

Establishing physics programs in black colleges

The history of the development of physics curricula in the small predominantly black institutions has been not unlike that of the small white colleges. In 1957 when Russia launched the first man-made satellite, this country witnessed a revolution in the education of its scientists. At this time, most small black institutions of higher education did not offer a major in physics (also true for most small white colleges). Today, several years after the peak of the revolution, many small colleges find themselves without a functioning program in physics. In 1957 many of the black colleges offering a physics major were staffed to a large degree by part-time faculty. This was not uncommon as late as a few years ago, and regrettably at this time many of our institutions are faced with this situation.

A survey of the AIP Directory of Physics and Astronomy Faculties for 1972-73 reveals that only 50% of the black institutions offer a major in physics. If we eliminate Howard University, whose department carries a staff of 17, the average personnel in the remaining institutions is approximately 2.5 per department. Surprisingly, a few offer the major with only a one-man department. Of approximately 65 black institutions, only Howard University offers the PhD and three others a master's-degree program.

In a society in which science and technology play so important a role in our social well-being, it is an institutional responsibility to develop the capability for high-level science instruction. Every college should be able to provide the opportunity for its students to compete and succeed in physics if they so choose.

What are the contributing factors working against our achieving higher scientific literacy?

► Black institutions still suffer from the psychological and economic chains of segregation.

► Many students entering the black schools today show less motivation and in some instances, less skill, compared to those of about ten years ago.

► At our schools, the facilities for science are poor. If it has been difficult to convince those with money that physics is a necessary discipline for our schools, it has often been more difficult to convince local administrators.



► Prior to 1968 competent black faculty to meet the needs was not available.

► Physics is a rapidly developing field. In the last ten years, most graduate schools have revamped their graduate program at least twice. During this same period, the program at most small institutions has remained static. Currently, elementary particles are finding their way into the undergraduate curriculum in larger schools. Will we in the smaller institutions make this adjustment before the 1980's?

Given the above difficulties, we still have been able to produce about 100 black PhD's in physics. This figure represents less than one percent of the community of PhD physicists. It is more depressing when you consider black people represent about 12% of our population.

Why should black people be concerned about physics education? To be literate, the early Greeks and Romans had to understand the classics; science has the same impact on modern society. If Blacks are to become significant contributors both socially and culturally, it is imperative that we produce outstanding scientists. There is no royal road from bondage. It is true there is an obviously dire need for medical doctors, lawyers and social workers. However, in seeking our place in the world, we would be ill advised to study a few areas

to the exclusion of others. Taking our place in today's society demands expertise in all areas of endeavor. Physics is no more the salvation of black people than is law. All fields are limited, and of course law would appear to deal with immediate human concerns; but even here we have a wealth of examples where law has failed. The period we are currently living in documents this point very well.

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No boycott for Trieste

The decisions taken by the UNESCO General Conference in respect to Israel have greatly upset many scientists and other intellectuals. A large number of them publicly or privately expressed their deep disappointment in this politization of UNESCO; they expressed their protest in different ways and many of them decided not to participate in any activities, studies or meetings organized by UNESCO.

The concern about developments in UNESCO has in particular had repercussions for the International Centre of Theoretical Physics in Trieste, which is affiliated with UNESCO. Thus, many physicists, on the grounds of boycotting UNESCO, have refused to attend meetings at the Centre.

We fully agree with the criticism of UNESCO, because we believe that the educational, scientific, and cultural communities must oppose all efforts to undermine international cooperation in these fields through the introduction of political considerations.

However, we feel that the boycott of the Trieste Centre is unjustified, since it has consistently upheld the highest principles of international cooperation in science and is continuing to do so. Attempts to put pressure on the Centre to break its relations with UNESCO would also appear to be unfortunate. Such a break could threaten the very existence of the Centre, which has been so successful in promoting collaboration between Western and Eastern groups as well as playing a unique part in the support of scientific activities in the developing countries.

Quite apart from these consequences, it would appear that the boycott is in itself

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an attempt to use a *bona fide* international scientific activity as an instrument in the political conflict. It was thus at variance with the very principle that provides the basis for the criticism of the developments in UNESCO.

In many respects the International Council of Scientific Unions (ICSU) and its affiliated Unions such as IUPAP are in a similar situation. They are non-governmental organizations affiliated with UNESCO. The International Unions like the Trieste Centre have been able to withstand discriminatory pressures and are endeavoring to uphold the traditions of international cooperation in science without regard to political considerations. We feel it of the greatest importance to support the Unions as well as the Trieste Centre in their efforts to preserve these traditions.

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Sunspots and earthquakes

In October 1975 (page 13) John Gribbin writes in a letter that the "major tremors" in the early 1800's are clearly of interest to his hypothesis. However, actually *each year* there are several big earthquakes in the world, so one ever can consider some of them in favor of any theory or hypothesis, and "prove" just what one desires to be proven.

Contrarily to Gribbin's statement, *no* more seismic activity is likely at times of maximum solar activity. In fact, observation shows that *there is no relation between the solar activity and the number of big earthquakes*. For exam-

ple, there were 31 earthquakes of magnitude 7.0 or greater in 1944, the year of a sunspot minimum (mean sunspot number $N = 9.6$), while there were only 25 in 1947, a year of high sunspot maximum ($N = 151.6$).

The figure shows the number E of earthquakes of magnitude 7.0 and greater, and the annual mean of the Zurich sunspot numbers N , for each year from 1905 to 1964. The numbers of earthquakes have been taken from the list of S. J. Duda.¹ There is clearly no relation between solar activity and the number of earthquakes. In fact, a least-squares solution gives the relation $E = 18.81 + 0.0188N$. The coefficient is very small, and because of the enormous scatter of the individual values one may say with confidence that for all practical purposes and for theoretical interpretations this coefficient is *zero*. Graphically we obtain a straight line that is practically horizontal (colored in the figure).

For the same values of E and N , the correlation coefficient is as small as 0.129, indicating that there is no relation between E and N .

Finally, while it is true that "buildings should be constructed to resist great earthquakes," the encouragement of this attitude may be no excuse for writing nonsense.

Reference

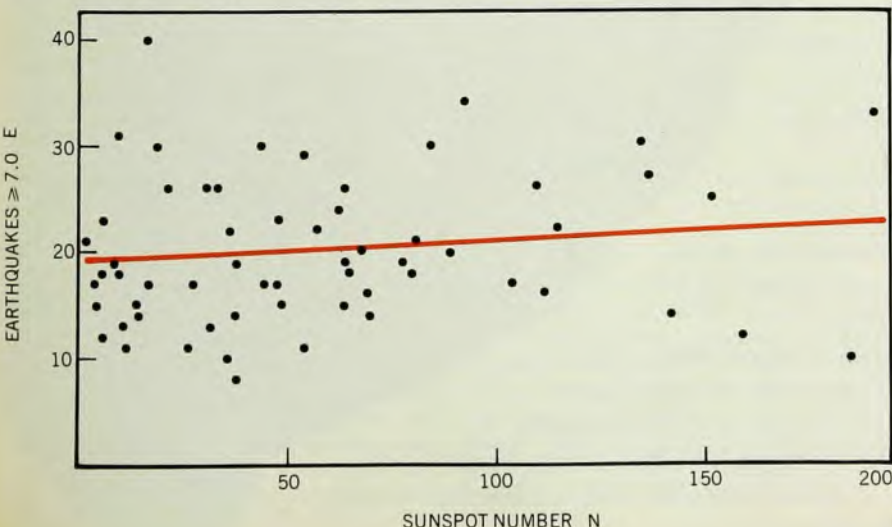
1. S. J. Duda, *Technophysics* 2, 427-452 (1965).

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THE AUTHOR COMMENTS: The data Jean Meeus has gathered are valuable in their own right, but have no relevance to our book *The Jupiter Effect*. The point of our exercise is drawing attention to the likelihood of movement on the San Andreas in the near future is that an essentially unique combination



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