

# Babies in Old Paintings Had Rickets

Medicine

BY MARJORIE MACDILL

Rickets, the disorder of the mineral chemistry of the body, that makes babies grow up into bow-legged flappers and unsymmetrical sheiks, has probably afflicted the children of man ever since the dawn of civilization.

Though it was not recognized as a distinct disease until 1650, Dr. John A. Foote, of Washington, a widely known specialist in children's diseases, has recently confronted the medical world with evidence that rickets has been prevalent in babies since very early times and, contrary to general belief, is not the outcome of modern conditions alone.

When the malady that made cod liver oil famous was first described in the middle of the seventeenth century, learned physicians at Cambridge University called it "an entirely new disease" and attributed its cause to conditions that have little to do with diet and sunshine. By the end of the 18th century authorities had reached the conclusion that improper food and climate had something to do with it.

It was thought then, and has been considered more or less generally since, as one of the consequences of the complex conditions of modern life even though it is now widely known that it can be prevented by direct exposure to sunlight.

In defense of his argument that rickets is not one more thing that can be blamed on our degenerate times, Dr. Foote has cited in a report to the American Medical Association a long list of medieval paintings of Germany and Flanders in which early masters have depicted the square heads, big abdomens and sharp lines around the chest, in their representations of the Christ Child that, to the eye of the experienced anatomist, betray rickets.

The countries of the temperate zones have always been heavy sufferers from rickets because the long cold months of winter necessitate confinement within doors and thick clothing that shuts out the beneficent action of the sun's rays. Therefore, it is reasonable to suppose, explained Dr. Foote, that primitive artists unconsciously represented the presence of rickets in their pictures of the Holy Infant, believing it was normal for infants to have square heads, pot bellies and grooved chests.

With the passing of feudalism and the subsequent rise of industrialism, people began to congregate in cities.



*THE LARGE HEAD AND BENT LEGS of the infant in this 15th Century painting of Hans Bergmaier indicate that the subject had rickets*

In Cologne, Bruges and Nuremberg weaving, metal working and other industries were developed. By 1475, Cologne was an important center of the great Hanseatic league which was formed by countries around the North and Baltic Seas for the purposes of trade. The development of the great trade leagues like this and others led to many civil struggles between burghers and petty rulers of neighboring towns. Peasant upris-

ings contributed to the general strife.

"Thus there existed," explained Dr. Foote, "in the last half of the 15th century ideal conditions for the production of rickets: an industrial population living in crowded walled cities, a northern climate under unhygienic conditions, and the effect of warfare on a society that would be poorly adapted to healthful life in cities even under far more favorable conditions than (Turn to next page)

## Rickets in Art—Continued

prevailed in those days. It would be natural to look for evidence of this disease among the people who lived in Cologne and Nuremberg and Bruges between 1450 and 1500, or from a century and a half to two centuries before Glisson described the disease in England.

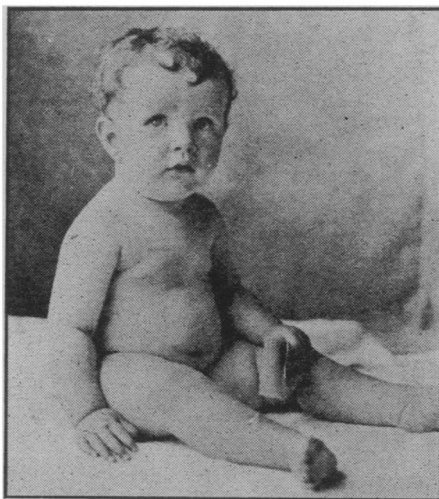
"Fortunately, the painters of that period made many pictures of religious scenes in which children were used as models, and one can call on that inspired school of painting which flourished so wonderfully in the unsettled years after the middle of the fifteenth century for clinical material.

"Correspondingly, in the pictures of the second half of the sixteenth century one sees a great many well nourished children and fewer rachitic children, despite the fact that rickets appeared in England a century later. One subject favorable for the purposes of this study was also a favorite with primitive religious painters—'The Adoration of the Child,' in which the Infant Saviour was shown lying on the floor entirely naked.

"Among the fifteenth century painters of the Netherlands and Germany whose works I have examined, the following show clinical rickets in the infant: 1447, Stephen Lochner, 'Virgin in the Grove of Roses,' in the Cologne-Richartz Muzeum; in 1460, Master of the 'Life of Mary,' 'Adoration of the Child,' Cologne-Richartz Muzeum; 1470, Swabian Master (of Augsburg) 'Adoration of the Child,' in Augsburg Church of St. Moritz, also 'The Nativity' and the 'Adoration of the Magi' in the Maximilian Museum. A number of other of his pictures show the children with the stigmata of rickets. In 1485, Bernhard Striger of Nuremberg, 'The Holy Family,' in the Germanic Museum, Nuremberg; 1490, Michael Pacher of Nuremberg, 'Birth of Christ,' St. Wolfgang Church; 1479, Michael Wohlgemut of Nuremberg, 'Birth of Christ'; Zwicau, 'Marien Kirche'; 1500, Albrecht Durer, Nuremberg, 'Madonna with the Siskin.' In this painting the infant holds a flour-ball in his hand. Hans Bergmaier, sixteenth century painter, also depicted rickets.

"Among the Netherlands painters are Bruges Master, 1440, 'Adoration of the Magi,' Bruges Museum; 1440, Rogier Van Der Weyden, Brussels, 'St. Luke Painting the Madonna,' Alte Pinakothek, Munich; 1490, Dirk Bouts, Harlem, 'Virgin and Child,' National Gallery, London."

"If one accepts the now well proved hypothesis," Dr. Foote con-



THIS YOUNG AMERICAN'S bulging forehead and protuberant tummy are symptoms of rickets

tinued, "that rickets is a disease of mineral metabolism caused by a lack of certain substances in the diet or by a lack of sufficient sunshine, especially in industrial cities in northern countries, and that war, famine and disease predispose populations to its ravages, one is postulating conditions some of which have occurred over and over again throughout the world, among both civilized and uncivilized peoples in various periods of history.

"When one considers the conditions enumerated in connection with the historical proof of their prevalence in past times, ones sees no reason why rickets should not have existed before 1650, and one may be certain that it did so exist and has existed, perhaps from the beginning of time."

The Washington specialist believes that in all probability babies in the tribes of northern Indians suffered from the disease just as their small fellow contemporaries on the other side of the globe did; but mound burial, such as was customary among Indians of the north, is not kind to cartilaginous bone and evidence is not abundant.

The bones by which doctors make a diagnosis of the ills of past ages that have survived the ravages of time are mostly the more completely ossified skeletons of adults. The softer bones of infants and young children disintegrate too readily to have come down to us in great numbers.

There is, however, in the U. S. Army Medical Museum, a skull of an Inca Child of about five years who lived in the temperate highlands of Peru at least a hundred years before Columbus came to this continent. This relic shows (*Turn to page 165*)

## Contra Astrologos

*Philosophy*

ST. AUGUSTINE, in *Confessions* (*Pilkington translation*) (Boni and Liveright):

These impostors, then, whom they designate Mathematicians [Astrologers], I consulted without hesitation, because they used no sacrifices, and invoked the aid of no spirit for their divinations, which art Christian and true piety fitly rejects and condemns. . . . There was in those days a wise man, very skilful in medicine, and much renowned therein. . . . When I had become more familiar with him, and hung assiduously and fixedly on his conversation (for though couched in simple language, it was replete with vivacity, life and earnestness), when he had perceived from my discourse that I was given to books of the horoscope-casters, he, in a kind and fatherly manner, advised me to throw them away, and not vainly bestow the care and labour necessary for useful things upon these vanities; saying that he himself in his earlier years had studied that art with a view to gaining his living by following it as a profession, and that, as he had understood Hippocrates, he would soon have understood this, and yet he had given it up, and followed medicine, for no other reason than that he discovered it to be utterly false, and he, being a man of character, would not gain his living by beguiling people. "But thou," said he, "who hast rhetoric to support thyself by, so that thou followest this of free will, not of necessity—all the more, then, oughtest thou to give me credit herein, who labored to attain it so perfectly, as I wished to gain my living by it alone." When I asked him to account for so many true things being foretold by it, he answered me (as he could) "that the force of chance, diffused throughout the whole order of nature, brought this about. For if when a man by accident opens the leaves of some poet, who sang and intended something far different, a verse oftentimes fell out wondrously apposite to the present business, it were not to be wondered at," he continued, "if out of the soul of man, by some higher instinct, not knowing what goes on within itself, an answer should be given by chance, not art, which should coincide with the business and actions of the question."

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Death rates from heart disease, pneumonia, cancer, tuberculosis, and diabetes were all higher in 1926 than in 1925, government figures show.

## Corn Borer in Russia

*Entomology*

The European corn borer, on which the United States is now waging costly war, is an old and troublesome story in Russia. It is a pest throughout the southern half of European Russia, and occurs in less destructive numbers in an additional stretch of territory to the north. Its northernmost extension carries it to the latitude of the Gulf of Finland, which is as far north as Hudson Bay in the western hemisphere. At this latitude in Russia it is not counted especially bad, but serious outbreaks occur in the new Baltic nations, formerly a part of the old Empire.

The borer plague is felt especially in the South, where the cornfields of Russia merge with those of Roumania, and swing eastward across the shores of the Black Sea and up the great river valleys. In the eastern part of the south Russian grain belt corn gives way to millet, which is better adapted to the drier steppes; but the borer afflicts the millet as well as the corn, and efforts are now being made to find varieties less susceptible to its attack.

Russia has no measures against the pest that have not already been recommended in the United States. The best means are the most laborious: a thorough clean-up and burning of all stalks that are not fed to cattle. The burning must be thorough, too, for according to A. Dobrodeyer, a well-known agricultural scientist, borers have often been seen emerging from stalks that were charred black on the outside, apparently none the worse for the experience. He has also seen borers coming out of stalks that had been left lying about in farm yards after the feeding of cattle, although these had been tramped about for weeks in snow and frozen mud.

The great increase in corn borer infestation in Russia seems to have taken place shortly before the World War. In 1908 a 20 per cent. infestation was observed in the fields of the Government (State) of Ekaterienoslav. This initial infestation took approximately an additional 20 per cent. of the stalks in each of the following years, until by 1912 practically every stalk in the afflicted fields had its borers.

*Science News-Letter, March 17, 1928*

## Rickets in Art—Continued



DR. JOHN A. FOOTE, who has found evidence of rickets in the babies painted by old masters

under expert inspection indubitable evidence of rickets.

An arm bone of a pre-Columbian Indian youth that was dug up from a mound in Kentucky reposes in the same collection. It is curved to the point of deformity and demonstrates that there was at least one aborigine that could have done with tasty doses of cod liver oil during his pa-poosehood.

The practice of wrapping babies up in swaddling clothes, followed by practically all ancient peoples except the Egyptians and Spartan Greeks, is in itself evidence of the prevalence of this so-called modern disease in antiquity, according to Dr. Foote. Ancient physicians whose writings have come down to us, frankly admit that swaddling was done for the purpose of keeping the new-born infant's legs straight, thereby indicating that bowlegged boys and girls have been all too common among the nations of early Europe. Solanus of Ephesus, a well known medico of the second century A. D. declares: "Since swaddling is an important reinforcement and a preventive of deformities, it is best not to free the infant from its protection until the body has become strong enough to remove all fear of the appearance of irregularities of form. The infant's feet may become crooked from unwise attempts at walking. Frequent examples of such deformity are seen in Rome, due in (*Turn to next page*)

## Sunspots and Radio

*Physics*

Future radio engineers may be able to look at the sun through a telescope and then tell how the presence or absence of spots will affect the transmission of radio waves, as a result of an investigation now under way in Cambridge, Mass., with the cooperation of physicists and astronomers.

There has just been installed in the Harvard Astronomical Laboratory, under the direction of Dr. Harlan T. Stetson, professor of astronomy at Harvard, apparatus to study the relation of spots and radio. Greenleaf W. Pickard, Boston radio engineer, designed the apparatus and installed it for use in cooperation with studies to give the size and number of spots.

It is not yet possible to say whether or not combination of radio data with observation of the sun can ever be used to predict earthly weather conditions, said Dr. Stetson. "However," he said, "observations are beginning to make us feel confident that there is a direct connection between conditions in the solar atmosphere and certain atmospheric disturbances on the earth. It seems not unlikely that with the further study of the bearing of sunspots upon radio reception it will be possible to make allowances for the solar disturbances, and by so doing discover more closely than ever before the correlation of radio reception with temperature, pressure and other meteorological phenomena.

"Just what happens on the earth when a sunspot appears on the side of the sun towards us is not fully known. It is believed that electrified particles discharged from the disturbed region on the sun, hurling through space, bombard the upper atmosphere of the earth and are responsible for an increased ionization of the latter, which is responsible for the modification of the intensity of the radio waves."

The station from which the signals will be sent, which are measured at the Harvard Laboratory, is WBBM, Chicago. The apparatus, which automatically records signal strength, as received in Cambridge, is carefully calibrated each day and makes it possible to record the measurement in absolute units of electrical intensity.

Dr. Stetson explained the apparatus was so designed that it would measure the intensity of the carrier wave and would scarcely be affected at all by superimposed modulations caused by the broadcasting of music.

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tions Number 3*

**FIRST REPORT OF THE  
PREHISTORIC SURVEY  
EXPEDITION**

By K. S. SANDFORD and  
W. J. ARKELL

This survey of the geology of the Nile is a first effort to rediscover those chapters of the history of man in Egypt which are missing from the written records. The study of prehistoric man has been steadily advancing in Europe for two generations past but only slight progress in such studies has been made in the Nile Valley.

These findings, as well as the other discoveries made in this region, have a direct bearing on the work of archeologists, who can, with this geological information, carry their explorations to a greater degree of exactitude.

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## Limitations of Physics

*Physics*

BERTRAND RUSSELL, in *Philosophy* (Norton):

It is chiefly through ideas derived from sight that physicists have been led to the modern conception of the atom as a centre from which radiations travel. We do not know what happens in the centre. The idea that there is a little hard lump there, which is the electron or proton, is an illegitimate intrusion of common-sense notions derived from touch. For aught we know, the atom may consist entirely of the radiations which come out of it. It is useless to argue that radiations cannot come out of nothing. We know that they come, and they do not become any more really intelligible by being supposed to come out of a little lump.

Modern physics, therefore, reduces matter to a set of events which proceed outward from a centre. If there is something further in the centre itself, we cannot know about it, and it is irrelevant to physics.

Physics is mathematical, not because we know so much about the physical world, but because we know so little: it is only its mathematical properties that we can discover. For the rest, our knowledge is negative.

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## Rickets in Art—Continued

most cases to ignorance and improper care of the infant. City women devote much less time and care to their infants than those in the rural districts, hence the more frequent occurrence of these deformities among the infants of city dwellers."

Solicitous modern mothers who pour the daily ration of cod liver oil into their protesting offspring regardless of kicks and howls, will regard with interest the dig at the parental carelessness of the ancient Roman ladies.

The art of the Greeks and Romans shows little evidence of rickets probably for two reasons: first, because their artists were idealistic rather than realistic and represented in their statues and paintings only idealized forms of gods and royalty; and second because they lived in the warm countries of the south of Europe, where the small amount of clothing people wore left their bodies exposed to the anti-rachitic action of the sun.

It is interesting to note the criticism of Solanus of Ephesus in this connection. It has been conjectured that children of the upper classes living in Italy and Greece may have been subject to the deformities of rickets because they were brought up in seclusion in the marble courtyards of their patrician parents where they were free from the contaminating influence of *hoi polloi* and incidentally from the beneficent action of sunlight.

The husky peasant *bambini* running naked on the warm slopes of Italy could have had little to fear from the deforming after-effects of rickets.

The up-to-date female parent, brandishing her cod liver oil bottle, will probably say that the old Greek physicians were only following the common custom of trying to blame it all on the women anyway.

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Out of 90,000 fatal accidents in this country, almost 22 per cent. occurred to children under 14 years of age.

Russian citizens are being given gas masks and taught how to use them, for protection against war gas or other emergencies.

Radio stations in 25 states will help to spread information to farmers on ways and means of fighting the European corn borer.

## Medical Astronomy

*History of Science*

WALTER CLYDE CURRY, in *Chaucer and the Medieval Sciences* (Oxford Press):

But undoubtedly John of Burgundy would have applauded the union of theory and practice in Chaucer's Doctor, against whom his strictures upon certain improperly equipped practitioners in the time of the pestilences could not have been leveled. "Ther have bene many grete maistirs," complains John of Burgundy, "and ferre lernyd in theoric or speculation and groundly in sight of medecyne, but they bene litill proued in practik and therto allefully ignorant in the sience of Astronomy, the which science is in phisik wonder nedefull . . . for why astronomye and phisik rectifien yche other in effect and also that one science sheweth forthe many thynges hidde in the other. . . . And I 40 yere and more have oftyn tymes proued in practise that a medecyn gyven contrary to the constellation all thogh hit were both wele compownyd or medled and ordynatly wroght after the science of phisik yet it wroght nowther aftur the purpose of the worcher nor to the profite of the pacient. . . . Wherefore they that have not dronkyn of that swete drynke of Astronomye mowe putte to thise pestilentiall sores no perfite remedie, for bicause that they knowe not the cause and the qualitie of the siknesse they may not hele it. . . . He that knowith not the cause hit is onpossible that he hele the sikenes. The comentour also *super secundum phisicorum* seith thus: A man knowith not a thing but if he knowe the cause both ferre and nygh. Sithen therfor the heavenly or firmamentall bodies bene of the first and primytif causes, it is behovefull to have knowlechyng of hem; for yf the first and primytif causes be onknown, we may not come to know the causes secondary. Sithen therfor the first cause bryngeth in more plenteuously his effecte than doth the cause secondary . . . therfor it shewith wele that without Astronomy litill vayleth phisik, for many man is perished in defawte of his counceleur." Indeed, a knowledge of astronomy is so absolutely essential in medical practice that Hippocrates is credited with having said, "The medical man, whatever else he may be, cannot be considered a perfect physician if he is ignorant of astronomy; no man ought to commit himself into his hands."

*Science News-Letter, March 17, 1928*