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From a painting by Ronald Clyne.
SOUNDS OF NEW MUSIC

Notes by EUGENE BRUCK

The compositions on Side I of this record represent attempts at new means of musical expression. Some utilize conventional musical instruments and sounds in startlingly new ways, giving an impression of an actual "new" sound being created; some use instruments new to music (electrical, mechanical and natural) adding to the composers' palette of timbres and tonalities. Whether or not these works come across as music depends upon listener reaction -- and most of them have been heard so seldom that no public verdict is possible. What is important is that the spirit of invention -- as differentiated from that of creation -- is being kept alive in a period when invention for material gain threatens to leave the tools of culture far behind.

SIDE I, Band 1: BAHNFÄHRT

is a musical version of a sort of narrow-gauge "Toonerville Trolley", performed in Germany in the mid-Twenties -- before Spike Jones, Tabas and trombones, whistles and windwires create a cartoon image. This type of music first found favor in Burlesque orchestras at the turn of the century and continues, much to every child's delight, to be the standard accompaniment to the animated cartoon of today.

SIDE I, Band 2: SYMPHONY OF MACHINES -- STEEL FOUNDRY

by Alexander Mosolov, was written in the Soviet Union in 1938. Here is another image, this time of something quite real. Almost every listener is able to picture some sort of factory, with its relentless, pounding, clanging movements of machines. The only concrete clue to the Steel Foundry is the constant rattling of a thin sheet of metal -- the only non-conventional instrument in the orchestra.

SIDE I, Band 3: DNIEPROSTOPT -- DNIEPER
WATER POWER STATION

by Julius Meytuss is another Soviet product of the Twenties. In it we hear of the initial work on the dam, the digging of the foundations and the sinking of piers, through the medium of a conventional orchestra.

SIDE I, Band 4: DANCE

by John Cage (1944) is played on a "prepared" Steinway piano. Cage has invented a new instrument, transforming the timbre and pitch of the piano by attaching a variety of rubber, wooden and metal objects to the strings at different angles and distances from the damping points. The resultant sound is similar to that of a gamelan orchestra -- gongs and percussion. The timbres of the instrument are used to emphasize the rhythmic patterns which form the basis of Cage's work. Traditional thematic and harmonic development have been dispensed with. What harmony exists is a blending of timbres. The rhythms and overall sound suggest primitive music.

SIDE I, Band 5: IONIZATION

by Edgard Varèse, written in 1926, is music put together in an entirely unconventional manner. Varèse recognizes timbre, pitch, intensity and duration as separate entities, to be blended without being dependent upon each other. In Ionization the use of the siren might seem spectacular in itself; actually it adds another dimension, that of indefinite pitch, to that created by the rhythm section, which in turn is part of the scheme laid out by Varèse to express the world as he saw, felt and knew it.

SIDE I, Band 6: AEOLIAN HARP

is by Henry Cowell, who first used "tone clusters", groups of notes played by leaning flaps, arms and palms across the keys of a piano. In this piece he also makes new use of the existing instrument by plucking the strings of the piano.

SIDE I, Band 7: BANSHEE

by Cowell is a spectacular example of the novel use of an existing instrument. By scratching, plucking, pounding and sweeping the strings and taking full advantage of the strings' sympathetic vibrations, the composer has perfectly evoked the Banshee of Irish and Scottish folklore, the female spirit whose wailings forewarn families of the approaching death of a member. Cowell has almost entirely obliterated the sound of the original instrument, so that all attention can be drawn to the work itself.

SIDE I, Band 8: SONIC CONTOURS

by Vladimir Ussachevsky, exploits the resources of piano sounds by means of tape recorders and certain other electronic devices. Ussachevsky writes that "In magnetic tape we have the multiple means of modifying musical sound after they have been recorded, or while they are being recorded. This is possible because of the flexibility with which tape can be cut up, spliced in any order, reversed for playing back, speeded up or slowed down or erased at any point, etc. . . . . . . . My own experiments use sounds well below and above the conventional piano range; modify the tone quality of the sounds within conventional range; and electronically repeat any such sounds by means of a specially designed gadget. The sounds produced by the latter create a peculiarly dimension- al impression and permit many individual variations in dynamic level in notes sounding simultaneously."

In a report on the first demonstration of tape experiments at the Composer Forum, May 9, 1952, Henry Cowell wrote: "One might add that Ussachevsky's electronic repetitions are controlled and vary from three or four to an indefinite number in the space of a quarter-note at about tempo allegro. One would not expect such a series of mechanical repetitions to be related to human experience, yet to nearly every one the effect seems to suggest some half-forgotten, elusive experience."

SIDE I, Band 9: FANTASY IN SPACE

is by Otto Loening, a colleague of Ussachevsky's at Columbia University. The composer has created a
"performance piece" in which the agility of a single flute is exploited. Although the acoustic resources of the tape recorder were used, Luening's avowed aim was to produce a piece which would communicate with an audience "conditioned to impressionistic, virtuoso and tonal music."

SIDE I, Band 10: SYMPHONIES IN SONIC VIBRATION
-- SPECTRUM 1

is by Halim El-Dabh, who was born in India and now resides in the United States. In notes provided in May, 1957, the composer describes his work as follows: "In my Symphonies in Sonic Vibration, I make use of traditional musical instruments (old and modern, such as bongos strapped to a piano) for the main purpose of producing vibrations, tonal shades, timbres and sound spectrums rather than melodies or harmonic progressions. The resulting vibration, and entity in itself, is used as direct expression for communication.

"The notation used for the instruments of the orchestra is traditional, except that it is written in a certain way to help release the desirable sonic-vibration (spectrum) for each specific composition. A technical knowledge in instrumental juxtaposition, along with sensitivity to overtones and sympathetic resonances, might enable the composer to master the media of sonic-vibration. I make use of a special notation simultaneously with the traditional one to help me clarify the intensity and timbre of the sonic-vibration and also its quality and shape.

"Some of the technical aspects that I attempt to use for the release of specific sonic vibrations are by allocating certain notes that are in actual pitch and other notes that are in harmonics. I treat each group allocated with its sympathetic resonances within a syntax of heterophonic notes and delineated notes. (See figure of notation.)"

SIDE II of this record is meant as a tool for those using new sounds and techniques in composing. There are basic sounds (some of which are hard to come by) and basic sound patterns, together with examples of how these sounds and patterns may be utilized.

SIDE II, Band 1: TRANSPPOSITION

is described by Vladimir Ussachevsky as the first and simplest principle used in making tape-music: "Most tape recorders have two speeds, and so any sound you record is immediately available in two versions, the original and one an octave higher -- or an octave lower. If you have two tape recorders, then any sound can be recorded up or down as many times as one wishes. "All the sounds on Band 1 --

from the high hiss to the low, bell-like tone -- originated from a single tone, the lowest "A" on the piano, which is 27.5 c.p.s.

SIDE II, Band 2: REVERBERATION

is described by Ussachevsky as another simple device for modifying the quality of a recorded tone -- by the electrical repetition of tones at fixed intervals. The same sequence of tones heard on Band 1 is repeated here, subject to reverberation.

SIDE II, Band 3: COMPOSITION.

written by Ussachevsky and presented at a Composers Forum in May, 1952, as an experiment based on the tones heard in Band 1.
sidelines every dimension of the originally intended sounds is changed—pitch, intensity, and probably duration. Furthermore, the essence of the structure is a set of pitch and duration ratios for which sound functions only as the material in which to express them. The peculiar sonorous characteristics, having been entirely changed with no damage to the structure, are entirely irrelevant to it.

It is true, of course, that purely sonorous characteristics are quite important to the total expression of a work, but the expressive possibilities of pitch and duration ratios (note structures) are so great that many works have been conceived in no other terms. In fact, before the appearance of Gabriel's Sacrénadale and the Yankee Doodle example, composers did not prescribe any particular instruments whose sounds were to embody their note structures. Even as late as the sixteenth century, when Salinas and others were writing only in terms of note structure, and, although since the seventeenth century the expressivity of particular sonorous material has been increased greatly, it still is not the case that the sound is the only thing that matters. Basic structural changes have only been concerned with their syntax. For several centuries a syntax has been in general use in music. Basic structural changes have only been concerned with their syntax. For several centuries a syntax has been in general use in music. Basic structural changes have only been concerned with their syntax. For several centuries a syntax has been in general use in music. Basic structural changes have only been concerned with their syntax. For several centuries a syntax has been in general use in music. Basic structural changes have only been concerned with their syntax. For several centuries a syntax has been in general use in music. Basic structural changes have only been concerned with their syntax.
rather than temporal dimensions. That is, it can be reversed, can be cut up into sections, can be made to pass through a machine at varying rates of speed, and every element is located at a particular place on the magnetic tape. Transmission consists of manipulating the material itself without aiming at a change in its form. For example, the recorded sound of a piano note when played at twice the speed of recording will have a higher pitch, a shorter duration, a different timbre; but the relation of attack, body, extinction, and intensity curve will remain the same. Transformation, which consists of manipulating the form rather than the material, offers the most striking possibilities. For example, one may cut off the attack of a sound on tape. One may split the form in two, reverse the two parts and recombine them so that the latter half of the body leads to an extinction, followed by an attack and the first half of the body. One may split a sound in several sections, either simply or with transformations of the sections themselves. With such possibilities, one can make a set of variations on the form of one sound, the material remaining the same. One may also create symmetrical sounds—that is, sounds whose form is identical when heard in the original or in reverse—or homogenous sounds which comprise neither attack nor extinction, and therefore may be extended an infinite length of time with no change. Having no elements to distinguish beginning, middle and end, homogenous sounds comprise only characteristics with no formal silhouette. With them, new sound forms can be artificially developed. This, as well as the other types of transformation can be easily performed with scissors and paste since the machines employed are well enough developed to allow accurate observation of the whereabouts of recorded elements on a tape. Meditation, the third manipulation, consists of varying selectively the characteristics of a sound without being concerned with transcription or transformation. For example, pitch may be changed. A machine employed in concrete music can perform this operation simply and accurately on any recorded sound. And within the duration of a given sound, the pitch may be varied at will to form any number of curves. Dynamic characteristics and timbre may be varied. The characteristics of attack and extinction can be altered. And this list hardly exhausts the present possibilities.

The composition of concrete music begins after the choice of raw materials, after the analysis, and after the manipulation; but these steps determine the composition. The composer must first choose sounds as raw materials for his work. They may be anything from a trumpet note to the sound of a brick being smashed by a hammer, but, whatever they be, they must have elements of the type which the composer wishes to manipulate. After recording, analysis will reveal the elements and their characteristics. The composer will then select, after manipulating them, in order to form the units which he has in mind for his composition. After recording the results of his manipulations, the composer is in possession of a repertoire of sounds, constructed and molded by himself. The original sounds are retained as raw material, the sounds which will make his composition. He must now make a schema representing the order of sounds, the rhythm, the polyphony, and so on. The execution of the schema will be carried out by two processes: montage—specifically the cutting and pasting of recorded fragments—and spatialization of recorded sounds which are re-recorded on a single tape. At the same time the composer wishes to consider the spatialization of the work when it is reproduced in a hall. Two types and their combinations are possible: Cinemtic spatialization is the term for emission of sounds from a localiser source—say, three loudspeakers, one at left, one at right, and one at front center. Cinematic spatialization is the term for the emission of sound in such a way that it describes trajectories in space. With these effects (produced by special apparatus) a polyphony, or even a single line may appear to come from one place, now from another, or from a moving source—or any combination of these possibilities. A score representing both spatial and temporal "cutting" as well as montage can be made to aid the composer in the arduous job of handling bits of tape. When the final assembly is made, the work is completed and needs no more performers than a playback machine with spatialization apparatus plus a man to control it. The radical difference from traditional music is obvious. The traditional composer begins with a mental conception based on an abstract structure. After representing his conception in notes his work is finished, yet it has no concrete reality until performers embody the structure in sound. The concrete composer, on the other hand, begins with concrete sonorous materials and works directly with it to form a structure.

Concrete music offers a technique, not an aesthetic program, and the works of its practitioners are quite varied as to style, expression, and the use of materials. One of the first works, composed by Pierre Schaeffer, the founder of the technique, is an Etude for Railroad Trains. Constructed in 1948 with devices much more crude than those described above, it uses the recorded noises of trains at a station. Certain sections present the noise in its natural state, while others present "manipulated" noises. Since noise has such powerful referential significance, the former sections are more dramatic than musical. The latter sections, however, approach more closely to music since there is no anecdotal significance to distract one from regarding the material as pure sound. Schaeffer's Concertino Diaphane, another early work, also presents an ambiguity since it is a combination of traditional piano music with a ratti built with the concrete technique from the recorded sound of an orchestra turning up. The Symphoni for One Man was a later composition in which Schaeffer collaborated with Pierre Henry, a young musician with conservatory training (Schaeffer was a sound engineer and writer, was not formally trained in music), and unlike the previous works, it attempts to find a synthesis between rather musical noises and noise-like traditional sound (Cage's "prepared" piano, for example). It is in advance of the other works in that it is more developed and more thought was given to structure. The more recent Batterie Fagace, of Pierre Henry, is an example of a more noisy work which demonstrates the new rhythmic possibilities of concrete music, in employing irrational rhythms convincingly. (That is, rhythms whose elements do not have a simple relation to the unit. For example: a time signature followed by a note of a triplet followed by two of a quintuplet. Such a rhythm is not traditional music since it does not allow "counting" in terms of unit. On recording tape, however, if a quarter note takes 50 centimeters, one from a triple: take the two from a quintuplet each take 12. Production of such rhythm requires only a ruler, scissors, and paste. And it is as easily perceived as it is produced.) Another composition of Henry demonstrates that an autogadugue of the same voice artificially produced several times at different pitches and speeds—is more than a stunt. But the first work to follow a rigorous schema of composition is Henry's Aural. It employs a fixed series of twelve complex sounds differing in timbre, pitch and volume. These are contrasted with a "chain" of continuously developing "elements" of sound. The form is based on the variations of blocks of different material, each associated with a particular duration. Cinematic spatialization is also used. Another strictly composed work is Pierre Boulez's Etude on a Sound which, as its name implies, uses only sound as raw material. It is composed according to a careful structure of pitch and duration, yet, because the material is so limited, the voices of Boulez' complex polyphony seem rather jumbled when heard through one loudspeaker. It is extremely interesting to notice, however, that spatial separation of the voices immediately clarifies the counterpoint. The former teacher of both Boulez and Henry, Olivier Messiaen, has also composed concrete work. His Timbres—Duplex uses only percussive sounds as raw material—drops of water, cymbals, gongs, drums, and wood block—each characteristic timbre being associated with a distinct rhythmic pattern. The structure is based on symmetry and addition of these duration-timbre associations. The concrete jazz of André Hodeir is rather interesting in that it is much more traditional in sound than any of the previously described works. As do the early compositions of Schaeffer, it employs "straight" music with superposition of material constructed with concrete methods. Since this approach would be necessary in jazz, where the characteristic element is a strong muscular drive, Hodeir uses a recorded rhythmical pattern of ordinary jazz as a foundation for the fanciful "concrete" arabsques. The result of such a mélange is quite satisfactory—equally as exciting as ordinary jazz even though it is constructed with bits of recording tape.

A curious thing about all these pieces is that, no matter how novel they may be, they are quite easy for the ear to comprehend—good deal easier, in fact, than some twelve tone compositions which use standard materials. The reason for this is probably that, though concrete works expand the musical domain, they do not add to its complexity. In fact most of them are a good deal simpler than what our ears are ordinarily confronted with. In this regard their relation to traditional music is rather like that of abstract painting to traditional painting. Also, like abstract painting, many concrete works present themselves as purely esthetic objects with no reference beyond themselves. (This may be the result of notes and note structures which are conventionally linked with the meanings of gesture and language.) Another similarity is that, just as abstract painting has influenced modern development of the traditional style, so the music can affect composers who wish to remain linked with human performers and instruments. It can suggest new points of view, new structures, and most important of all, a more generalised theory of music which includes all the functions of sound. In so doing, it may be able to add a freshness to our present methods which seem to be developing by turning in on themselves and becoming increasingly complex. It should be emphasized, however, that the power of the concrete technique to stimulate traditional music is an incidental function. Concrete music is completely separate, approaching its material and using it in an entirely different way. It can never replace the older methods, of course, since one of the prime functions of the latter is to provide music for people to play. But it can co-exist with the older techniques. Concrete works can be performed in concert halls and on the radio as "pure" music, or they may serve as accompaniment to films, stage, television, and radio productions. In fact, radio has already exploited concrete music quite successfully, and has avoided producing the embarrassment felt by a concert hall audience when it is faced with nothing but electronic equipment. Such embarrassment, though probably only the result of a startling break from habit, may not disappear for some time. Performances of concrete music would have to be more general, and the production of compositions as well as their distribution is extremely limited. It is to be hoped, however, that this situation will change, since the technique should certainly exert a great attraction for many composers and audiences throughout the world.

1 The first step could be skipped if the composer has a tape recorder available and has recorded in advance the sounds or voices which he wishes to use. This section is based on a section of the concrete music studies of the Radio/Studio Paris discussed in the article "Concrete Music" by Arthur Bliss, "Music and Acoustics" by Roger Temperley, and the Concrete Music Research Group of the French radio station.