

Spinal Curvature Blamed On Muscles

Physiology

Reports from Anatomists and Physical Anthropologists

LACK of balance between the set of muscles on one side of the spine and those on the opposite side was described as the cause of spinal curvature by Dr. Eben J. Carey of Marquette University Medical School, Milwaukee, at the meeting this week of the American Association of Anatomists.

This suggestion contradicts a prevalent theory of the cause of this rather common condition in which the spinal column curves somewhat to one side or the other, generally accompanied by round shoulders and hollow or sway back. The usual theory is that the curvature is due to the motionless dead load of the body's weight on the upright spinal column.

In most animals the spine is horizontal and does not bear the full weight of the body. Yet Dr. Carey was able to produce typical spinal curvature in such animals by weakening muscles on one side of the spine, while leaving those on the other side unchanged.

According to Dr. Carey's theory, the weight of the body in human beings is supported directly by symmetrically balanced muscles on both sides of the spine, and indirectly by the spinal column itself.

When the muscles are weak or of poor tone, so that the muscle pull is unequal on the growing spine of a child, curvature results.

In preventing curvature, therefore, one must guard against such conditions as bad posture of the body, lack of sunlight, lack of a balanced diet, lack of moderate muscle exercise, lack of adequate rest in a horizontal position, lack of sufficient fresh air, and chronic foci of infection, all of which might produce muscle weakness or poor muscular tone.

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Hearing

THE present theories of hearing have been upset by an anatomical discovery reported by Dr. Stacy R. Guild of the Otological Research Laboratory, Johns Hopkins University. In this Baltimore laboratory earnest investigations are being made in the hope of learning more about the causes of deafness and, subse-

quently, methods of preventing or relieving this affliction.

A rare type of structural defect of the inner ear was found in one ear of a man who, four weeks before his death, had perfectly normal hearing with even slightly better than average hearing for low tones, Dr. Guild reported.

The condition found was a large opening in the bony partition between two turns of the spiral tube of the inner ear. According to some of the best known current theories, sound waves pass up one side of this tube and down the other on their way to stimulate the nerve of hearing. If these theories are correct, the large opening found in this tube should have interfered with the wave systems in such a way as to have seriously interfered with hearing, Dr. Guild pointed out. The theoretical effect of such an abnormal opening may be compared to the effect in theaters or auditoriums where, due to echoes, there are "silent spots" or "confusion spots."

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World's Tallest

OLD Virginians whose ancestors were the Cavaliers and Roundheads who settled the first English colony in America, have been studied by an anatomist who finds that they are among the tallest people in the world.

Physical measurements were made of over 6,000 old Virginians of both sexes between the ages of 6 and 60 years by Prof. Robert Bennet Bean of the University of Virginia. The families of most of these people had been among the first settlers, the famous first families of Virginia, and all of them had been residents of Virginia for two generations or more.

"The stature and leg length of the men and women are greater than for the majority of European peoples," Prof. Bean reported to the American Association of Physical Anthropologists.

The persons measured were divided into groups. The tallest were the men of the group of planters, or gentlemen farmers, from Albemarle county, whose average height was approximately 5 feet, 11 inches. Next tallest

were the group of men students between the ages of 17 and 20.

The others from Albemarle county also had a tall stature. These people may represent the descendants of pioneers from the Tidewater section of Virginia and such families as those of Jefferson, Marshall and Washington, who were all tall men, Prof. Bean pointed out. The city dwellers had a smaller stature than the others.

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Difference in Faces

THE different expressions seen on the faces of members of different races is partly due to the fact that the muscles of the face are different in different races, Dr. Ernst Huber, associate professor of anatomy at the Johns Hopkins University, reported.

Dr. Huber has made anatomical studies of a large series of American Negroes of all ages and compared them with whites, with an adult Chinese and with an adult Hawaiian. He also analyzed the facial expression in various human races.

"Racial characteristics are more conspicuous in the facial musculature than in the rest of the muscle system, where differences are likewise recognizable," he said.

While differences in the facial expressions of different races are due to differences in the muscles, skin and tissues beneath the skin of the face, they are even more the result of characteristic racial differences in mental and emotional reactions, Dr. Huber said.

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Girls' Size Unchanged

MEASUREMENTS of nearly 17,000 women students at the University of Minnesota did not confirm the theory that the average girl's physique has become more slender through dieting or other means during recent years, says Dr. C. M. Jackson of the Institute of Anatomy at the University of Minnesota.

The young women were measured upon entering the university in the years from 1912 to 1929. There was a decrease of four months in the average age during this period, but this would not be enough to affect the stature (*Continued on page 254*)

Idols of the Bible Land—Continued

orgies. It was she against whom the prophets of the Bible most ardently raged, for her cult made its appeal through the most primitive and deep-rooted passions of the race. Women who desired children, men and maidens who would be happily wed, as well as those who were allured by the licentious rites, all craved the protection of the goddess of love.

The layer of ruins at Kirjath-Sepher which contained the five figurines of Astarte stood as a living city in the days of Joshua about 1200 B. C. This was the town that Othniel besieged to win Achsah for his wife. Deep layers of ashes tell a story of a terrible fire. From that time on, Kirjath-Sepher was no longer a Canaanite royal city, but a Hebrew provincial town.

When the victorious Israelites took possession, Othniel, the conqueror, rebuilt the city and became the first of the judges of Israel. From the state of the ruins, archaeologists conclude that Othniel built hastily. The walls show signs of rapid, none too expert, workmanship. Othniel's followers were not the experienced builders of fortresses that the Canaanites were. The men that he set to work as brick-makers, masons, and carpenters had been wandering in the wilderness. The knowledge of building that the Israelites acquired in the land of the Pharaohs had become almost tradition.

These Israelites came into Canaan just about the time when iron was introduced there. Contrasting the last of the Canaanite cities at Kirjath-Sepher with the city built by Othniel, Dr. M. G. Kyle, president of Xenia Theological Seminary, stated:

"Below this layer of ashes a careful examination of the pieces of pottery showed that it was all Canaanite. Likewise the implements and the weapons were Canaanite and made of bronze. No iron whatever appeared. Evidently up to that layer of ashes the Canaanites occupied the city and as yet did not use iron, at least extensively, if at all.

"Above the layer of ashes a very different state of things was revealed; every bit of pottery was Israelite!—unmistakably Israelite. Besides, all the weapons and the tools were also Israelite, and made of iron. The more beautiful and costly bronze had disappeared. Never again did we find

a piece of bronze in the city, except one arrowhead. This was almost certainly shot into the city by an enemy from without, and so did not represent Israelite weapons."

The Israelites got their iron, it is believed, from the Philistines, who immigrated into Canaan from across the Mediterranean, and probably brought knowledge of iron into the land for the first time. For a while, the Philistines controlled the iron trade. But, Dr. Kyle explains, "when smelting furnaces made iron abundant and cheap, it quickly drove out the expensive bronze as the automobile drove out the horse from our civilization within twenty-five years." This happened about the thirteenth century B.C., just the age of the Israelite conquest.

This fifth edition of Kirjath-Sepher, like the others before it, was eventually laid in ruins, and for the last time a town rose on the top of the heap. This was a crowded, busy little community, as the closely built houses show. It had some 5,000 inhabitants and was a center of a dyeing and weaving industry. Four dye plants with stone vats are among its ruins. This last Kirjath-Sepher belonged to the days of the divided Israelites, when the south of Palestine was the Kingdom of Judah, and the north was the Kingdom of Israel. From the tenth century B. C. to the sixth, Kirjath-Sepher flourished, and then was suddenly demolished forever by the Chaldean army of Nebuchadnezzar which swept the Israelites down to Babylon, to captivity.

Out of the debris of this last of the hilltop towns, archaeologists have taken a variety of everyday objects used by the Hebrews of the period of the Kings of Israel and Judah. There are the iron tools of laborers, the household pottery, and the toys, rattles, and whistles of the children. The whistles were promptly blown by the excavators who found them, and the little clay toys sent out the same shrill pipe that amused the children of the city in Biblical times.

Out of this layer, too, were taken cosmetic palettes of the women's dressing rooms, with traces of green and black pigments for lining the eyes, still clinging to stone containers. And again, the figures of the popular and persistent goddess Astarte, bobbed-haired and boldly unclad. These figurines—idols the prophets called them

—were symbols of divinity about the time that Isaiah and Jeremiah so bitterly lamented that their people's vision of an unseen Almighty had become so dim.

The names of a Biblical king and his servant have been preserved in this city. The handle of a broken jar lay among the ruins, and on the handle was impressed a seal inscribed: "Belonging to Eliakim, servant of Joiakin."

This Joiakin, or Jehoiachin, was the boy king who reigned in Jerusalem for only a few months, and was overthrown by Nebuchadnezzar, all in the year 597 B. C. The jar handle must have been stamped with its proud seal of ownership in that year. This means that Kirjath-Sepher was then in existence. Whether it fell before the Chaldeans then, or whether it stood until about ten years later when the Hebrews were swept away into captivity, is yet to be learned. Nor is it yet discovered why that sixth city on the hill was the last of Kirjath-Sepher.

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Physiology—Continued

although it might reduce the average weight, Dr. Jackson explained.

The average stature increased one-tenth of an inch during this period, but the average weight not including clothing showed a corresponding increase of about two and one-half pounds.

However, measurements at Hollins College in Virginia during the period from 1920 to 1927 showed about half an inch increase in the average stature with a decrease of about three and one-half pounds in the average weight. These figures give a large proportion of apparent underweights.

That a general improvement in average stature began at a still earlier period is indicated by the combined data, totalling 21,383 women, for Stanford University and Smith and Vassar Colleges. These figures showed a progressive increase in stature amounting to about one and two-tenths inches during the thirty years from 1890 to 1920. The Vassar data show also a corresponding gain of 7 or 8 pounds in weight, although there was little change in weight during the last ten years of the period.

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