taken into account when calculating that most satisfying of tests of general relativity, the advance of the perihelion of Mercury. But the sensational result of Dicke's experiment has been to destroy what was previously very good agreement between relativity theory and observation.

This is why scientists everywhere are trying to pick holes in Dicke's reasoning. One of them is Dr F. P. Bretherton of Cambridge, who is trying to work out whether the solar interior could really spin that much faster than the 25 day rotation period which is observed for the outer layers. This is where the physics of stably stratified environments enters the problem, and the simple answer seems to be that a rapidly spinning solar core is not possible. A differentially rotating Sun, the argument goes, would come about from the ejection of matter from the surface of the Sun into interstellar space along field lines—the solar wind—slowing down the rotation of the surface compared with the interior. At last week's meeting, Dr Bretherton's approach was to show how a spinning Sun with a laminar core, an outer convective zone, and a solar wind carrying away angular momentum can be studied by analogy with a rotating beaker of fluid. He seems to be able to show that there would be a transfer of angular momentum through the layers of the Sun destroying the differential spin. But Professor Tayler stressed that this question of solar spin-down, together with every link in Dicke's argument, is hotly disputed.

Geophysicists seem to be favouring the "liquid in a beaker" approach to questions of turbulence and mixing just now. Dr J. S. Turner of Cambridge, one of the oceanography contingent at the meeting, showed films taken in the laboratory of motions induced in beakers of liquid. The liquids were stably stratified in the sense that the lighter liquid was on top, and the motions resulted from the effects of heat and the presence of salt solutions. In one of his films a stable salinity gradient heated from below beautifully showed the formation of layers.

MUSIC

Variations on a Theme

MUSICIANS apprehensive about the advance of computers into their domain would have been well advised to avoid the Royal Institution on February 28. Professor C. A. Taylor of the University of Wales at Cardiff gave a discourse on "Physics and Music" which demonstrated the full potentialities of computer generated harmonics. One piece which particularly caught the audience's fancy was a sequence of notes which appeared to be a chromatic scale, but which never appeared to increase in pitch. Professor Taylor explained that this was achieved by adding together several harmonics of a basic note and then modulating these with an intensity function in the shape of an inverted letter U. By keeping the centre of the U at the same pitch while increasing the individual notes chromatically, the mind is led to experience the dual sensation of pitch stability and increase.

Professor Taylor used many other instruments—if that is the right word—to illustrate the strange relationship between music as characterized by the pressure vibrations of air, and music as registered by the mind. The mind, it appears, considers the initial part of a note to be the important part, and Professor Taylor demonstrated this by playing a tape recording of some piano music both forwards and in reverse. A piano note has a sharp beginning followed by a transient decay, and the reverse of this resembles closely the slow increase of an organ note. The mind is willing to overlook to a large degree the sharp cut-off of this organ note.

Professor Taylor divided musical instruments into three categories; those with one vibrator, those with multiple vibrators and those in which the shape of an air cavity is the variable. Most normal instruments fall into the latter two categories, although some use combinations of all three methods. Professor Taylor threw in a demonstration of two single vibrator instruments which appealed to the audience; one was a carpenter's saw, where the degree of bending of the blade controlled the pitch of the note, and this "instrument" was played by the lecturer with a vibrato that would have shamed no first violinist. The amplification effect of a formant was brought out on another pseudo-instrument, containing one wooden string. Bowing this string with considerable skill, Professor Taylor showed how the shape of the formant can transform a pitiful squeak into a relatively rich sound.

Although the lecture featured many recordings of conventional instruments, the live demonstrations were all carried out on avant-garde devices. A repeat performance on the glass rod vibrators—*Les Structures Sonores*—which appeared on the BBC's Monitor programme some years ago was among the large collection of items that helped to make this an entertaining and imaginative lecture.

ARCHAEOLOGY

Castle Discovered

from our Archaeology Correspondent

INCREDIBLE though it seems, a twelfth century castle, with walls 10 feet thick and standing in places 10 feet above ground, has been discovered in a wood in Huntingdonshire. This mysterious castle is not recorded on large scale Ordnance Survey maps of the area which are supposed to record every feature 6 feet above or below datum. It was discovered by Mr Philip Dickinson, who is the chief correspondent for the Ancient Monument Department of the Ministry of Public Building and Works in Huntingdonshire. He was asked by the planning office of the county council to investigate a story told by an old lady living in the hamlet of Ashton, which is close to the wood. She had told the council that she hoped that "the palace" would not be damaged during felling work in the wood. Mr Dickinson went to the wood, which is very isolated and overgrown, and to his amazement came upon the remains of a large rectangular tower and part of what must have been a moat, in some places 40 feet wide. Until all the undergrowth has been cleared it is impossible to know the full extent of the ruins, but Mr Dickinson believes that the stone tower stands on the mound of an earlier Norman motte and bailey castle. The tower itself has some examples of cut stone facing and the remains of shaft vaulting and there are traces of four corner turrets. Mr Dickinson hopes that when the undergrowth is cleared in the vaulted basement a first floor entrance may well be revealed.

A search of twelfth to fourteenth century records has so far revealed no reference to the castle, although