We have since found that in another solvent the isomers exhibit a pair of peaks in the red, which are resolved almost as well as those in the blue. In Fig. 1

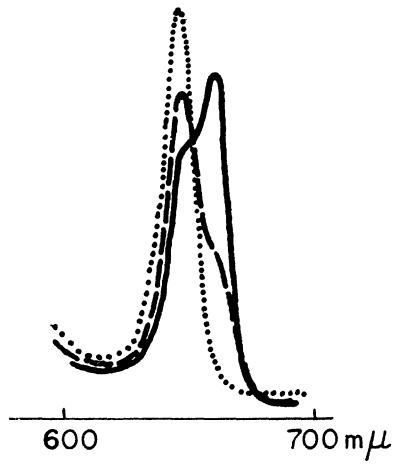

FIG. 1. Absorption spectrum of the intense red band of chlorophyll *b'* dissolved in a solvent consisting of 10% diisopropyl amine in 1 : 1 propane and propene: ..... 230° K, - - - - - - - - 170° K, ———— 75° K.

is shown the effect of temperature on the main red peak of chlorophyll *b'* dissolved in a solvent consisting of 10% diisopropyl amine in 1 : 1 propane and propene. At 230° K, only one band, at 6460 A, is present; at 170° K and at 75° K two components are clearly evident at 6480 A and 6610 A. The one at the longer wavelength is more intense at lower temperatures. The relative intensities of the two components of this band vary reciprocally, and reversibly with temperature; and equilibrium is quickly established. Along with these changes of the red band are similar reciprocal relations among the components of the blue band, such as were described in our previous paper. Altogether similar changes were observed in the red band of chlorophyll *b* in this solvent.

The following considerations rule out, we believe, the possibility of an explanation of these phenomena in terms of the existence of chlorophyll in the colloidal state. All the solutions remained clear, and over the entire range of temperatures at which the reciprocal transformations of the spectral systems took place, the transparency remained practically unaltered as far into the ultraviolet region as we examined—3000 A—where scattering from colloidal particles would have seriously affected the transparency. At the lowest temperature, about 150° K, at which both species were clearly observable, the equilibrium between them was rapid. At such low temperatures a decided time lag would have been required if coagulation processes were involved, since they would doubtless have been diffusion-controlled.

Manuscript received June 12, 1952.

Comments and Communications

Two Long Climatic Records[1]

FOSSIL pollen profiles from sediments formed outside the limits of continental glaciation are of interest because they give a record not interrupted by the presence of ice in sedimentary basins. They also yield information as to the nature and extent of climatic trends correlative with ice movement.

The left-hand profile in Fig. 1 is based upon a reconnaissance drilling by H. T. Stearns in Valle Grande, a caldera and former lake bed shown in the Jemez Springs and Santa Clara quadrangles, northern New Mexico, and here reported by permission of the Atomic Energy Commission. The material consisted of chips washed out in drilling, bagged to give a representation of conditions at 5′ intervals. Thus the profile provides only a rough approximation except near the top, where the results of our own close-interval sampling to a depth of 14 m are included.

The right-hand profile presents a composite of three cores within the limits of Mexico City. Material for analysis was obtained by precision coring and generously furnished by L. Zeevaert at the suggestion of A. R. V. Arellano, of the Instituto de Geología.

All pollen and spores were counted, but only those of upland forest trees are here considered. From their totals at each level, the percentages of those clearly indicative of moist conditions were calculated. These percentages were then plotted against depth in meters. Essentially, the values represented are:

Mexico	New Mexico
Oak–alder–fir	Spruce–fir
Oak–alder–fir–pine	Spruce–fir–pine–oak

The separation of various species of pine was not feasible at this juncture. These vary somewhat in their requirements, although generally indicating dryness. The same may be said of oak in New Mexico. The net effect of these limitations, however, has been, not to invalidate our results, but to make them more conservative than they otherwise would have been, especially in the emphasis of moist peaks.

Groups of values to the left of the shadowed band (Fig. 1) indicate dry intervals, those to the right indicate moist, and levels that we consider correlative are connected. Data given are based upon a previous report (Sears, P. B. *Bull. Geol. Soc. Am.*, **63**, 241 [1952]). Moist maxima in New Mexico may safely be

[1] The work on which this report is based was supported in part by a grant from the Penrose Fund of the Geological Society of America.

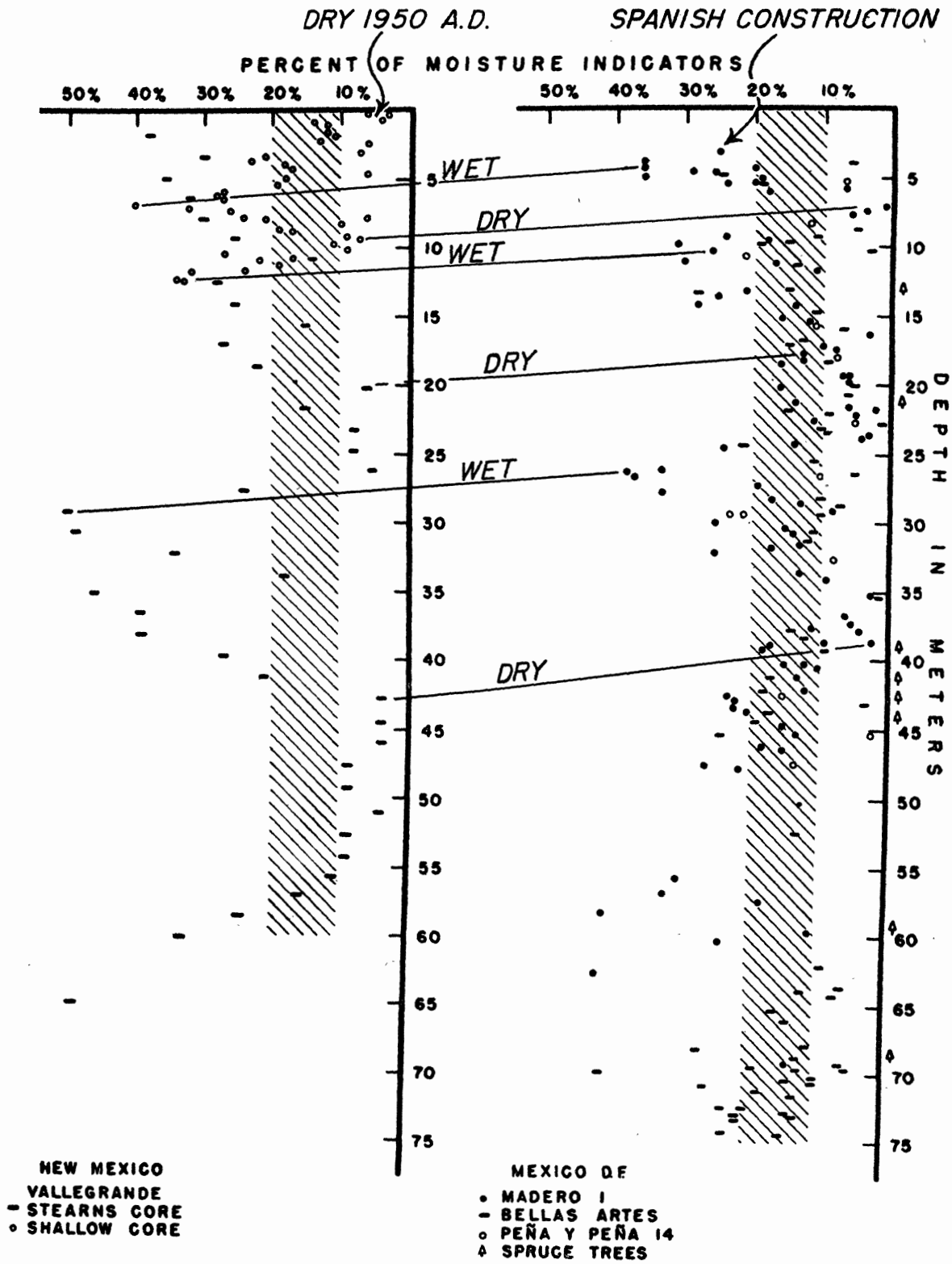
DRY 1950 A.D.
SPANISH CONSTRUCTION
PERCENT OF MOISTURE INDICATORS
50% 40% 30% 20% 10%
50% 40% 30% 20% 10%
WET
DRY
WET
DRY
WET
DRY
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
DEPTH IN METERS
NEW MEXICO
VALLEGRANDE
- STEARNS CORE
o SHALLOW CORE
MEXICO D.F.
• MADERO I
- BELLAS ARTES
o PEÑA Y PEÑA 14
Δ SPRUCE TREES

FIG. 1.

assumed to be cool, a condition also indicated by the presence of spruce at 40–45 m in Mexico. It is our present hypothesis that moist and/or cool conditions represent periods of ice advance, whereas dry and/or warm represent intervals of retreat.

Noteworthy is the evidence of current desiccation at the top of the New Mexico profile—information that is missing in the Mexican data, where sedimentation was ended by Spanish construction. To be noted also is a displacement in the Mexican profiles caused by rapid sedimentation around the 55-m level. When this gap is closed, a strikingly consistent alternation of moist and dry intervals appears in these two sites, separated by a linear distance of some 1600 miles.

PAUL B. SEARS
KATHRYN H. CLISBY

Conservation Program
Yale University

Passports and Visas

THE following experiences of mine may interest some of your readers.

I lived in the USA from 1938 to 1950 and acquired the status of a permanent resident in 1948. In 1950 I came to Britain to take up a research post for one or two years. I then held a re-entry permit to the USA, valid until September 1951. I applied in August 1951 for the renewal of this re-entry permit, but even at the present time (December 21, 1951) I am still without any reply from the Immigration and Naturalization Service.

In September 1951 I was informed by the secretary of the American Mathematical Society that the Cole Prize for Number Theory would be awarded to me at the December meeting of the society, and that it has been customary for the recipient of the prize to give a lecture at the meeting. When, early in November, I had still received no reply from the Immigration and Naturalization Service, I wrote again (enclosing the letter from the secretary), requesting that my permit should be renewed in time for me to attend the meeting. No reply has come, and I am therefore prevented from attending the meeting.

It is difficult to believe that my inability to get any reply is due to administrative inefficiency, and I am concerned lest it indicate a change of policy about the renewal of re-entry permits. If this is so, grave hardships will be inflicted on individuals, and formidable new obstacles will have been placed in the way of the movement of scientists.

PAUL ERDÖS

Department of Mathematics, University College
London, England

THE undersigned, while enjoying the hospitality of the Pasteur Institute in Paris, were embarrassed by the situation in which a member of that institute was placed as a consequence of the McCarran Act of 1950. Since our return to the United States another distinguished member of the Pasteur Institute has found himself in a similar situation.

In order to acquaint American scientists with the nature of the decision that some of their honest and sensitive foreign colleagues have made, we ask that you publish the following letter.

We are grateful to Dr. Monod for making his letter available to us.

ERNEST BOREK

Department of Chemistry
The City College, New York

FRANCIS J. RYAN

Department of Zoology
Columbia University

INSTITUT PASTEUR, PARIS
4 juin, 1951

Monsieur Larkin, Consul des Etats-Unis
Ambassade des Etats-Unis, 2 Avenue Gabriel, Paris

MY DEAR MR. LARKIN:

This letter is meant as a conclusion to the conversation which we had last Wednesday on the matter of my application for a U. S. visa. I have considered this problem very seriously in the light of the information you gave me that, under the provisions of the Internal Security Act of 1950, I must be considered an "inadmissible alien" because I belonged to the Communist party from 1943 to 1945. To my regret I have come to conclude that I could not follow the course you suggested I should take, of applying to the Attorney General for special permission to enter temporarily the U. S.

In view especially of your extremely courteous and helpful personal attitude in this matter, I feel that I should explain in some detail the reasons that have led me to this negative decision. These are twofold.

To begin with, my proposed trip to the U. S. was planned, you may recall, in answer to invitations extended to me by the American Chemical Society and by the Harvey Society. However much I appreciate the honour entailed in these invitations, as well as the pleasure and fruitfulness of a scientific visit to the U. S., I cannot put these in balance with the extremely distasteful obligation of personally submitting my "case" to the Department of Justice, and of having to ask for permission to enter the U. S. as an exceptional and temporary favor of which I am legally assumed to be unworthy.

The second reason is that I am not willing to fill in and swear to any "biographical statement" of the type apparently required for this application. This refusal is not based on abstract principles only, but on a sad and terrible experience: this kind of inquisition was introduced into the French administration under the Occupation. I will not submit myself to it if I can possibly avoid it. Furthermore I feel quite sure you realize that such questions as "State name of all organizations of which you have been a member since 1918 or to which you have given financial or other support, giving dates of membership and dates of contributions" cannot be answered both *fully* and *truthfully*. It is unfair to demand a detailed sworn statement when the slightest omission, such as the "date of a contribution," might make one technically liable to a charge of perjury. You will also realize, I believe, that such statements, should they fall into wrong hands, might conceivably be used as a source of information. The mere possibility of this would make it impossible for me to submit one, even though I knew that mine would be most uninteresting. The fact that I have been completely estranged from my former political affiliations makes this even more impossible.