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the location of the bridge, the soundhole, the dimensions of the body--they're all related according to these musical inter? vals. You know--all your intervals, you can find expressed in the proportions of the body of the instrument. (So you're not coming to the body and say? ing, "I'm going to make a mandolin. And I'm going to give it a shape I feel." Am I correct, that you're trying to be obedient to these principles...?) Well, there's both. Mathematics or whatever can't dic? tate what you're going to make. There's two sides of it. Nature doesn't work strictly according to mathematics. I mean, that's not all there is. That's one mode of looking at the world.... I mean, there is a mathematical mode of thought which is really expressive of our capacity to reason. It's kind of pure, ab? stract- -in a way, mathematics itself is a product of the mind. And yet we can look in nature and find it confirmed everjrwhere we look. It's a way of thought and looking at nature. As well as (being) an intuitive sense. Music has both, just like harmony is both, and the world contains both. It's not purely mathematical.... Though nowadays there seems to be a real separation between those two modes of thinking: sort of scientific, mathematical or whatever, and then maybe your aesthet? ic, intuitive approach. But they're not exclusive of one another. And that's one of the things I try to keep with the in? struments. It's not that mathematics is going to dictate the form of the instru? ment . But the instrument that I create, I'm trying to express mathematics within it. That's one aspect of it. Just like, we hear harmony. It's not a sense of just purely a series of numerical relationships. But we intuitively feel mu? sic. We hear the harmony, it moves us in various ways. And that's like the real magic, mystery of it--the fact that these mathematical ratios, which is basically where music starts from, can move us emo? tionally. Not that one is exclusive of the other, but they're contained within each other. Our aesthetic sensibility to nature or to art or whatever, in a lot of ways, is touched off by things that can be seen

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From the above diagram, you can see how these musical ratios are brought into relationship and translated into the geometry of the design of the instruments. First, the two large circles (A and B) are drawn, each centered on the circumference of the other. The body of the instrument is inscribed within the intersection of these two circles. Its lower edge follows the arc of a circle (C) just inscribed in the center of the intersection. This circle (C) is one half the radius of the larger circles (1:2 =octave). The small? er circle (D) is inscribed just inside the upper half of the Inter? section, and has a radius three quarters that of the central circle (3:4 = fourth). The soundhole (E) is centred on this circle, and a curved neck block (F) follows the upper arc of this circle, thus defining the air chamber within the body of the instrument. The bridge (G), which lies along the diameter of the central circle, then divides the chamber into a proportion of 2:3 (fifth). The ratio of the total length to width of the chamber then is 4:5 (major third).... A little exploration with compass and straightedge will reveal yet other harmonies and mathematical resonances almost as overtones of the



fundamental conjunction of the circles. as quite rational forms. When we see a painting, our sense of form and harmony, symmetry--all of these things are very mathematical. We don't think of it that way, but that's what's quite interesting. We can analyze it for that and find that, and it can be very helpful. 1991 Pathfinder 4x4 NOW IN STOCK • Also Available in 4-Door • 272-B Prince St., Sydney • 562-3035 in Sydney Shopping Centre (across from Back Window of Scotia Bank) Amateur "Wine & Beer Making Supplies & "Equipment • Beer Kits • Winemaking Kits • Grape Concentrates • Liquor Extracts • Soda Extracts HOURS: 10to10 • Monday to Saturday