state variables would allow experts in various fields to involve their knowledge more usefully. Such a model might be a practical policy tool. And in a way, such a model would be the good science that Forrester's reviewers were looking for.

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Appendix

The *World Dynamics* model consists of a system of difference equations. In the usual notation such an equation would be written:

$$X(t) = X(t - \Delta t) + (\Delta t) \cdot F[X(t - \Delta t),\ Y(t + \Delta t)] \quad (1)$$

where $F(t-\Delta t)$ can be thought of as the rate of change of X during the period from $(t - \Delta t)$ to t. There would be a similar equation for Y. Dynamo solves these sorts of equations in the following manner. At any given time step, say t, Dynamo has the store version of $F(t-\Delta t)$. In Dynamo this would be written $F.JK$. Dynamo updates X and Y with the use of Eq. 1. In Dynamo this is written $X.K = X.J + (DT)(F.JK)$. Then Dynamo computes $F[X(t),\ Y(t)]$. This is written $F.KL = F(X,Y)$. In the systems dynamics idiom F usually is a product of functions of single state variables. For example:

$$F(X,Y) = \phi(X.K)\ \psi(Y.K)$$

These multiple functions, ϕ and ψ, are entered into the program in a tabular form. This is done by the use of TABLE or TABHL statements. For example

$$PHI.K = TABLE(PHIT, X, 0, 1, .5)$$

and

$$PHIT = 1/.5/0$$

means that PHI has tabular values for X.K between 0 and 1 at increments of .5. These values are entered under the name PHIT. Between these increments Dynamo uses linear interpolation.

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6. Supported by NSF grant number GI-27. I thank John Brewer and Sy Schwartz.

24 March 1972; revised 26 May 1972

Double Moldavites in Southern Bohemia

Abstract. *Two noteworthy finds of moldavites were made in southern Bohemia. In both cases two moldavites are thrust into each other. The collision evidently took place during the flight of an inhomogeneous swarm of moldavites, still plastic but already displaying almost definite aerodynamic shapes. It is the first time such moldavites have been encountered, and the authors propose to designate them as double moldavites.*

In 1970 and 1971, two noteworthy finds of double moldavites were made in the fields of southern Bohemia. One of these double moldavites was found near Kamenný Újezd and the other near Slavče. In both cases two moldavites are partly thrust into each other. The one with the sharper and probably more solidified margin is partly plunged into the other moldavite. The collision probably took place while the moldavites were still plastic, before their infall to the earth's surface, as otherwise they would have been shattered.

The double moldavite from Kamenný Újezd (Fig. 1a) weighs 12.87 g. One part is of a drop shape, slightly olive green in color, and plunged almost per-

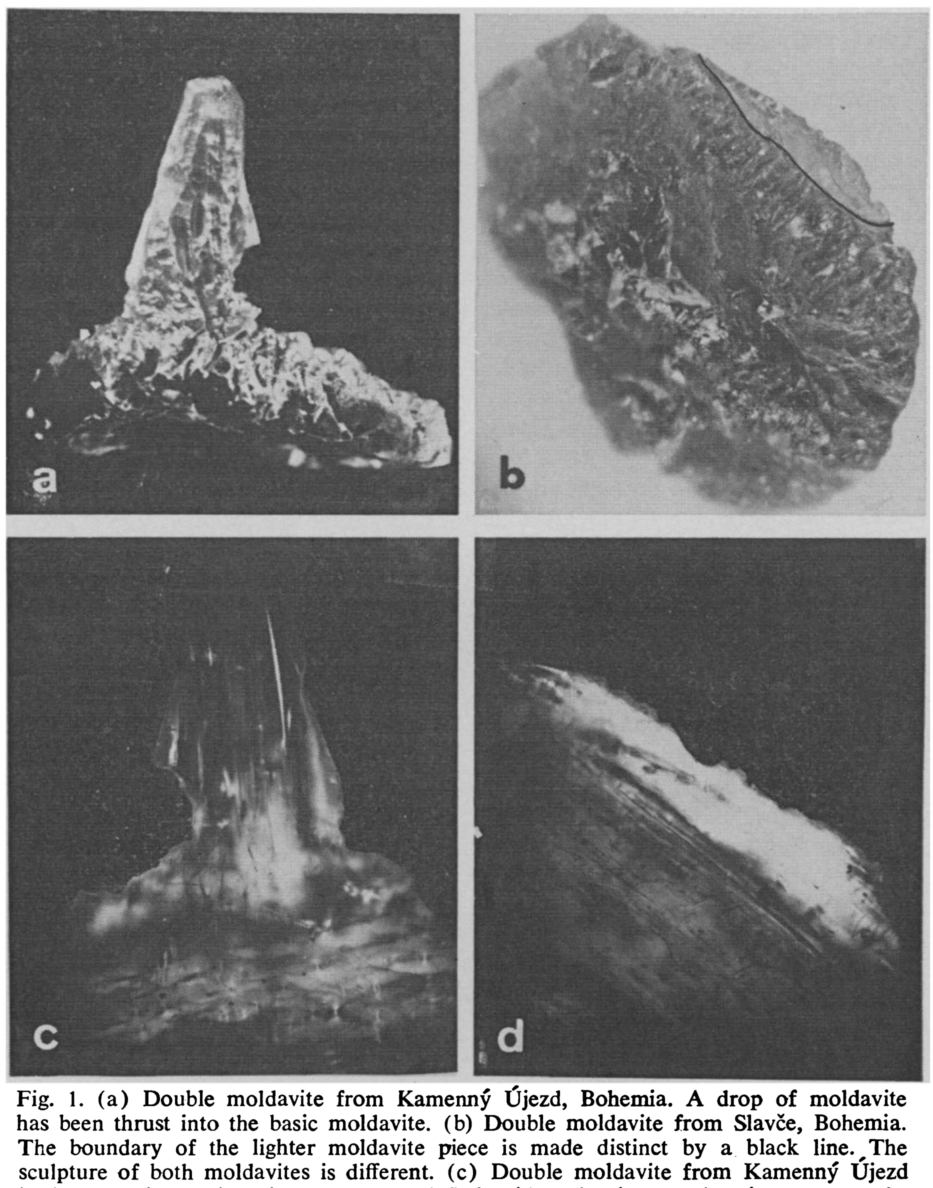

Fig. 1. (a) Double moldavite from Kamenný Újezd, Bohemia. A drop of moldavite has been thrust into the basic moldavite. (b) Double moldavite from Slavče, Bohemia. The boundary of the lighter moldavite piece is made distinct by a black line. The sculpture of both moldavites is different. (c) Double moldavite from Kamenný Újezd in benzene immersion, between crossed Polaroids. The increased anisotropy at the junction of the moldavites and the different interior arrangement of the moldavite matter can be seen. (d) Double moldavite from Slavče, between crossed Polaroids. The lighter, thrust-in moldavite is markedly optically anisotropic. All photographs are moderately enlarged.

pendicularly by its thicker end into the other moldavite (at about one third of its length). The other moldavite is flat, oval, and olive green. Measured from the junction, the drop is 20 mm long and 11 mm wide at its maximum width. The oval, flat moldavite is 38 mm long, 27 mm wide, and 8 mm thick. Both parts of double moldavites differ only slightly in their indexes of refraction, the drop having an index of refraction at 20°C for sodium light, $n^{20°}_{\lambda Na}$ of 1.4928, and the oval specimen having an n value of 1.4920. The specific gravity of the whole double moldavite is 2.356. In a benzene immersion under the stereoscopic microscope the two moldavites can be distinctly seen to be thrust into each other. The junction of the two moldavites, examined between crossed Polaroids, is anisotropic with relatively higher interference colors of the first order; the other parts of the joined moldavites display a common anisotropy known in moldavites (*1*). The surficial sculpture is rather coarse in the basic piece and somewhat finer in the plunged drop. The schlieren and elongated vesicles (bubbles) in both parts of the double moldavite are perpendicular to each other (see Fig. 1c). This unique specimen is deposited in P. Horský's private collection of moldavites in České Budějovice, Czechoslovakia.

The double moldavite from Slavče (Fig. 1b) weighs 17.65 g. It is a flat, oval moldavite with a pronounced surficial sculpture and is bottle green in color. A piece of different translucency and color adjoins it on its side (compare Fig. 1, b and d). Even if the more translucent piece is regarded as an extreme case of inhomogeneity of the moldavite matter, we are nevertheless of the opinion that the differing piece is a remnant of another moldavite which struck against the flat, oval moldavite at a time when both were still plastic. After cooling and solidification, the greater part of the moldavite to which this piece belonged was broken off (probably during infall to the earth's surface). Both moldavites forming the double specimen differ not only in color but also in surface sculpture, that of the larger piece being much coarser. This moldavite, which is somewhat bent, measures 11 by 26 by 40 mm, and the adjoining part of the second moldavite is 21 mm long and 3 mm thick. A microscopic study shows that the second moldavite is thrust about 2.5 mm into the basic piece. The moderately arcuate boundary of the junction of the pieces does not show any sculpture. Both pieces are also distinguished by their indexes of refraction. For the basic moldavite n is 1.4899, and for the adjacent moldavite fragment it is 1.5013 to 1.5016. The fragment exhibits a higher optical anisotropy (see Fig. 1d). The specific gravity of the whole specimen is 2.341. This double moldavite is in the private collection of moldavites of M. Kos in České Budějovice. It resembles to some extent the two-color moldavite from Lipí (*2*), in which the boundary of the junction of the two differently colored parts is also sharp.

These two finds of double moldavites furnish evidence for an inhomogeneous swarm of moldavites closely preceding their fall. The possibility of a collision was, however, considerably limited because the moldavites fell in the same direction with an equal velocity. We have examined 25,000 pieces of moldavites, but only the two specimens reported here show evidence that there were collisions during the flight and that during this phase of flight the moldavites were probably in a plastic state with somewhat different viscosities corresponding to their size and chemical composition. It is the first time that such moldavites were discovered.

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Air Lead: Relation to Lead in Blood of Black School Children Deficient in Glucose-6-Phosphate Dehydrogenase

Abstract. *Forty-four black children at two elementary schools within 0.7 mile of a battery plant had significantly higher* ($P < .001$) *concentrations of lead in their bloods (34.1 ± 9.7, micrograms per 100 milliliters, mean ± standard deviation) than 122 students (26.3 ± 7.1) at seven schools 1 to 3 miles distant; 5 months later there was a comparable difference between red cell lead values (54.1 ± 18.5 versus 37.4 ± 12.6). Among the blacks, those deficient in glucose-6-phosphate dehydrogenase had a higher* ($P < .005$) *concentration of lead in the blood after correction for anemia (32.9 ± 9.7) than the nondeficient (25.7 ± 8.8), and a higher concentration in the red cells (47.3 ± 14.7 as compared to 35.6 ± 15.8,* $P < .001$)*; the enzyme effect was independent of geographic location.*

The epidemiologic correlation of atmospheric exposure to lead and blood concentration of lead in the community (*1*) raises the question of individual or genetic factors contributing to an increased concentration of blood lead. We report here an increase in the blood lead of black school children living in Omaha within 1 mile of an emission source, with an independent increase in those children deficient in glucose-6-phosphate dehydrogenase (G-6-PD).

Ambient lead was monitored in central Omaha (*2*) from May through November 1970, with simultaneous studies of the blood lead of inner city black school children to evaluate the possible role of anemia and of G-6-PD deficiency. Air was sampled by means of high volume collectors at five sites, three sites being in proximity to the schools studied and to three known lead emission sources (Fig. 1). Samples were taken at an elevation of 15 feet (4.5 m), and all data are reported as the average of 24-hour samples collected three times weekly (*3*).

In April 1970, 3,400 school children (of over 10,000 volunteers) from both suburban and inner city Omaha were tested for G-6-PD activity by the fluorescent spot technique of Beutler (*4*). Presumptive deficiency was found in 14.5 percent of black males and 2.4 percent of black females, aged 5 to 19 years. Testing was then done in May (at nine inner city schools) of 166 of these black school children for concentration of lead in the blood (*5*), G-6-PD activity (*6*) (44 percent deficient, 18 percent intermediate) with complete blood count and reticulocytes in 79 children. Lead concentrations were corrected for anemia to the mean hematocrit (Hct) of 38 percent by the formula: blood lead concentration (μg/100 ml) $\times$ [38/Hct (%)].

Because of the known effect of both