Diarrhea developed more quickly and was more severe for the tube-fed rats. Autopsy finds in Experiments II and III included distended stomachs and intestines. Distension was greater in the force-fed rats. Hemorrhage was noted often in the intestine and in the stomach of both experimental and control animals.

D. E. Smith found (4) that food is retained in the stomach for 4 or 5 days post-irradiation. In my experiments, little emulsion was found in the stomach upon death. The distension was due either to gas, blood, or chow.

SUMMARY

Force-feeding of a fat emulsion to rats irradiated with 750 r or 1000 r (Co-60) and with 800 r (x-ray machine) was studied. Such feeding did not reduce anemia, decrease in leucocyte counts, or body weight losses.

With 1000 r Cobalt irradiation and with 800 r x-irradiation, the tube fed animals showed less food consumption, more acute diarrhea, greater stomach distensions, and shorter survival times than their controls. It seems conclusive that force-feeding of a fat emulsion immediately following irradiation is detrimental.

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A STUDY OF CHEROKEE MEDICINE

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In this modern world of ours, we seldom stop our routine lives to think about our predecessors—the Indians. I decided to make my project on the Cherokees and their medicine. They depended upon good health as much as we do today. Although the Cherokees didn't contribute anything to our modern medicine, theirs was one of the most interesting in all history and showed primitive man's struggle for existence.

The Indian equivalent of our doctor was the medicine man. He had charge of the following practices which I will discuss later:

Diagnosing the Illness

The Cherokees recognized 230 diseases. The medicine man's first step in diagnosis was to uncover the seat of the pain. Then he matched the pain with any dreams, omens, or broken taboos

which he deemed significant. The dreams may have dated as far back as two or three years. If the disease could not be found by this procedure, the cure could have been found by examining the beads, (a never failing method). This was done by guessing upon the disease and cure, then rolling a small black bead. Should the movement be brisk, the answer was affirmative; negative, if the movement was sluggish.

Collecting the Herbs

The medicine man, having made his diagnosis, set forth on the task of finding herbs, barks, and roots out of which to make medicine. The herbs were usually gathered on the east side of the tree on the top of a mountain. Once the herbs had been gathered they were wrapped into a bundle and thrown in the river. If the bundle floated they had been properly gathered, otherwise he would have to start all over again. The medicine man was given a piece of cloth as his fee. He always tried to get a lot of cloth by telling a member of the household how hard he had to work to get the herbs.

Preparation of the Medicine

There were three major modes in preparing the medicine. They were: (1) pounded and steeped in cold or warm water, (2) boiled, or (3) boiled down. While preparing the medicine, the medicine man had to recite a sacred formula. This was handed down from generation to generation, and consisted of sacred phrases, directions, etc. Occasionally a few flint arrowheads were dropped in the medicine to "cut the disease to ribbons."

I have prepared some representative samples of their medicine, listed below:

No.	*What the medicine was used for*	*What the medicine was made from*
1.	Snake bites and headaches	Tobacco in saliva
2.	"Yellow navel" (in babies)	Ironwood bark in water
3.	An itching disease	Poplar bark in water
4.	For hypochondriacs	Seven pine branches in water
5.	Diarrhea	Wild cherry and persimmon barks in water
6.	Dreams of snake bites	Poplar bark in water
7.	Chills connected with swamps	Tobacco and wild cherry bark in water
8.	When the patient "urinated like milk"	Birch, white oak, ironwood, and sycamore barks in water
9.	Sore mouths and arrow wounds	Chewed hickory bark
10.	To make the mother's milk flow more freely	Smooth sumac in water
11.	Indegestion	Vapor bath of red alder, persimmon, chokeberry, sycamore, poplar and cucumber tree barks and water
12.	Sore eyes	Red alder and water
13.	Watery blisters	Smooth and dwarf sumac in water
14.	Laryngitis	Spanish oak, chokecherry, dogwood, apple, and willow barks in water

Administering the Medicine

The most usual method of giving the medicine was to drink a quantity of the concoction from a gourd dipper, which ranged from two to seven liters a day. Some diseases were treated by blowing a mouthful of medicine through a hollow blowing tube. Another were the steam and vapor baths. This was water and fragrant herbs sprinkled over preheated rocks in a small closed hut. The patient took off all his clothes and entered the bath house. When he could take no more he ran out and plunged in a cold mountain stream. During one epedemic, 300 died as a result of this practice.

Surgery

Surgery was not used as extensively as some practices, but it was the most unusual and primitive of their medicines. The most common form of surgery was scarification or scratching, especially among the ball players. The medicine man's scarification instrument was made of seven bones from a turkey's leg, set into a frame of turkey's quill, in a comb-like structure. The branches of briars, especially blackberry briars, were used for scratching. Ten or 12 laurel leaves, arrowheads, and rattlesnake's fangs were also used. The purpose of scratching the skin was to "cut the disease to ribbons" and to make "the medicine take a deeper hold." This was the procedure for scarification: The medicine man, beginning with the patient's right hand, made one long gash from the first finger, along the back of the hand, up the arm, across the chest, and down the left leg and foot. He reversed this operation beginning with the left hand and ending with the right foot. Then he started with the right thumb, up the back of the arm, across the shoulder and neck, down the side to the left leg and foot. He then reversed this operation, scratches the skin at random, and applied the medicine.

Fractures

The most common fracture was that of the collar bone, suffered in a type of ball play. When this occurred, the medicine man sprayed a concoction of poplar bark on the shoulder and the patient holds his arm at a 45° degree angle to his body for three weeks. As the medicine men put it: "If everything has been fixed nicely, the bones will grow together again and heal, if not the man will never use that limb again."

Dislocations

In the case of dislocations three or four tribesmen gathered around the patient and pulled hard and frantically until they believed the joint to be in place.

Dentistry

When a patient had a toothache the medicine man put small quids of tobacco in the cavity to retard growth. If a swelling

occurred the cause was said to have been an insect in the gums and the medicine man set forth to draw it out. Finally when the patent could not stand the tooth any longer it was knocked out with a stone.

SCIENCE TEACHERS GO VISITING

MADGE KELLER

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The science teachers of Knox County were granted permission to spend November 11, an in-service day for teachers, visiting local industries. Four industries, namely, the Electro-Manganese Company, Gas Company, Knoxville Water Plant, and Fulton Sylphon Company were visited on that day. All participating teachers agreed that the day was well spent.

Of special interest was the guided tour through the Electro-Manganese Company, one of our newer industries in Knoxville. We gained a great deal of technical information as well as practical knowledge. This plant, the largest in the world, produces over one million pounds of manganese per month. The reasons given for selecting Knoxville as a site for their plant were given in this order: climate, help, and electric power. Our climate which has no extremes of heat or cold is especially suitable for the electroplating process. According to the management, the East Tennessee "Hill Billy" is exceedingly apt and easily trained as a worker. TVA power with its low rate and availability is a must for this plant.

A closer relation between industries and schools is very desirable. First-hand information as to what the different industries want or expect of our high school graduates can be of invaluable help both to the teacher and to the boy or girl who expects to go into that field. A recent survey of two hundred industries showed that they are facing an acute shortage of scientists and engineers.

Rear Admiral Lewis L. Strauss in his speech to the Thomas A. Edison Foundation Institute in November of this year was quite frank in his criticism of our school systems for the failure to turn out more trained scientists and engineers. In his contrast with Russian schools we came out a very poor second.

Our group plans to spend our next in-service day visiting more industries. Men from some of the Industrial Companies have also been invited to our schools to speak to our science students. It has been suggested that we arrange a SCIENCE-CAREER DAY in all our schools.

We would like to pass our ideas on to teachers in other schools who may help to emphasize the science program to our boys and girls, and we should like for them to pass their ideas back to us.