knowledge of the way in which such transformations proceed at the atomic level¹⁻⁸. In particular, the martensitic phase changes in Au-Cd (ref. 1), In-Tl (refs. 2 and 7) and TiNi (refs. 5 and 6) are preceded by "softening" of certain elastic coefficients and the transitions result from the development of lattice instability evidenced as a soft acoustic mode; as the transition temperature is approached and the incipient mechanical instability rises, certain lattice vibration modes undergo a considerable energy decrease and as their frequency falls the wavelength increases and the interatomic binding forces are decreased. Ultimately, the vibration amplitude and anharmonicity are so large that the atoms adopt new sites. On the basis of this model properties which depend on the lattice vibration spectrum are expected to exhibit marked anomalies in the vicinity of the transformation. One property directly manifesting anharmonicity of lattice vibrations is the thermal expansion; a pronounced peak in the thermal expansion coefficient occurs centred around the martensitic transformation in TiNi (ref. 6), the attendant anharmonicity being reflected in the Grüneisen parameter which rises from the normal background value of about 2 to more than 40 in the transition region.

Enhanced interactions, classified by Fleury⁹, between ultrasonic waves propagated through transforming material and soft lattice vibrations lead to a large increase in the ultrasound attenuation accompanied by pronounced minima in the ultrasound wave velocities: the acoustic anomalies in TiNi (refs. 5 and 6) provide a good example. Recently, similar effects have been observed⁷ in single crystals of indium-thallium alloys in the vicinity of the fcc to fct transformation. These particular alloys are unstable to shears on {110} planes in [110] directions^{2,7} and a combination of two such shears carries the cubic form into the tetragonal modification. The two possible transverse ultrasonic waves in a [110] direction of the cubic phase show extreme changes in their propagation characteristic: in particular the wave polarized in the [110] direction and thus associated with the modulus $\frac{1}{2}(C_{11}-C_{12})$ suffers an anomalously large attenuation while its propagation velocity decreases markedly.

In transitions associated with soft phonon mechanisms the propagation velocity of the transformation interface should be closely correlated with the appropriate strain wave velocity. It is known that the propagation rate of the transformation interface is slow in comparison with normal sound wave velocities. Bunshah and Mehl¹⁰ measured the propagation velocity of martensite forming in an Fe-29.5% Ni alloy as $9.9 \times 10^4 \text{ cm s}^{-1}$ ($\pm 20\%$) and attempted to correlate it with the shear wave velocity ($3.0 \times 10^5 \text{ cm s}^{-1}$) calculated from the measured rigidity modulus. This polycrystalline shear wave velocity is, however, dependent on the velocities of waves of all polarizations in single crystals: the soft phonon mode model requires that the martensite propagation velocity should be comparable with the appropriate slow shear single crystal wave velocity. The measured¹¹ single crystal elastic constant data for an Fe-30% Ni alloy reinforce this suggestion. In particular the modulus $\frac{1}{2}(C_{11}-C_{12})$ approaches more closely the value of 10^5 cm s^{-1} required to give a velocity close to that measured¹⁰ for martensitic propagation.

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Observations of OJ 287 between 0.36 and 3.4 μm

We have found that some of the infrared magnitudes quoted in our recent letter¹ are in error. Table 1 of ref. 1 should be revised as shown below.

Table 1 Corrected Infrared Magnitudes for OJ 287

Date (UT) 1971	J	H	K	L
September 21	—	—	8.8 ± 0.2	7.3 ± 0.2
September 22	10.3 ± 0.2	9.3 ± 0.2	8.7 ± 0.1	7.5 ± 0.2
October 28	—	—	9.2 ± 0.2	7.7 ± 0.2

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