never able to return. I liked teaching well enough to stay in it.

Also at MIT I had ROTC training as well as physics, and during graduation ceremonies the ROTC students were sworn in as Second Lieutenants – I in Antiaircraft Artillery. I kept up my work, and in 1940 I had the rank of Captain.

By 1940 the situation in Europe was very tense, and President Roosevelt declared a state of emergency. This enabled him to start the draft, and order reserve officers to duty. I returned home from school late in October 1940 and found orders to report to West Point for a final-type physical examination, and if that was satisfactory to report to Fort Monroe, VA on December 7, 1940. I was on active duty from then until early March 1946, when as a Colonel I reverted to inactive status; the peace time Army was not attractive.

I now was free to resume teaching, and had time to explore the situation. Sometime during the following summer, I found what I thought would be a good location. It was in the high school of the town of Irondequoit, immediately next to the city of Rochester, NY. This city is the central location of Eastman Kodak, Bausch & Lomb, General Railway Signal, and other companies, many of whose employees settled down in Irondequoit and other nearby towns. The Irondequoit School Board always had at least one engineer on it, so the physical sciences always received proper attention. I began my twenty years of teaching there in September 1946.

I must say that I am 96+ years old, living in a single motel-style room in the Assisted Living Center of Azalea Trace, a life-care retirement center. I have been able to keep with me only two PSSC volumes: the fourth edition with its laboratory manual, and the seventh and final edition with its loose-leaf Teachers' Guide. All else is memory.

#### ***The Birth of PSSC Physics***

Teaching at Irondequoit was the first time that I had to teach physics following the syllabus provided by the New York Board of Regents. I disliked it, for it appeared to me to be more nearly a syllabus for the 9<sup>th</sup> grade. For an extreme example: there were to be no problems on Newton's Law  $F = ma$ , for the mathematics was deemed to be too



complicated for high school juniors and seniors! I was able to beef up the course partly because the textbooks available were not as low as that, even though they were defective in other matters; and partly because I was able to sneak in from time to time problems that were brain exercisers.

MIT has a few faculty members who are designated as Institute Professors. These have performed their duties extremely well, and now are being paid for doing anything educational that suits their fancy. In 1956 Institute Professor Jerrold Zacharias' fancy was to produce and test the formation of a high school physics course that would give an accurate idea of the breadth and depth of up-to-date physics to the extent that it could be understood by competent high school students. By December 1956 he had organized a team of scientists and teachers from inside and outside of MIT, and by September 1957 this Physical Science Study Committee had completed enough work to be tested in a few high schools during the 1957–1958 school year.

In the fall of 1957, the Russians put up the first artificial satellites of the Earth, the Sputniks 1 and 2 being launched a month apart. This Soviet success dealt the U.S. a bitter blow, and the reactions were prompt. Among these was the realization that education in science and mathematics was far behind the Russians. Much money became available for the improvement of curricula, and since the PSSC was already under way, it was able to obtain large grants that enabled a vast increase in the number of pilot teachers in the program. In the school year 1958–59, the new course was tested in 250 schools, preceded by three six-week summer institutes for training the pilot teachers.

### ***Irondequoit High School Becomes Involved***

At this time, one of the Irondequoit School Board members was a friend of mine, a fellow alumnus of M.I.T., and a fellow member of the U. S. Army Reserve. In late 1957 he had heard of the PSSC and its work, and advised me to get in on the program. Since many more pilot teachers were now required, it was easy for qualified teachers to become pilot teachers. I was anxious to become one of them, for I was sure that the new course would be vastly better than Regents Physics.

Our school Principal at that time was anxious to improve the scholastic skills of the students in our school, and had ruled that I should introduce Advanced Placement Physics in Sept. 1958. I told him about the PSSC program and asked permission to introduce the PSSC course instead of the AP Physics. He refused saying that the AP courses were well-known and effective, whereas the PSSC was brand new, and who knew what kind of thing it would turn out to be? I related this to my Board member friend who then reasoned with the Principal until the latter finally agreed to delay the AP Physics for a school year and let me work on the PSSC course beginning Sept. 1958. This connection with PSSC Physics lasted the rest of my life as a paid teacher and then well on into my “retired” years.

In some schools a pilot class was formed by selecting small numbers of students with high scholastic standing, and providing a highly competent teacher for them. I thought that this was no way to test the program, for it seemed to me that the test would have to reach farther down into the student body to get a realistic picture of the general use of the course. I felt that the information obtained from classes of average size with a normal



distribution of scholastic competence among the students would produce better data for an average high school.

At the beginning of the 1958–1959 school year about one hundred students were registered for physics, none of whom was a chronic failure. These were divided into four classes of twenty-five students each; two were to be pilot classes for PSSC Physics, the other two were to be classes for Regents physics. The situation was explained to the students to begin with; fortunately the hundred students divided themselves between the two courses fairly evenly, requiring a minimum of adjustments to equalize the size of the classes.

### ***The Pilot PSSC Physics Text***

Initially the pilot text was formed of four parts bound separately. As I recall it, Part I was a general overlook about the nature of physics, with a small number of representative examples. Part II dealt with Geometric and Physical Optics; Part III with Motion, Gravitation and Energy; Part IV with Electricity, Electromagnetics, and Atomic Theory. Parts I and II were available at the beginning of the school year; Part III came later, but in time for the subjects included; Part IV was different. We first received the first two or three chapters stapled in between plain blue covers. The next segment came stapled but not in covers, and the last batch came in the form of printer's galleys with all illustrations printed last. Some pilot teachers joked that they had to stand by until the postman arrived, when they could grab the day's physics and dash up to class with it. It was a great relief to have in the next year the complete course in four complete paper bound volumes.

The PSSC text was like nothing most of the students had ever before seen. To quote the Teacher's Guide: "The reading of physics is different from reading a novel due to the conciseness of the logical development and the often quantitative reading," There were no "Type Problems" and no Glossary. Nothing was asserted; all principles were built from initial observations. Questions to varying degrees of difficulty expected the student be able to apply the principles to the situation considered. The teacher had to be patient and friendly, but firm.

It was our duty to keep a daily log of our classroom activity and to make periodic reports to the PSSC headquarters. At lengthy intervals I was able to visit the headquarters and to get to know the people there. It was on one of these occasions that I first met Dr. Uri Haber-Schaim ("Uri"), with whom I later had a great deal to do. The headquarters seemed to be pleased with the reports I sent in.

### ***Dr. Zacharias Pays Us a Visit***

In the fall of 1958 the Rochester chapter of the Optical Society of America, a large organization (think Eastman Kodak, Bausch and Lomb), took an interest in the new Physics course and set up a large evening meeting open also to school administrators, teachers and students, to get the details of it from a speaker who could give a complete and accurate picture of what was developing in high school physics – Dr. Jerrold Zacharias. I was told that he would visit me before the meeting, at about 3 PM. This is



the time at which the school is dismissed, so I invited PSSC students to come in and talk with him; about fifteen boys showed up, a comfortable number. It had happened that two of the films that were supposed to be coordinated with the text had been sent to IHS out of order, and students were confused somewhat by the discrepancy. Zach (as he was known) did not know that this had happened.

Zach had a strong personality, and he vigorously defended the course after a few negative remarks by some of the students. After he found out about the misplaced films and several other misunderstood matters were cleared up, the meeting went well and Zach was happy when he went on his way.

At the evening meeting he gave an excellent review of the aims and means of PSSC Physics. He then went on to say that he had visited IHS earlier, and praised the school in such flowery terms that I wanted to crawl under my seat. When I reported about the meeting to the Principal of the school the next day, he told me that a member of the Irondequoit School Board had also been present, and gave the same report as I had, but in addition said: “but it sounded GOOD!” IHS was in the spotlight from then on. Shortly after, the school began to take on the piloting of other subjects: chemistry, biology, earth science and mathematics. Nevertheless, I still had to begin AP Physics in September 1959.

### ***Two Incidents in Class***

When we were well into the book and were studying light, difficulty increased in the study of interference and diffraction. The classes became vocal about the difficulty of understanding the text. I finally said in one of the classes: “I will read two or three paragraphs in the text, and when you hear me read a portion that you do not understand, raise your hand, and we’ll see what the trouble is”. So I read the section, but no one raised a hand. I said: “Well! You all understand it when I read it. Yet all I did was to read what every one of you could have read for yourself. What goes?” For a short while no one spoke. Then I heard someone in the back of the class say: “YOU stopped at all the right places.” I was astonished to realize that so many students – juniors and seniors at that - had no idea about the nature of punctuation. It reminded me that a Physics teacher is also a teacher of English; it also suggested to me that it would be well to read with the class from time to time.

(When I became the Science Coordinator for the District, I had the opportunity to hold joint meetings with the Mathematics Department, and also with the English Department. We cannot afford to have the departments sealed off from each other. I could enlarge this point considerably.)

Sooner or later the time comes when experiments must be performed to assemble the data required to develop general principles. It was believed initially that the equipment needed would be simple enough to be assembled by the teacher or perhaps by his students from raw materials. This was true in a few cases, but eventually the idea was dropped. However, it was still in effect when we reached the study of waves that precedes the study of light.



I can't recall any high school book back in that time that covered the subject at all. It was easy to see how a ripple tank was constructed, and so I began by purchasing a half window pane set in wood, followed by the wood needed to make a proper support, etc. It was a good tank, if I do say it myself. Our Industrial Arts Department was good enough to make several others like it – all we had room for in our laboratory space.

We were ready to begin the sections on water waves before the additional tanks were ready, so I set my tank on the floor in the middle of the classroom and placed an arc lamp on the floor under the tank with the source carbon aimed straight up. The ceiling then made a screen that displayed very well the goings-on on the water surface.

On one occasion I had set the device that makes ripples so that two separated point sources would go up and down together, and thus display the wave pattern produced when the circular waves from one source pass over the circular waves produced by the other source. At one point in the demonstration noise from the arc indicated that the carbons were burning back too far and the arc was about to quit. I bent down to adjust the carbons, and when I looked back up, I was astonished to see a fish swimming about, passing back and forth under the ripple makers. The guppy was a fish small enough to swim freely in water about a centimeter and a half in depth, and the class was entranced. One of the bright girls had come to class with a test tube filled with water and the guppy, closed with a rubber stopper. When my attention was directed at the arc, she removed the stopper and poured the contents of the tube into the tank. Seeing that I was not in a rage, she accepted the return of the guppy. Later she was to receive a PhD. in Mathematics from Brandeis University; “A little nonsense now and then is relished by the best of men/women.”

### ***Regarding the Laboratory***

It was something of a lengthy process to get the students to write their lab reports PSSC-style. The elements of a proper report are found both in the Teachers' Guide and in the foreword to students in the Laboratory Manual. All entries must be neat enough so that they can be easily read or tabulated; discussion of results must be clearly stated, and bulleted questions should be answered with complete sentences.

At first even some of the National Honor Society members would turn in reports neat to the point of looking like engravings; but on reading any discussion required, I would find nonsense. I well know how hard it is for a teacher to take home with her/him 50 reports to read during the evening. It is all too easy to grade a report on its appearance instead of its content, and there are always students who will take advantage of the teacher, to their own detriment.

Part III also used laboratory equipment I had not seen before. Early on laboratory carts were used in four experiments and later in an additional experiment. Although they were new to me, I could see immediately their usefulness.

At the start the cart with its load of one or more bricks was held in place at one end of a table while a student stretched one or more rubber bands attached to the cart with a meter stick held horizontally slightly above the cart. On signal the cart was released and moves faster and faster, the student with the meter stick stepping sideways to keep the rubber



bands always stretched by the same amount. Just before the cart reached the end of the table another student was posted to grab the cart from above just before it ran over the edge of the table. The fifth experiment dealt with the collision of two carts on the table, and was done without rubber bands. Part III had several other excellent experiments that I had not seen before, and that I was happy to be able to use.

## ***Physics and Mathematics***

During the laboratory experiments I was reminded that in addition to being a teacher of Physics and English, I was also a teacher of Mathematics.

A math teacher usually asks a student to plot a graph of some function under study, and the student turns up with nice straight lines or smooth curves. In physics the process is usually reversed; the student obtains a set of points from some experiment, and is expected to recognize the function that best describes the set. Some remarks must be made regarding the accuracy of measurements and the reason for drawing the best line that represents the data. Usually the math teacher gets to teach graphing before the physics teacher does, and sometimes the student is set in his/her ways before the physics teacher takes over.

I remember one young lady student who had not yet grasped the physics point of view. Her laboratory group had done the experiment: Changes in Velocity with a Constant Force, and she had plotted the data. She said that she did not know anything about the collection of points on her graph paper. I kidded her a little, by saying: Draw the circle through the points, Oh no! She said. I then said: Well, try a parabola. Once again she said Oh no! So I said: So you do know something about it. Tell me what you can draw that is the closest to the points.” She then said: I suppose it is nearest to a straight line.” I then told her to draw it in, and that it might be best to draw it so that there were as many points on one side of the line as there were on the other side. She set a ruler where she thought the line should go, but she then closed her eyes and shuddered as she drew the line.

## ***The Good Word Spreads***

The first edition of PSSC Physics appeared in 1960, and the second appeared in 1965. In the five-year period between these editions, 6,000 teachers had taught the course to 640,000 students. Each teacher had received instruction in advance about the course that he/she was about to begin teaching. This could happen since a number of colleges and universities throughout the country were offering additional institutes or workshops to train teachers for the course.

I was at home one day in late June 1960 when my telephone rang. When I answered, a voice said: “This is Father Mulligan at Fordham University. We are going to run an institute for PSSC Physics, and we need a PSSC teacher on our staff. We hear that you would be available; would you be willing to join us?”

Well! I was astonished. How in the world would he know? I knew little about Roman Catholics to begin with, although I had been friendly with an Augustinian priest during my time with the PSSC institute that had been held at Bowdoin College. I suggested that he see if the Augustinian would be available, but the suggestion went over like a lead



balloon. It was evident that the Protestant in hand was better than the Augustinian in the bush. I wanted to be doing something, so I consented. (I later found that another PSSC teacher had consented to the job, but had backed out at the last minute.)

The Institute was backed by the National Science Foundation, and so it was blind to religion. About half the students were from various RC teaching orders, the rest being non-Catholic. I found it a pleasure to work with the priests, brothers and nuns; they were easy to get along with, and were thoroughly devoted to their profession. By the time we were well under way, I had become familiar with the teaching orders of men, but the orders of women still baffled me. I made a remark to this effect to one of the priests; with a twinkle in his eye, he said: “At Notre Dame we had a Nun-watchers’ Manual!”

Uri ran a long series of workshops for PSSC Physics, there being a continuous demand for instruction. I was on his staff for five summers doing workshops conducted by Boston University and held at the Putney School in Vermont, and for three summers doing workshops conducted by the Colorado School of Mines at Golden, CO; these were financed by student fees. All of these workshops were by and large pleasant experiences, although once in a while there was a sour apple in the group.

### ***We Need an Earlier Course***

I managed to complete the PSSC Physics course by careful planning in advance and managing to keep to the schedule. It was hard work for both the students and me. There was some improvement in the performance of the students as time went on, but many never reached the point of being comfortable with the course. During the second year I did not have to work quite as hard, but the reaction of the students was a repeat of the first year. I began to think that it was a bit much to expect students who had been brought up under other conditions to be expert in reacting to a new set of conditions near the end of their secondary schooling. I felt that they should be able to take a science subject in a lower grade and with simpler substance but conducted in a way similar to that of the PSSC Physics. Then the PSSC Physics would not seem so strange to them, and they would undertake the course with greater confidence.

Similar rumblings came in from here and there about the country, and a decision was made that when time would permit a group would be formed to consider what should be done. Time permitted in the summer of 1963, when *Introductory Physical Science* was born, a new course designed for the 9<sup>th</sup> grade but found suitable for the eighth grade as well. It was hugely successful. There we must leave it.

### ***PSSC Physics Jumps to Puerto Rico***

After I had been through the PSSC Physics course three times and was completely at home with it, Puerto Rico decided to give the course a trial down there. They proposed to the PSSC headquarters to start the trial off by having a group consisting of twenty-three teachers and two representatives from the administration meet daily during the last two weeks of August 1961 at the University of Puerto Rico; they requested the PSSC HQ to send someone down to instruct the group. After that, they had someone else lined up to keep the group one jump ahead of the students by weekly meetings during the year.



No one in the headquarters was able to meet the request at that time. However, I had come to be well acquainted with them, and I received their request to go down there at headquarters' expense to run the workshop in that time interval. This I could do, since there was just enough time for me to return to Irondequoit before school began. I was pleased to get the request but was uneasy about it since I knew no Spanish.

In late spring of 1961 a large group of PSSC directors of workshops held a meeting at M.I.T. that I was able to attend, and there I met the Director of Secondary Education for Puerto Rico. I told her that I was uneasy about not being able to speak Spanish, but she just laughed and said that they all knew English.

Ha! There were three or four teachers whose command of English was good enough to discuss physics matters freely in English. Fortunately, the University had designated one of their staff who was fluent in both Spanish and English to be my assistant and caretaker of laboratory equipment. With his assistance we made out all right. The textbooks were in English. I had heard that there would be a Spanish version soon, and remarked to my assistant one day that instruction would be easier when the Spanish version became available from Editorial Reverte, whose headquarters is in Barcelona, Spain. To my astonishment he said: "No! Those Spanish don't use the right words." Later I thought, "Of course! Even the United States and England do not speak English in exactly the same way."

Later I remarked about this incident to an official of Editorial Reverte. He replied that Spain was the Mother Country; other Spanish-speaking countries would grumble, but would use the books originating in Spain. Otherwise he said there would be a different version of PSSC Physics for each of the eighteen Spanish-speaking countries.

European countries were interested in what was going on in the U.S. (I once wrote an article on PSSC Physics for a French education magazine), but had no intention of being influenced by it. Spanish speaking countries were much more open on this matter, and I thought I might be involved in going somewhere south of the border. I decided that I would not go again without knowing something about the country's language.

The Irondequoit school system ran a night school for adults, and luckily for me one of the classes taught Spanish. I attended night school twice a week for two years; at the end I had a good grip on Spanish grammar and usage. Our instructor was not a native Spanish speaker and had to rely on recordings to give a notion of what natives sounded like when they were speaking. I never had to speak Spanish on behalf of PSSC Physics; however, I had several occasions to do so on behalf of the *IPS*. But that is another story.

### ***Dodge Has Had It***

By my last three years at IHS the school had grown to 2200 students with an enlarged faculty. I was caught up in pilot teaching *IPS* classes, besides my single AP Physics class. I had to hand over PSSC Physics to the two other physics teachers.

During my time in IHS I was also caught up with other activities. I spent a number of years on the Council of my church, sometimes being Financial Secretary, sometimes Church Treasurer and sometimes Council President. In addition I was occupied with my duties as Plans and Training Officer for the Monroe County Area Army Reserve. I began



to feel unstable, both physically and mentally. My physician sent me to several specialists without result until the last one – a neurologist – said to me:

“There is nothing wrong with you, you are just nervous and depressed”; and then he prescribed a drug called Elevel.

When I told my own physician about this, he was disgusted. When I asked him what the drug was for, he answered that the drug was used to make a person feel better. I thought to myself that if I had to be drugged to feel good, it was time for me to clear out. I resigned my high school position as of the end of the school year in June 1966, thus bringing to a close twenty years of teaching in IHS. I could not remain idle, but I did need work in which my evenings and week-ends could be left free.

I was puzzled about the kind of work that would require an individual of my background and experience and yet would leave me free for evenings and week-ends. Then I had a brilliant idea; perhaps the PSSC would like to have me work for them under such a condition. A word to Uri was sufficient, and I began working in the PSSC headquarters at around July 1<sup>st</sup> 1966 for three years’ full time and an additional five years half-time. Although I had not expected it, my work included a fair amount of traveling, both within and outside of the United States. My “outside” work began with a week in Israel, attending a conference of Israeli teachers, and later attending various groups meeting in Chile, Argentina and Uruguay.

### ***PSSC Physics Gets Hard Covers***

By the time that the school year 1959–1960 was ready to begin, Part IV of the course was complete in its own volume. Teachers who could reach it could now make plans well in advance. D. C. Heath had been designated as the publisher of the new course, and was able to begin publishing. The first edition began with a preface dated September 1960.

Five years elapsed before a second edition was prepared. I have noted earlier that in this period, some 6,000 teachers taught the course to 640,000 students. Feedback from the pilot teachers as well as comments from the physics community in general had led to a number of changes, which however did not change the spirit and style established in the first edition.

Not long after the appearance of the second edition of PSSC Physics, there was a shift of responsibilities of the staff, and Uri became the Senior Author of PSSC Physics. He in turn named three PSSC Physics teachers as Junior Authors, of whom I was one; I continued in this capacity for all of the following editions that came at five-year intervals.

In 1967 the first edition of *Introductory Physical Science* appeared; an edition of one of the two courses would appear half-way between two of the editions of the other.

The first action of Uri in his new position was to reduce the original Part 1 of the course to a single chapter, the reasons for doing so being expressed in the preface. This allowed some increase in the available time for the remaining parts of the course, the general structure of which remained basically the same.

In the following years various modifications took place in successive editions in which I had a hand. In the 5<sup>th</sup> and following editions Mechanics came first; the Light chapters



were expanded. The 7<sup>th</sup> and final edition was generally praised as THE high school Physics text, the best of all. Several other projects were usually underway at the same time, in some of which I also had a hand.

### ***Dodge “Retires”***

I turned 65 in August 1974, and moved to DeLand, Florida. I was no longer employed by the successor to the PSSC, but I remained in the author group for both PSSC Physics and *Introductory Physical Science*. Sometimes I would come north during the summer for a couple of months to work with the other authors of PSSC Physics; or at other times Uri and another junior author would come down to Florida to work with me for a couple of weeks. I dropped out of the author team for *IPS* after its fifth edition, but remained with PSSC Physics to the end. A few years later when I was living in a retirement facility near Pensacola, FL, I spent fifteen years doing volunteer teaching of AP physics in three Escambia County schools. I had no other duty except to teach the subject I loved to small classes of students who wanted to learn. This was a delightful occupation! I used the latest edition of PSSC Physics available and prepared written notes for those few sections in AP Physics not covered in the PSSC text.

Each school had PSSC laboratory carts stored, bloody but unbowed, one of the scarce indications that the schools sometime in the distant past had tried out PSSC Physics. One day I was in the science storage room of one of the schools to see what I could find that I could use with my AP Physics class. This storage room had shelves that left space between the top of the top shelf and the ceiling.

On this occasion I spotted the corner of some object that just jugged over the edge of the top of the top shelf, and got the ladder to see what it might be. I was astonished to see a number of packages that save one had never been opened. I got them down and found a place to inspect them. I was astonished to find that they had all the equipment needed to carry out the experiments from Part IV on Measuring the Magnetic Field in Fundamental Units, and The Mass of the Electron, except for the power supplies. Fortunately, power supplies were available for the experiments.

The containers were yellowed with age – they had been sitting on the shelf for 20 – 25 years – but were still sturdy. How I was carried back to my pilot days! I opened the packages with the same intense interest that I had in the early days.

The tuning eye tubes alone were worth their weight in gold. The tuning eye tubes used in radio receivers back in those days had long been discontinued, and were replaced in PSSC Physics by small cathode ray tubes, which were much more expensive and complex in use. I was delighted to have the tuning eye tubes for my AP Physics, as I knew I would not find anything else to replace them. It was obvious that the Pensacola schools had never been able to reach Part IV.

### **Sunset for PSSC Physics**

After the 6<sup>th</sup> edition of PSSC Physics was published D. C. Heath felt that the company was not making enough money to warrant the publishing of any further editions. The



PSSC disagreed, and sought for another publisher. Another publisher was found, Kendall/Hunt Publishing Company of Dubuque, Iowa.

An initial conference brought the four authors to Dubuque to meet with the administrators of the Company. An important decision was made that the first twenty chapters would be core chapters, taken by all students and resulting in a well-rounded picture of a good portion of physics. The eight remaining chapters would provide the opportunity to adapt the course to the special interests of students and teachers. These chapters were largely independent of each other and could be inserted into the main sequence at appropriate places. Much of the material in previous editions could be reused, although it was also necessary to streamline some early writings. A pilot text was prepared for use in eleven schools that would pilot teach the renewed course. The first year went well. The pilot text fulfilled its purpose, as did the pilot teachers who pointed out any difficulties and offered suggestions. From these, a final edition was prepared and put on the market.

The seventh edition appeared thirty years after the first edition. During this time, three major changes had been made: the reduction of Part I, the beginning of the book being shifted from Light to Mechanics, and the division of the text into core and optional chapters. Nevertheless, the various editions were all written from the same point of view as in the first edition.

Several of the textbooks in use before the arrival of PSSC Physics moved to improve their own texts, and eventually became well accepted by the field. The PSSC never claimed that their text was the only one possible; the hope was that their action would give rise to the modernization of other texts as well. This seems to have happened, and the 7<sup>th</sup> edition was the final end to their work.