portional to its mass, while the radiation from a body is proportional to its area, we see that, in principle, it should be possible for sufficiently small bodies to reach the earth after suffering relatively little melting. This line of reasoning is ordinarily applied to the micrometeorites, but it is clear that along grazing trajectories, where the heating is so much more gentle than in a typical meteor trajectory, the same reasoning may apply to very much larger objects. It is perhaps in this way that smaller chunks of lunar material manage to reach the earth's surface without being transformed into droplets.

In conclusion, therefore, it is found that the theory of a lunar origin for tektites can be reconciled with the criticisms of Urey and Barnes with respect to the distribution, but that to reconcile them requires us to assume, first, that the orbits are measurably eccentric; second, that the glassy form of the tektites is the result of atmospheric ablation; and third, that lunar material also reaches the earth in considerable quantity in some other, probably inconspicuous, form. The conclusion of Kopal, that some source nearer than the moon is required to account for the narrow distribution of the tektites, is valid in the sense that the breakup into separate bodies takes place in the earth's atmosphere (*10*).

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10. I wish to thank Kenneth B. Holmes of the Missouri State Historical Society, Donald F. Danker of the Nebraska State Historical Society, Edythe L. George of the South Dakota State Historical Society, Roy L. Fox, director of the National Weather Records Center, Asheville, N.C., and especially Alexander D. Mebane of New York City for kindness in supplying the information on which this article is based.


# Science in the News

## Kennedy's Program for Education: Teachers' Salaries; Construction; Scholarships

This week the President submitted to Congress what he described as a "modest program" for education. For the first year (fiscal 1962) it calls for spending about $700 million beyond the billion proposed in the Eisenhower budget, with built-in increases of $400 million each year for fiscal '63 and '64.

The program includes the two principal innovations Kennedy had committed himself to support: aid for teachers' salaries and a federal scholarship program. The amounts of money involved, though, are smaller than those in the bill that passed the Senate last year, and smaller still than those recommended by Kennedy's task force on education.

In general, the pattern of the education message follows that established by earlier proposals on medical care and minimum wages, to which Kennedy also attached the term "modest": he has compromised on dollar figures while holding out for innovations in principle.

The minimum wage bill, to the dissatisfaction of organized labor, abandons the request for an immediate raise from $1 an hour to $1.25, settling for an increase by steps over a period of 3 years; the medical care bill provides smaller benefits than those in the bill Kennedy and Senator Anderson sponsored during the rump session of Congress; the education bill asks for only about half as much money in the first years as the $1.5 billion a year measure that Kennedy's task force recommended. In each case, though, the really controversial point is less the dollar figures than a new legislative principle: in the case of minimum wage, an expansion of the definition of the Constitution's interstate commerce clause to cover not only businesses involved in interstate commerce but businesses merely "affecting" interstate commerce; this would cover just about every business of any consequence in the country. In the case of medical care, the new principle, of course, is the inclusion of health services under the social security system.

In the case of education, the point of controversy is money for teachers' salaries, with its clear implication, conceded by the Administration, that this involves a permanent commitment of the federal government (as opposed to a bill limited to school construction, which might be regarded as an emergency program to be terminated when the classroom shortage had been met).

In each case Kennedy is asking for expansion not merely of the amount of federal spending, but of the area in which the federal government will operate. Like the other major proposals, the education measure will face heavy conservative opposition both on the grounds that the expanded federal authority is unwise in itself and because once the new principle is accepted expansion of the program becomes virtually inevitable, even if the proposals for the first year or two are comparatively modest. The education program will almost surely pass the Senate without difficulty; indeed the Senate, as it did last year, will probably vote for a larger program than the President has asked for. But it will be quite a triumph for the Administration if it can get a bill granting money for teachers' salaries through the House.

Sam Rayburn, Speaker of the House, greeted Kennedy's message by announcing that he was still opposed to grants for teachers' salaries, and considering the close division in the House between liberals and conservatives that showed up in the vote on the Rules Committee, it is hard to see where

Kennedy will get the votes to support any measure that Rayburn will not support. Rayburn is supporting the grants for school construction, and this much of the program (about $300 million a year) will presumably go through. If so, the final form of the education bill will depend on what sort of compromise is worked out between the bill including teachers' salaries that seems certain to pass the Senate and the bill limited to construction that will probably come out of the House.

### Federal Scholarships

Kennedy's message also included a less controversial proposal for a federal scholarship program averaging $700 for 25,000 students the first year, to grow to 50,000 in the third year. If the proposal passes this year in the form Kennedy has requested, the first scholarships will be awarded to students entering college in September 1962. Since each scholarship will run for 4 years, the program, even if it is not expanded, will involve 200,000 students by the mid-1960's. Following the principle described here last week for the medical scholarships proposed in the health message, each scholarship would be accompanied by a grant to the school the student attends. Its purpose would be to help cover the expenses the school incurs in accepting the student beyond the tuition he is charged. This grant would be $350 per year per scholar. All told, then, the federal scholarship program will be costing the government over $200 million a year by 1968. This, of course, would be in addition to the loan and graduate fellowship programs already existing, which Kennedy says will have to be expanded.

The rest of the message proposed two programs of low-interest loans to encourage university expansion: $250 million a year to continue the college dormitory program, a $50-million increase over Eisenhower's recommendation, and $300 million a year for a new program to provide similar loans for college classrooms, libraries, and laboratories. Eisenhower had cited the inclusion of such a proposal as one of his reasons for vetoing a housing bill 2 years ago.

The education program, then, goes well beyond Eisenhower's recommendations and of course much further beyond what the conservative coalition in the House will willingly accept. It involves a fair amount of money for fiscal 1962, and a built-in commitment to spend much more, in the years that follow. Yet Kennedy's description of it as "modest" is not far-fetched. For in no important way does it go beyond what Nixon recommended in his campaign policy paper on education (*Science*, 30 September), or beyond what the President's Commission on National Goals recommended to Eisenhower in December (*Science*, 2 December). The grants for public schools would add only about 7 percent to the $12 billion a year that is already being spent by non-federal sources.

There is virtually no argument over the need for more money for education. Eisenhower's final economic message described the need for "a huge expansion of the nation's commitment to education." But Eisenhower hoped the problem could be solved without a massive commitment by the federal government. Kennedy, and, more reluctantly, Nixon and the National Goals Commission saw no other way to meet the problem.

Two major reasons have forced this conclusion: one is that, as with scientific research, many aspects of education are national rather than state or local problems. It is not any particular state, the liberals argue, but the nation, that is faced with a shortage, for example, of scientists. This means that the national interest demands a heavier commitment to education than the sum of the interests of the 50 states. Even if the states were ideally responsive to their individual needs there would still remain a gap to be filled by the federal government.

But the state legislatures, in almost every case, are dominated by a rural minority of the state's population, while the problems that lead to the need for more investment in education are most acute in the cities. "The more the role of the states is emphasized . . .," said Eisenhower's Commission on Intergovernment Relations, "the more important it is that the state legislatures be reasonably representative of all the people." "One result of state neglect of the reapportionment problem," the same report said, "is that urban governments have bypassed the states and made direct cooperative arrangements with the national government." With education, as with slum clearance, water pollution, and any number of other problems, the argument is made that it is not a question whether the states or the federal government should do the job, but of the federal government or no one.

The principal item left out of the message was a program of direct building grants, rather than loans, to private and public universities. Two explanations were offered by Administration spokesmen: the limitation in the amount of money the President felt he could ask for this year, considering the other requests he has made or will make for more money in other areas, and the constitutional question that might be raised about grants to colleges that are connected with a church.

The loan program Kennedy proposes saves the colleges some money on financing bond issues, but nearly all the money must be paid back to the federal government over a period of years. To the extent that the universities face long-range financial problems, the federal loan program only delays the time when their problems become critical.

It is widely assumed that sooner or later grants as well as loans will be necessary. Nixon proposed a grant program in his policy paper on education, and the educational associations in Washington were disappointed that Kennedy's message did not include building grants. The message did take a small step in that direction in the proposal that a $350 grant to the college accompany every federal scholarship.

Administration officials have continued to try to keep the civil rights aspects of education programs quiet. They have promised not to withhold funds from segregated school systems unless Congress requests this, which is impossible since any bill with an antisegregation ammendment would be filibustered in the Senate if there were any chance that it might otherwise pass. Nevertheless, as noted here last week, there will be a good deal heard about segregation when the bill comes to the floor.

### Civil Rights

The proposed legislation does provide safeguards at two points to keep the money from being used to strengthen discrimination: the money in the public school grants will be based on the number of students attending public schools, and it can be used only for public schools. This means that a district which tries to set up a system of private schools to avoid integration will get no federal assistance, and a state may even find it awkward to divert part of its funds to help the private school system, for to do so may cause it to fall below the minimum state effort for public schools required by the bill before a state is eligible for aid.

There is also a safeguard in the scholarship program, which will be administered through the states in order to minimize charges of federal domination of education. But the bill provides that there must be no discrimination and gives the federal government the power to hold up the money if the state's method of awarding scholarships is ruled discriminatory.

#### Rival Bills

Along with Kennedy's proposals, Congress has before it a panorama of rival school bills, representing the whole range of the political spectrum. Briefly summarized, and from left to right, here is a classification of the major ones:

The National Education Association bill: permanent subsidy for public education starting at about $1.4 billion the first year, climbing to $5 billion in the fourth year.

The Administration bill: $666 million the first year, $766 the second, $866 the third. States required to spend 90 percent on construction and teachers' salaries; 10 percent is available for "special problems."

Liberal Republican bill: In the same price range as the Administration bill, but with more money for the poorer states, and with the states free to spend the money in any legal way: that is, encouraged but not required to use a large share of it for teachers' salaries. Based, incidentally, on a bill introduced by Senator Taft, with bipartisan support, in 1947. Much the sort of bill that Nixon promised during the campaign.

Eisenhower Bills (bills the former President indicated were acceptable to him last year): either a long-term federally financed bond issue or grants, limited to a temporary program of school construction. If grants, it would cost about $300 million for several years; if bonds, about $60 million for 20 years.

Goldwater Republican bill: Unspecified as yet, but will involve allowing taxpayers deductions from their federal taxes to make more money available for state school taxes. Goldwater wing feels it has gotten a bad reputation as mere obstructionists. Therefore they have promised to offer alternatives, such as this one on education, to all liberal proposals involving greater federal spending or expansion of federal powers.

In general, most Democrats and the liberal Republicans are fairly close, both willing to provide money for teachers' salaries: the predominant view in the Senate. The Eisenhower view predominates in the House, but with strong Goldwater sentiment among most Republicans and Southern Democrats. The Goldwater bill is given no chance of passage, and its supporters will oppose anything else.—H.M.

# News Notes

## Lysenko Regaining Power in Soviet Biology

Recent events indicate that Soviet biologist Trofim D. Lysenko, who had great political and scientific power under Stalin, is regaining the influence that he began to lose with Stalin's death. Lysenko first won favor by maintaining that he could change plant heredity through environment, a theory that is rejected completely by Western geneticists. Soviet scientists who opposed Lysenko's views were discredited and in many cases lost their positions.

The most distinguished of these victims was geneticist Nikolai I. Vavilov, who died in a Siberian concentration camp during World War II. One of the evidences of Lysenko's diminished stature was the posthumous publication of Vavilov's works by the Soviet Academy of Sciences in 1956.

Last November this section published an erroneous report that Lysenko's influence was still waning, a report that was based on apparently current material from the Office of Technical Services of the U.S. Department of Commerce. One of the protest letters received as a consequence comments: "It is very unfortunate that a governmental report should be so erroneous, in regard to so important a matter." Another letter observed: ". . . You have inadvertently misled your readers, who, like me, were optimistic enough to believe that the report of the Office of Technical Services was an up-to-date revelation of a change of wind in Russian science."

#### Olshansky's Appointment Significant

That Lysenko is regaining influence was clearly demonstrated recently when Mikhail A. Olshansky was named minister of agriculture. Olshansky has been a devoted supporter of Lysenko's for many years and was the opening speaker at the 1948 session of the Lenin Academy of Agricultural Sciences at which Lysenko delivered an attack on academic scientists who opposed his views and quoted the Communist party's Central Committee in a way that established his ascendency beyond question.

Last month a New York *Times* article pointed out that the recent Soviet debate on agricultural policies, culminating in a sweeping reorganization of agricultural administration and Olshansky's appointment, indicated that Lysenko has won a key role in Premier Khrushchev's hierarchy "and is again bidding to set up his own political-scientific 'empire.'" Lysenko's rise is reported to have accompanied an intensive behind-the-scenes political struggle, the focus of which has been the continuing failure of Soviet agriculture to meet the optimistic levels of production promised by Khrushchev.

Lysenko's most recent project has been to increase Soviet butterfat production through widespread use of a special stock of bulls that he has bred. Farm leaders who opposed this plan have been ousted, including Olshansky's predecessor, Vladimir V. Matskevich.

## 1961 Federal Research Support Estimated at $9.1 Billion

The federal government will obligate an estimated $9.1 billion during fiscal year 1961 for the support of scientific research and development, according to the National Science Foundation. The estimate includes $8.5 billion for conduct of research and development and $600 million for increase of the research and development plant. About $850 million of the $8.5 billion—10 percent—is marked for basic research.

The 1961 total of $9.1 billion compares with obligations of $7.4 billion in fiscal year 1959 and an estimated $8.6 billion for fiscal year 1960, according to *Federal Funds for Science, IX: The Federal Research and Development Budget, Fiscal Years 1959, 1960, and 1961*, which NSF has just issued. The publication presents detailed information on obligations for the conduct of research and development in terms of administering agencies, performers of research and development, and character of the work.

Summary data for fiscal year 1961 reflect congressional action on the President's budget and subsequent administrative decisions. This is the first time such data have been introduced in this