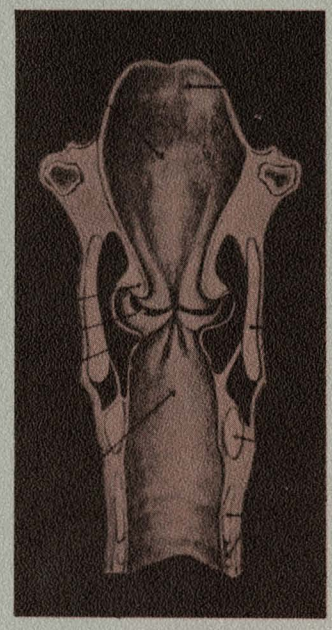
SPEECH



AFTER THE REMOVAL OF THE LARYNX

RECORDED BY HARM A. DROST

FOLKWAYS RECORDS FX 6134

SPEECH AFTER THE REMOVAL OF THE LARYNX

FOLKWAYS FX 6134

COLORATURA SOPRANO SINGER
MAN WITHOUT LARYNX
BUCCAL SPEECH
PARABUCCAL SPEECH
SINGING VOICE, WHICH BEARS RESEMBLANCE TO PARABUCCAL SPEECH
GLOSSOPHARYNGEAL SPEECH
FROGSOUND-GLOSSOPHARYNGEAL SPEECH
ESOPHAGEAL VOICE

INJECTION-BASIC SOUND
BASIC SOUND OF THE ESOPHAGEAL VOICE
BASIC SOUND OF THE ESOPHAGEAL VOICE AN OCTAVE LOWER
ESOPHAGEAL VOICE BY TELEPHONE
LARYNXOPHONE
SINGING VOICE WITH LARYNXOPHONE
PIPA DI TICHIONI
WESTERN ELECTRIC

DESCRIPTIVE NOTES ARE INSIDE POCKET

COVER DESIGN BY RONALD CLYNE

FOLKWAYS RECORDS Album No. FX 6134

SPEECH AFTER REMOVAL OF THE LARYNX

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Written and compiled by
HARM A. DROST.
Head of the Speech Department.

Total removal of the larynx is no longer a rare operation, and in recent years many publications on the various ways of producing voice without the larynx have been added to the literature on phoniatrics. A phonograph record demonstrating some of these forms of speech in which sounds are created without the use of vocal cords therefore seemed to us a useful contribution.

Speech is normally produced by means of the larynx in combination with the nasal, pharyngeal, and oral cavities. The larynx is essentially a mechanism to promote swallowing, which man can exploit for speech because it contains musculocartilaginous elements that can be cause to vibrate by the air expelled from the lungs.

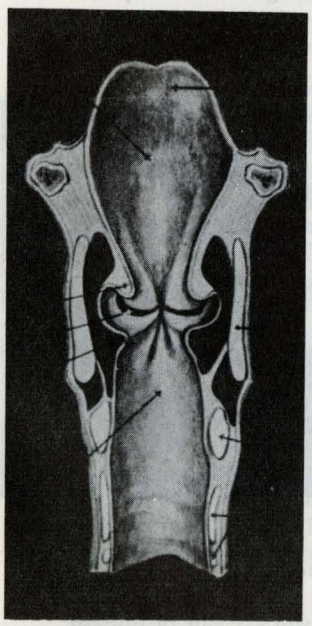

Fig. 1.

Cross-section of larynx.

The current of air produces a whirling motion in the vocal cords when a sound is produced. The cords of folds are repeatedly pushed briefly apart by the pressure of the expelled air and then drawn together by their elastic tension. The number of impulses or waves created by the vocal cords per second is called the basic frequency of the voice. For the male voice this basic frequency is about 110 Hz, and for the female voice about 220 Hz, or an octave higher. The melodic quality of the voice is carried by the basic frequency of the vocal cords: the speaker introduces tonal variations into his speech by regulating the basic frequency by means of a complex of muscular movements.

Total removal of the larynx, the organ of voice, is sometimes made necessary by the presence of certain malignant tumours. This operation often saves the life of the patient, but robs him of the organ which equips him for oral communication, one of the most important elements of our daily lives.

We cannot imagine what it is like to be really "dumb" Even the individual who find himself faced with the loss of his vocal organ cannot begin to conceive the proportions of this loss. Only during and after his recovery from the operation does the patient begin to realize more and more what it means to be completely mute. In the beginning, this psychic trauma and the change in his physical state are difficult for the patient to cope with.

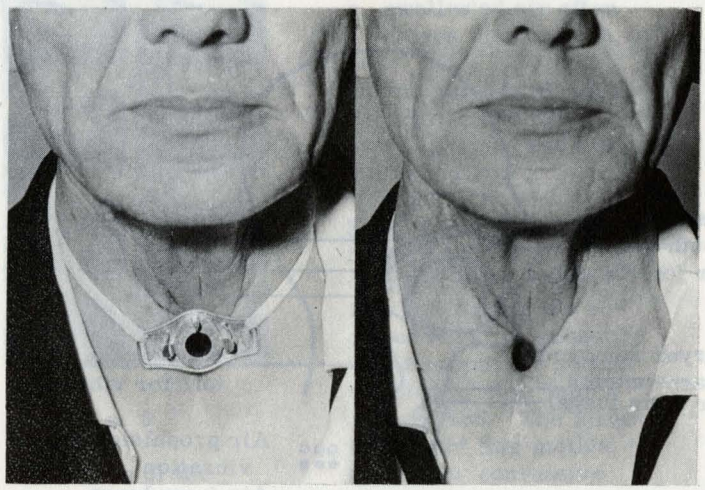

Fig. 2.

Tracheostoma

The change produced by the laryngectomy in the state and the action of the organs of speech is as follows. The larynx is removed by surgery. To prevent food from entering the air passage or trachea, the latter is provided with an external opening at the front of the neck, the so-called tracheostoma (fig. 2). Air no longer passes through the nose and mouth but flows directly through the tracheostoma. As a consequence of the removal of the larynx, two components of the peripheral mechanism are now missing, air propulsion and phonation. The third element, articulation, has not been disturbed. Because of the absence of the larynx, no basic frequency or ground tone can be created, and the absence of a current of air means that whispering is impossible. Other functions of the upper air passages which require a flow of air through the mouth and nose also become impossible, for example smoking, blowing, whistling, sneezing, sniffing, and blowing the nose. Fortunately, the intense compulsion and psychic necessity to maintain oral communication can lead to the creation of other forms of speech or vocalization.

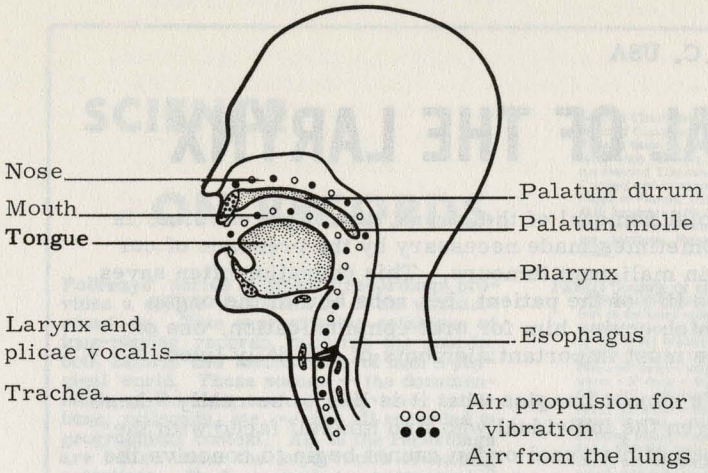

Fig. 3a.

Normal condition

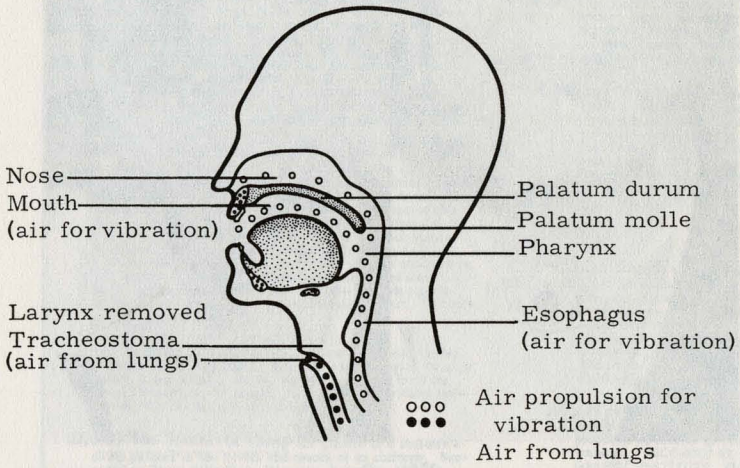

Fig. 3b.

Condition after laryngectomy

Buccal speech. (recording III)

Buccal speech is the most imperfect form of expression that can be learned to replace the vocal cords, but it is in a sense the obvious one to be produced spontaneously. It has been noted that buccal speech, which is produced entirely without a basic tone, must be seen as the most primitive form of speech known in the development of man. In this means of communication, use is made only of articulation and no additional sound is provided by a substitute organ of voice. The explosive and fricative consonants p-t-k-s and f are formed in such an exaggerated manner that the air in the oral cavity is made to resonate according to the shape assumed by the oral cavity for the vowel to follow the consonant.

When a person whose larynx has been removed is forced to use buccal speech over a long period, he may achieve such skill that combined with the position of his lips he becomes understandable to others.

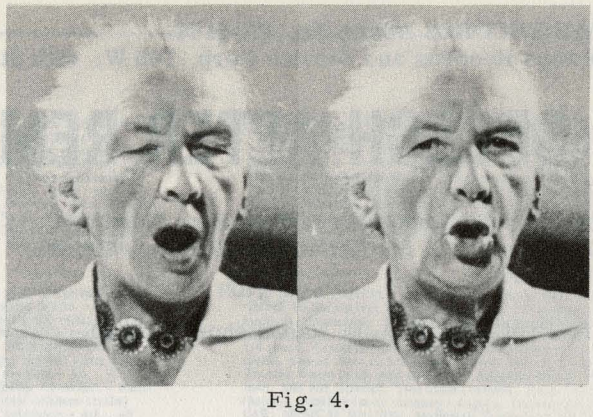

Fig. 4.

Exaggerated articulation in buccal speech.

The patient whom you have just heard has acquired enormous virtuosity with buccal speech, even though she is completely unintelligible auditorially, i. e. when her lips cannot be seen. What you heard are only exaggerated clicking sounds.

Parabuccal speech. (recording IV)

Parabuccal speech is a little-known manner of speaking. At one time this form of speech was occasionally applied in the rehabilitation of speech. It is no longer used for this purpose because it is very difficult to learn. In parabuccal speech, the air required to form the basic tone is collected in a space between the cheek and the upper jaw; the cheek serves as an air reservoir and the muscles of the cheek force the air out. The basic sound to be articulated is formed between the cheek and the teeth: the inside of the cheek is pressed against the teeth and the collected air is forced between them, creating the basic tone. This tone, as you can hear on the record, is high, thin, and pinched.

The patient who made this recording has developed such facility with parabuccal speech that you can understand him easily. He is even able to use this manner of vocalization to sing.

Fig. 5.

Parabuccal speech.

Expansion of cheek to form air pocket.

Pressing air out of pocket via narrow opening between upper jaw and cheek towards the mouth.

The parabuccal form of speech is the first form of oral communication in which, in a very primitive way, a basic tone is produced.

Glosso-pharyngeal speech. (recording VI)

Glosso-pharyngeal speech is a very rare mode of speaking. This recording was made by a patient who has been described in detail by Dr. Damste and Mrs. Moolenaar-Bijl. Glosso-pharyngeal speech is sometimes encountered in children provided with a temporary tracheal cannula because of a serious stenosis of the larynx. The pharynx serves as an air reservoir and a pseudo-glottis is provided by a contraction in the oral cavity formed by the back of the tongue and probably the left front palatal arch, the left edge of the tongue being pressed against the processus alveolaris. When the small volume of air is forced out of the pharynx through the small opening between the tongue and palate, a quacking basic tone is developed. But because the tongue and palate must remain rigid during phonation, the oral cavity cannot assume the positions required for the various vocals and the consonants r-n and l cannot be articulated at all. The rapidity of the speech and absence of melody largely determine the comprehensibility of this form of speech. Only members of the family and people in daily contact with the speaker can understand him well; for others he is incomprehensible.

Esophageal voice. (recording VIII)

Since 1890, esophageal voice has been considered the best replacement for the normal voice. This form of phonation offers the most possibilities for the development of an easy, flowing manner of speaking which is reasonably understandable, and gives the patient a means of expressing his personal feelings with temporal, dynamic, and even melodic accent.

The esophagus as a whole serves to a large extent as an air reservoir. The pseudo-glottis is formed by a constriction in the esophagus created by contraction of the M. cricopharyngeus (fig. 6). With involuntary eructation we can hear that this annular muscle is by nature capable of vibration. The basic tone (recordings X and XI) is low and its volume is small because the tension of the pseudo-glottis cannot be varied very much.

The ground tone is sometimes rather difficult to determine. Luchsinger states that the basic frequency is between 50 and 64 Hz, but Damste has measured 40 and 180 Hz.

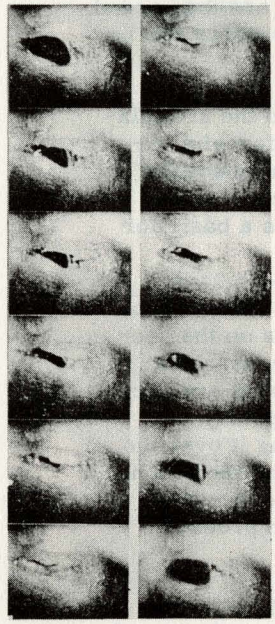

Fig. 6.

Vibration of the M. cricoph. seen from above.

To produce esophageal sound, the esophagus must be able to take in and expel air voluntarily. The taking in of air requires a reconditioning of the esophagus which, closed by reflex, must be trained to open at will.

The oldest method to introduce air into the esophagus is by swallowing. The objections to the swallowing method are:

A.

a. the swallowing of air cannot be repeated sufficiently;
b. swallowing interrupts speech;
c. swallowed air often enters the stomach.

Other methods of introducing air into the esophagus are suction and injection.

Suction: With direct inhalation, the esophagus opens simultaneously, thus increasing the so-called negative pressure in the esophagus so that the air can flow into it undisturbed. The disadvantage of this method is the rather convulsive mechanism which is accompanied by rapid fatigue (hyperventilation).

Injection (recording IX): The air present in the tongue or bottom of the mouth and forced into the esophagus. This does not require thoracic breathing movements. The oral closure and constrictive movement are the equivalent of a very lightly applied articulation of the explosives p and t. Further back in the mouth, at the level of the k-articulation, a movement of the back of the tongue can create the same effect. There is thus a relationship between the formation of consonants and injection. For teaching esophageal voice, the injection method is now used exclusively.

Patients who have acquired skill in esophageal voice can use the telephone as easily as before the operation. (recording XII)

The teaching method for esophageal voice.

After the patient has been given a brief explanation of the principle of esophageal voice, attention is given to quiet breathing with as little sound as possible. In

the very first lesson the patient is asked to articulate the meaningless syllable pa-pa-pa until an esophageal sound is produced.

If the combination of a pa cannot be realized after several attempts, vowel combinations such as ij-ee-ui are tried. Learning to repeat the injection of air is extremely difficult for the patient, and this is the moment at which it is essential that the therapist convey his will to persevere to the patient because at this stage many patients become discouraged or are overcome by panic. In most cases, however, after intensive practice with the syllable pa, esophageal sound is produced after a short time. The syllables ta, tei, tee and ka, kei, kee are then added, and after practice the first meaningful words can be formed.

In the next lessons attention is given to the articulation of the one-syllable words without forceful exhalation and without irrelevant associated sounds. Other vowels in combination with the consonants p-t-k can then be practiced and used as a basic for many other variations.

It is now possible to begin with the teaching of two-syllable words in which the accent falls on the second syllable, and later several other consonants can be added unobtrusively. These words are used with the object of conserving the still poorly-developed esophageal sound and spreading it over the whole word rather than wasting it in one expulsion. When these combinations can be produced with a certain amount of ease, the patient can proceed to the initial consonants s and f.

The practice material is then extended to include three-syllable words with the main or subsidiary accent on the last syllable, and in this composition all the vowels can be used.

If the patient has so far achieved reasonable facility at each stage, he is now ready to use the practice material to form short sentences and he can also make simple sentences with numerals and the substantives he has already learned. At this stage a start can be made with teaching the consonants b and d. For the sake of simplication, these consonants are first pronounced as p and t, and preference is given to words in which the second syllable carrying the accent begins with a b or d.

When the patient is able to produce a ructus at will, a word beginning with a vowel will give him little trouble, but if he is not yet able to eruct at will he can be taught to pronounce combinations of words in which the first word ends with an explosive and the second begins with a vowel. Shortly thereafter, other two or three syllable words beginning with a vowel and with an explosive in the middle can be added.

In attempting to come as close as possible to perfect articulation, attention must be given to the voicing of the consonants m-n-ng and l-v-z. Voicing of the consonants m-n-ng is achieved by sustaining the esophageal tone as long as possible. These consonants must be taught in the middle position in words with the accent on the second syllable, after which words can be used with the accent on the first syllable.

Once this difficult point has been overcome, the nasals and liquids can also be taught in other positions. To achieve a flowing pronunciation of two different successive vowels, special words are practiced such as lay-out and get-up. The ability to repeat a vowel without a new injection provides refinement and control of the esophageal sound. The limited variations in tonal height and intensity available to the esophageal speaker can be increased to some extent by various vowel exercises, and here the fact that there is a close relationship between melodic and dynamic accent must be kept in mind. It is also important that time be spent on the accentuation of syllables and parts of sentences, which can be taught by means of contrasts and multisyllabic words in which the consonants p-t-k-b and d predominate.

This is a short statement of some of the broad lines to be followed in teaching esophageal voice. The patient must of course have the courage and determination to realize the new form of speech in his daily life. The therapist can be of great help to him in this, by encouraging him to speak often and slowly and convincing him that concisely formulated his thoughts always provides the best communication between people.

The artificial larynx. (recordings XIII, XIV, XV and XVI)

Not all those who must undergo a laryngectomy are capable of learning esophageal voice. The causes of failure include an organ unsuited to producing the basic tone, advanced age, and inadequate intelligence. For these patients the artificial larynx is to be considered.

The production of the basic tone by mechanical means can be done in two ways. The first group of apparatuses, to which the larynxophone belongs, (recording XIII and XIV), have in common that a membrane is caused to vibrate by air expelled from the lungs via the tracheostoma. The sound developed in this way is led into the mouth by a tube. By controlling the pressure of the air from the lungs, the membrane can be made to vibrate faster or slower, enabling good variation of the basic tone. (fig. 7).

Fig. 7.

Larynxophone

In the second group of apparatuses the basic tone is produced electro-acoustically. At the desired moment, the noise source must be switched on and off. This group includes the "Pipa di Tichioni" (fig. 8) (recording XI) and the Western Electric instrument (fig. 9) (recording XVI) of electro-mechanical type in which the basic tone is led via the sort tissues of the neck and bottom of the mouth to the extension. Because the basic sound has a constant frequency, the ground tone cannot be varied. The result is a soft, monotonous sound.

Fig. 8.

Pipa di Tichioni.

The noise source is built into the pipe-bowl.

Fig. 9.

Western Electric.

Fig. 10.

Farmer with frog.

A bizarre means of producing a basic tone was discovered by a farmer in California, at least according to history. He used the croaking of a live frog. When he wanted to speak he put the frog into his mouth and caused it to croak by stroking it with his tongue -- and the farmer spoke -- so the story goos.

Literature.

1. Damste, P. H.; Esophageal speech after laryngectomy. Dissertatie Groningen 1958.

2. DiCarlo, L. M; Amster, W., and Herrer, G.: Speech After Laryngectomy. Syracuse, N. Y., Syracuse Univ. Press. 1955

3. Doehler, Mary; Esophageal Speech. Boston, American Cancer Society, 1953.

4. Gilse, P. H. G. van; Another method of Speech without larynx. Acta Oto-laryng., Supp. 78:109-110 (1949).

5. Marland, P. M.; A direct method of teaching voice after total laryngectomy. Speech 13 (2) : 4-13 (1949)

6. Moolenaar-Bijl, A. J.; Het spreken zonder strottenhoofd. Log. en Phon. I t/m V, 31, 65 (1959).

7. Reichard, W; The rehabilitation of the laryngectomized patient. Bol. Asoc. med. P. Rico, 46:4: 162-67, 1964.

8. Riesz, R. R.; Description and demonstration of an artificial larynx. J. acoust. Soc. Amer., p:273, 1930.

9. Tait, V.; Speech rehabilitation with the oral vibrator. Speech Pathol. Ther., 2:64, 1959.

10. Waldrop, W. F; Rehabilitation of the laryngectomized patient. Nbe. St. med. J., 39:419-22, 1954.

Recording XI: Basic sound of the esophageal voice an octave lower.

The pace with which the patient can learn this speechmechanism is variable and depends on age, state of health, intelligence, sphere of activity and milieu. Under favorable circumstances the patient can learn this technique within two months. When speaking clearly and slowly, patients with esophageal voice are completely understandable, even through the telephone. This can be heard in the following recording.

Recording II: Esophageal voice by telephone.

Not every patient without a larynx is able to acquire an esophageal voice. Several causes such as age and low intelligence, preclude this accomplishment. For these patients the possibility of procurring an articial larynx exists. The production of basic sounds by mechanical means can be done according to two principles: The first includes a group of appliances which have a membrane set in motion by air expelled from the lungs through the tracheostoma. The sound thus produced is conducted by means of a tube to the mouth, as you will hear in the following recording.

First you will hear a little piece in Dutch and after that a little piece in French.

Recording XIII: Larynxophone.
English translation of the Dutch part:

In 1952 I constructed an apparatus and called it "Larynxophone" I was inspired by a balloon with a little squeaker in it, when we pinched the balloon out comes a specific sound. This little squeaker was worked into my apparatus in the form of a membrane.

It is even possible to sing with this apparatus.

Recording XIV: Singing voice with larynxophone

The second principle includes a group of appliances in which the sound is produced electrically. This source is switched on and off at will. The path by which the sound reaches the mouth can be varied. The "Pipa di Tichioni" is a representative of this group. This apparatus resembles a pipe. The source of sound being built into the pipe-bowl and the sound being conducted into the mouth by way of the pipe-stem.

Recording XV: Pipa di Tichioni.

With removal of the vocal organ we save the patient's life, but at the same time deprive him of the organ that enabled him to maintain human contact and spontaneous self-expression. The social problem here entailed will be heard from the following patient. He has tried to learn esophageal voice, but failed. He is now speaking with an artificial larynx, the "Western Electric".

Recording XVI: Western Electric.

Fortunately the patient whose larynx must be removed is not doomed to be mute for the rest of his life. For each one there is a method of learning a new way of speaking, as this record has attempted to demonstrate.

Harm A. Drost.

Leiden, 28 april 1964.

A cover-picture for the record.

It symbolizes a man without a larynx and a violin with broken strings.

Ideal from Harm A. Drost.
Drawn by Jaap Groendal.

SCIENCE

ON RECORDS

Folkways' series of science recordings provides a unique documentary of the world around us. This ever-growing catalogue of long-playing records, captures the sounds, both natural and mechanical, of man's physical world. These sounds -- the documentation of animals, insects, man-made satellites, railroads, etc. -- are all recorded in geographical context. All of the recordings are edited under the supervision of leading scientists. Each record is accompanied with a set of extensive documentary notes, providing background on the subject plus additional information on the circumstances of recording and the significance of the sounds recorded.

FX6007 The Science of Sound Demonstrations of acoustic phenomena with an explanatory narration written by scientists and engineers of Bell Telephone Laboratories, How We Hear, Frequency, Pitch, Vibration and Resonance, Intensity, Loudness, Noise Measurement, Masking, Echo and Reverberation, Delay Distortion, Fundamentals and Overtones, Quality, Subjective Tones, Music or Noise, Filtered Music and Speech, Dissonance and Consonance, Music Scales, Vibrato and Tremolo, The Doppler Effect.
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FX6100 Sounds of Frequency The purpose of this record is to provide a standard by which record playing equipment can be checked for frequency response and distortion. 78 RPM:... Frequency test run; square waves; and three variations of music to check longplay phonograph record characteristics. NOTES BY PETER BARTOK The purpose of this record is to provide a standard by the use of which record playing equipment can be checked for frequency response, and distortion, without equipment other than an oscilloscope and volume indicator. The portion of the record intended for frequency-response measurement provides test signals which are always the same musical distance apart. Accompanying descriptive notes.

FX6101 Science in Our Lives narrated by Ritchie Calder, from the Signet Key Book. Includes Science began, Science terms, Edison effect, Atoms, Agriculture, Food from the desert, Food from the jungle, Millions of men without teaspoons, Rip Van Winkle comes to town.

FX6105 The Sounds of Camp the picture of a children's camp painted in the voices and sounds of its children. Recorded at Camp Killooleet, Hancock, Vermont, 1958 by Ed Badeaux, Includes Riding, Shop Swimming, Jingle, Before lunch music, Filing into tables, Eating, Happy Birthday, Jacks, Dance Class, Baseball, Theatre Backstage, Front porch before hikes leave, Hike reports, Girls after a dance, Riflery, Last campfire.

FX6120 Sounds of A Tropical Rain Forest in America As a dramatic presentation, and because enough sounds were available it was decided that the approach would be.. for every hour of the day from one to two minutes of sound would be used on the record. Thus in sixteen minutes of play an idealized condition was possible in depicting a dawn to dusk period. Includes, THE DRY SEASON Cricket and Dove, Violaceous Jay, Black Howler Monkeys, Parrott, Swainson Toucan, Cicadas, Great Rufus Motmot, Cicada, Spotted Chachalaca, Great Tinamou, Wattled Guan, Red Wattled Curassow, Toucan and Jay, Monkey Chatter, Toucan Barbetes, Flock of Parrots, Waglers' Toucan, Macaw talk, With Crickets, Crested Guans in Thunderstorm, Chestnut Headed Tinamou and Crickets, Crickets and Parakeet, Crickets and Mourning Dove, Small Tree Toad, Peepers, Flight of Parrots, Giant Toad (Bufo Marinus), Many Toads, Rain Sequence with Crickets, And Toads, Three Wattled Bell Bird, Black Howler Monkeys, Tree Fall With Screaming, Monkeys, Parrots and Macaw, Tree Toad, and Big Toad.

FX6121 Sounds of the Sea Actual SOUNDS of fish species recorded in isolated tanks and at varying depths - from 5 feet in sheltered areas to 2,000 fathoms 200 miles out - in tropical waters of the Atlantic and Pacific Oceans, Recorded by the Naval Research Laboratory, INTRODUCTION AND NOTES BY C. W. COATES. Includes, Normal water noises - Pac., 10' deep - snapping shrimp - toadfish - Atl., 11' water - 5' deep - Atl. - snapping shrimp - croakers - toadfish - Atl., 20' water - Pac., One mile offshore (crabs) Pac., 45' water - snapping shrimp; Afternoon - Atl., 45' water; Evening - Atl., 1 1/2 miles out above water - Pac. snapping shrimp - sea robin - croakers, 50' 60' 70' water Pac., 12 miles out - 48' deep - Atl. - drum fish (bastard trout), 600 fathoms down 18 miles out - Pac. - croaker family 600 fathoms down - unknown sounds - Pac., 2000 fathoms down, 200 miles out - Pac., Spot fish, Sea robin, (5) Catfish, (400) Croakers, (150) Snapping shrimp, (40) Cancer crabs, Spotfin croaker, Black croaker, Croaker and snapping shrimp chorus in open water, Drum fish, and Toadfish.

FX6122(FPX6122) Sounds of the American Southwest recorded in Arizona near Tucson, Cave Creek, Chiricahua Mountains and Rustlers Park. In New Mexico, San Simeon Valley and in California, Mandevilla Canyon, Santa Monica Mountains and Lake Fulmar, by Dr. Charles M. Bogert, Chairman and Curator of the Department of Amphibians and Reptiles of the American Museum of Nat. Hist., N. Y. The sounds recorded are those that anyone traveling in the arid portions of southern California, Arizona and New Mexico might hear during a single summer. Includes, Morning doves, mocking birds, woodpecker, owls, rattlesnakes, bob cats, crickets, beetles toads, frogs, etc. Thunder storm and flashflood. Illustrated Text.

FX6123 Vox Humana recorded in England, Alfred Wolfsohn's experiments in extension of human vocal range with an Introduction by Dr. Henry Cowell. Includes Female voice in a range of seven octaves, Female duet in ne vocal sound range, Boy's voice in seven octaves, Four and five octave leaps, Double and multiple stopping by the voice, New registers (male and female voice), Male voice in nine octaves, "String Quartet" for four female voices, and Voice versus Instrument.

FX6124 Sounds of Animals audible communication of zoo and farm animals. These various recorded sounds suggest that just as man has his own special language, so animals have their own special means of vocal communication which help them to solve their own living problems. Includes, ZOO: Puma, Lion, Indian Elephant, Rhea, Hippopotamus, Chimpanzee, Peccary, Rhesus Monkeys, Rhinoceros, Tiger, recorded by Arthur M. Greenhall. FARM: Chicks, Goat, Sheep. recorded by Nicholas Collias.

FX6125 Sounds of Sea Animals Vol. II Florida This record contains representative or typical underwater sounds produced by several species of fishes and by the sea cow or manatee. RECORDED BY W. N. KELLOGG. OCEANOGRAPHIC INSTITUTE. . FLORIDA STATE UNIVERSITY... Includes Snapping shrimp, Toadfish, Trigger Parrotfish, Sea catfish, Single catfish, White grunt, Drumfish, Cowfish, Manatee, One porpoise, Four porpoises, School of porpoises, "School" at 1/2, 1/8, 1/32, and 1/64 speed.

FX6126(FPX126) Sounds of Carnival The Midway and Merry-Go-Round Music. Recorded at the Royal American Shows by students of the Chicago Institute of Design. This record is for young and old. It is a documentary of typical sounds nostalgic and true of an American scene... The Carnival. Includes the Crowd, Merry-Go-Round, Barker, Outside the fun house, Animal barker, Ferris Wheel, Motordrome barker, Roll-O-Plane, Strange people barker, Laughing clown, Interviews, and the famous repertoire of merry-go-round music, including Calliope; Over the Waves, Ta-ra-ra-boom-der-e and others. Notes.

FX6127 Sounds of Medicine recorded on location. Contains Operation; Supervised surgical operation on a small boy with a cyst in his neck, Stethoscope Sounds; Heart murmurs and lung sounds - A woman with Rheumatic Heart Disease, Normal heart and lung sounds, Heart murmurs and lung sounds - A woman with Valve Disease of the heart before surgical operation, Breath sounds, Sounds of the bowels - A normal hungry man smoking a cigarette before dinner, Heart sounds - A man with inflammation of the heart due to active Rheumatic Fever.

FX6130 Sound Patters Taken out of content these sounds 'stand' by themselves in their uniqueness, and create new auditory dimensions. NATURAL SOUNDS: Wood Thrush--natural speed, slowed down to 1/2 speed, slowed down to 1/4 speed, Crickets--natural speed, slowed down to 1/2 speed, slowed down to 1/4 speed, slowed down to 1/8 speed, Thunder Storm (with toad and bird), Alligator Chorus (American, and one Asiatic), Two Lions (Atlanta, Zoo), Monkey (happy), Monkey (same monkey - angry), Tortoise Mating Call, MUSICAL SOUNDS: Musicians Tuning-up, SOUNDS: Animal Imitations by an Eskimo, Heartbeats, LOCATION SOUNDS: Chorcha, Honduras, Talking Drums, Africa, Taxi Trip, Through Traffic to Airport, Street Cries -- N. Y. C. Lineman, N. Y. C. gardenias!, Hot Dogs in Times Square, Flower Vendor, Charleston, S. C., Cow Ceremony in Yugoslavia, Dawn Chorus, East Africa, MAN MADE SOUNDS: Jet Flight, Railroad to Atlantic City, Short Wave Radio, Pump Drill, Electronic Feedback -- 7 1/2 inches tape, and 15 inches tape.

FX6136 The Science of Sound (Short versions of FX6007) This record describes and demonstrates various phenomena of sound as an aid to understanding how sound is put ot work for the benefit and pleasure of man. How We Hear, Frequency, Pitch, Intensity, The Doppler Effect, Echo and Reverberation, Delay Distortion, Fundamentals and Overtones, Quality, Filtered Music and Speech.
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FX6140(FPX140) Sounds of the Annual International Sports Car Races of Watkins Glen N.Y. The Schuyler, Carrera, Glen Trophy and Grand Prix. Recorded on location by Henry Mandler and Robert Strome Includes: lining up, practice, winner O'Shea in the victory lap, technical inspection, cars in the races: Maserat, Jaguar, Austin, MG's, Porsches, Mercedes. With ill. notes.

FX6151 Sounds of A South African Homestead Recorded in the Land of the Zulus by Dr. Raymond B. Cowles Containes DAWN CHORUS: Doves, Thrush, Cuckoo, Weaver. BUSH BIRDS: Hornbills, Doves, Barbet, Shrikes, Monkey, Warblers, Cicadas, Orioles, Bulbul, Robbin, Starling, Ibis, Trogon, Drongo. LATE AFTERNOON UNTIL DARK: Partridge, Drongo, Bulbul, Cricket, Amphibian chorus, Toads, Frogs. ZULU MUSIC: with guitars, jew's harp, fighting sticks, gourd-and-bow, horns, in songs, wedding chants, beer-drink, praises, dances. Accompanying notes and illustrations.

FX6152 Sounds of Steam Locomoties No. 1 Stack Music Sampler; The U.P., C.B.&Q., I.C., C.N.W., D.R.G.W., etc. 2-8-2, 4-8-4, 4-12-2, 4-6-0, 4-6-6-4, 4-8-8-4, 4-8-2, 2-10-2 and switchers 0-6-0. 2-8-0, narrow gauge 2-8-2. These recordings were made by Vinton Wight who wrote the accompanying notes.

FX6163 Sounds of Steam Locomotives No.2 Stack music sampler edited and recorded by Vinton Wight. Includes No. 510 Switching, No. 4958 Leaving Yards, No. 5116 Climbing to Elevator, No. 5112 Struggling spotting Cars, No. 4958 Returning to Yards with Empties, No. 5344 Simmering on Ready Track, No. 5351 Up to Crossing and Back, No. 5504 Leaving Yards with Train, No. 5355 Passing, No. 5505 Switching at Ashland, No. 5504 Woodlawn Run, No. 5347 and Helper No. 7000 near Firth, No. 5335 Pulling into Yards, No. 5504 Light to Roundhouse, No. 5351 from RH Simmering and Switching.

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