STACCATO SPEECH FOR SILENT STATISTICS

The Pictograph, From Vienna, Gives New Meaning to the Facts of Everyday Life

Widespread interest has been aroused in a new kind of chart designed to reduce facts and figures to graphic form. The inventor of the pictograph, Dr. Otto Neurath of Vienna, recently visited this country; types of his charts are presented on this page. In the accompanying article the basic ideas behind their preparation are set forth.

By WALDEMAR KAEMPFFERT

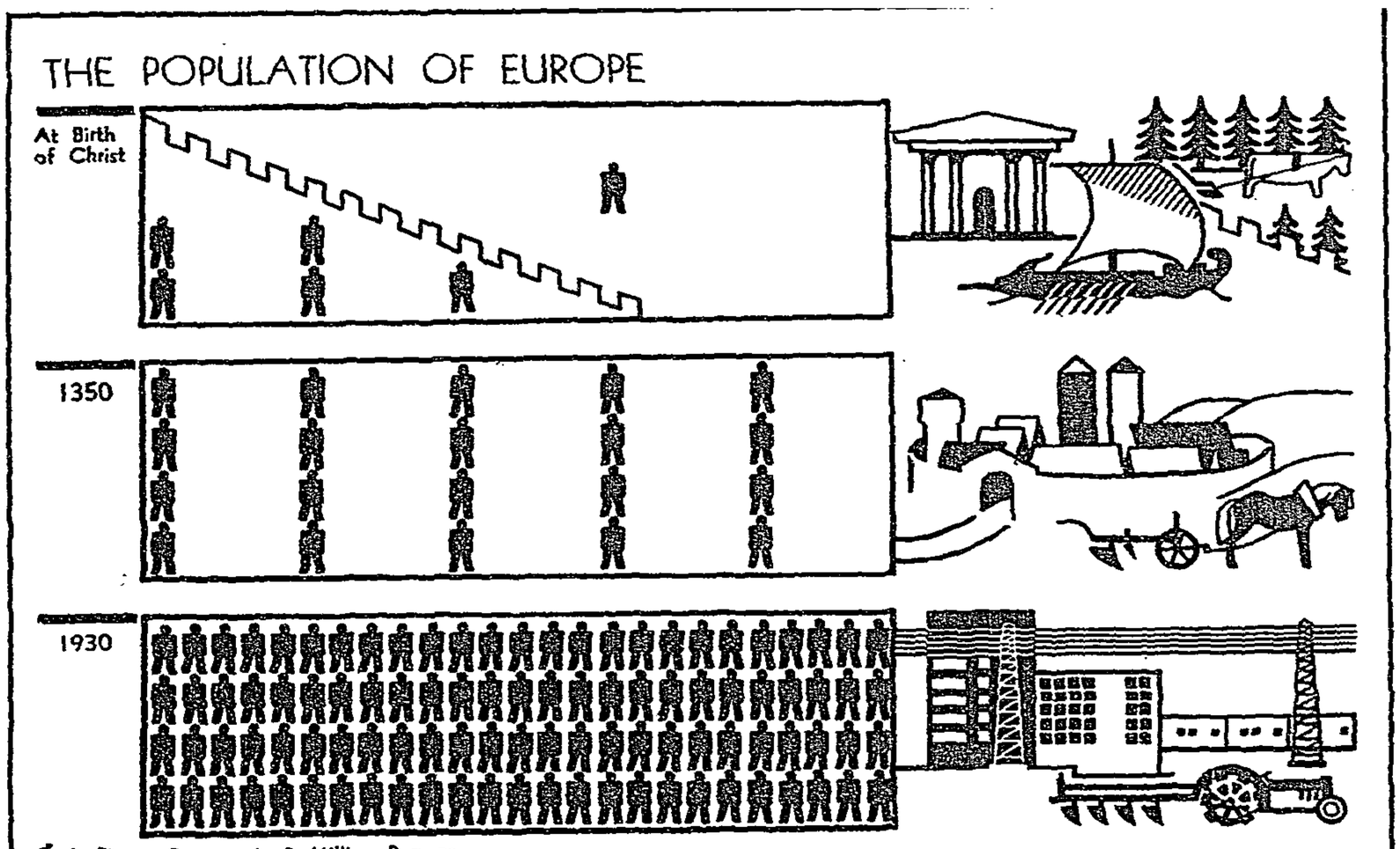
IN 1924 the city of Vienna established in its Rathaus, or city hall, a museum of social and economic science and made Dr. Otto Neurath its director. The museum was to be not a collection of curiosities but an educational institution in which men, women and children with no more than a common school education might learn what communal life means—learn how it is affected by disease and death, agriculture and industry, and how dependent it is on remote countries since rapid means of transportation and communication have been developed.

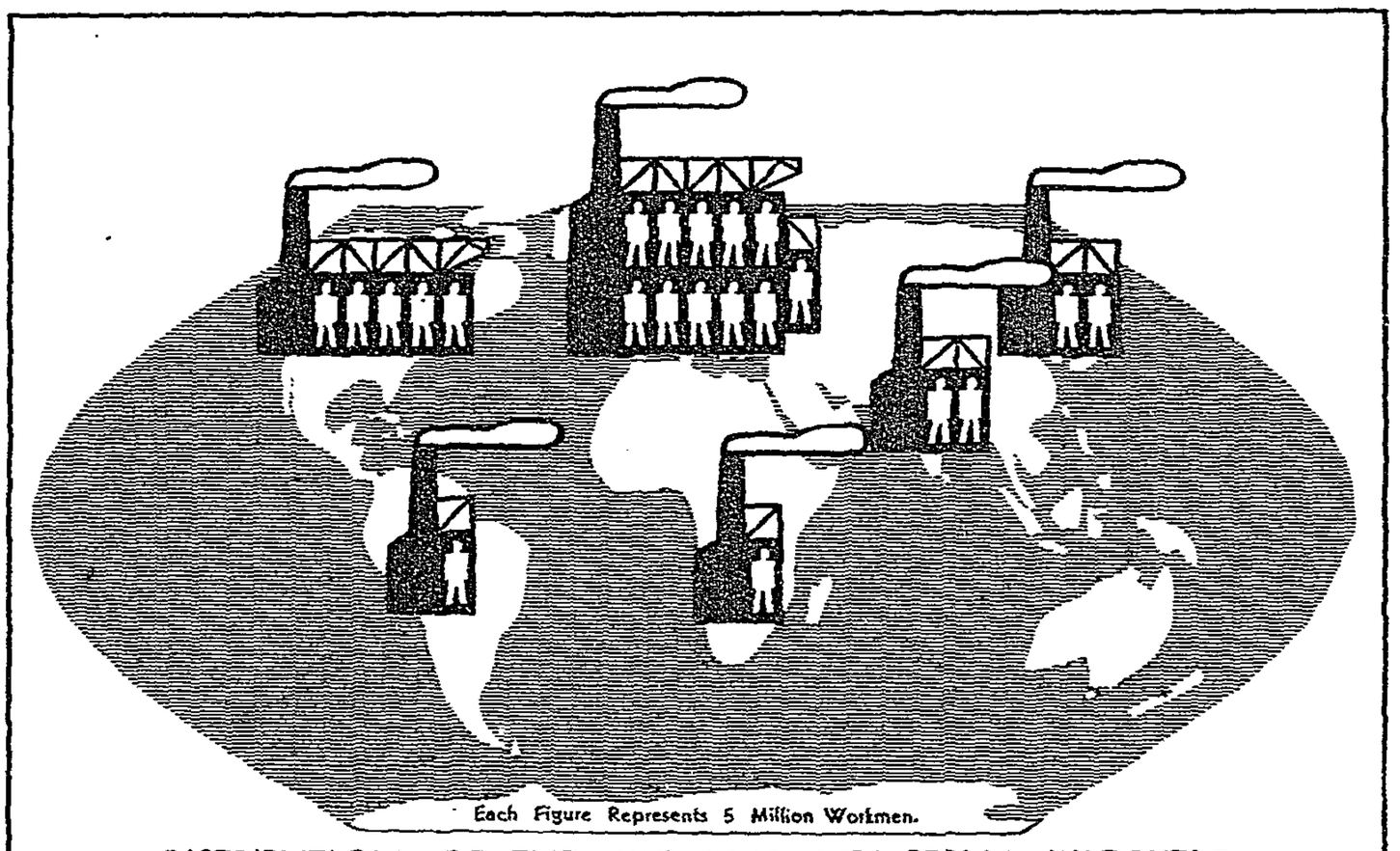
There are larger museums in the world than that which Dr. Neurath organized, but there is none that has had a richer influence. The visitor can see everything there is to be seen in a quarter of an hour. But the chances are that he will spend half a day at least in threading his way through the alcoves, returning again and again to some exhibit that tells him something about Brazil or India that he had always known but had never related properly to the rest of the world.

And the wonder of it is that the exhibits are nothing but statistics. No stuffed animals, no bales of cotton with price labels, no samples of money. Nothing but statistics, statistics, statistics, or explanatory diagrams of machines, buildings and cities. Men and women who ordinarily find it difficult to add up a column of figures and who yawn when they are told that there are 25,000,000 automobiles in the United States discover that numbers and facts can be fascinating when they are clothed with a social meaning.

"The Viennese Method," as it is known in Europe, is now definitely established by decree in the Soviet Union for the pictographic presentation of statistics in schools and in posters that are to instruct the masses. Under the auspices of the city government and a section of its university, Amsterdam has established a modest subsidiary of the Viennese Museum of Social and Economic Sciences to serve not only the Netherlands but also Belgium, Denmark and other neighboring countries. Soon there is to be another in London. Perhaps a third will be established in New York, thanks to the efforts of a group of men and women at whose invitation Dr. Neurath recently visited this country to formulate plans for the introduction of the Viennese Method into America.

"Sachbilder," or fact-pictures, Neurath calls his pictographs. What he has invented is a system of hieroglyphics, or picture-writing, which is as intelligible to a Japanese or a Turk as it is to an American or a Frenchman. A pictograph, or fact picture, is international in its appeal and as unmistakable in its point as a Mickey Mouse animated cartoon.





Suppose that the relative strengths of three armies are to be compared. Usually three soldiers of different sizes are drawn. The tallest represents the powerful green army, the next in size the weaker blue, and the little dwarf the feeble red army. But how much stronger is the green army than the others? Are we to judge by the areas covered by the heights or widths of the figures? Whatever the standard may be, the popularizer always prints a descriptive title beneath his comparison and states that the green army comprises 652,571 men, the blue 367,930 and the red 112,432. Whether we like it or not we must read the statistics and remember them if we can. The picture is therefore merely an illustration of no intrinsic statistical value.

Neurath's pictograph of the same subject consists not of three solitary soldiers but of three rows of soldiers. First there is a row of thirty green infantrymen; below that a row of fifteen blues; and lastly a row of five reds. At a glance you see that the green army is twice as strong as the blue and six times as strong as the red. Eye and brain ask no more when swiftness of perception and instant correlation are demanded.

Suppose that the relative numbers of the three armies is to be ascertained. In one lower corner of the pictograph is a key: Each figure represents 20,000 soldiers. The thirty green infantrymen in the top row therefore stand for 600,000 men and the five blues for 100,000. "When we deal with quantities we must give the impression of quantities," is one of Neurath's cardinal principles. All large numbers are divided into parts, and each part is separately symbolized. Thus number and mass relationships are assimilated at once. The method is both psychologically and statistically sound.

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BUT these are only round numbers, a carping critic may protest. What of it? We are appealing not to economists and statisticians, who have their tables and source books at their elbows, but to ordinary men, women and children, for whom it is enough to know that it is approximately a mile to the postoffice and not exactly 5,845 feet 7 inches. For the ordinary purposes of life 11,000 is as good as 10,784. "It is better to remember simplified quantitative pictographs than to forget exact figures," is one of Neurath's aphorisms.

What is the difference between an advertising poster and a Viennese pictograph? The advertisement must compete with all other advertisements for attention. It can hardly be standardized, for that reason. Pictographs are always standardized like building blocks, bolts, nuts and screws. So far from competing, they supplement one another. Related pictographs can be fitted together to amplify a statistical narrative.

Evidently fact pictures must be so simple that they can be literally devoured at a glance. Each consists of so many eyefuls—the least possible number consistent with adequate elucidation. Hence pictographs are made in accordance with a system. They are as practical, as carefully planned, as a printing press. In their preparation the artist is deliberately excluded. His place is taken by a

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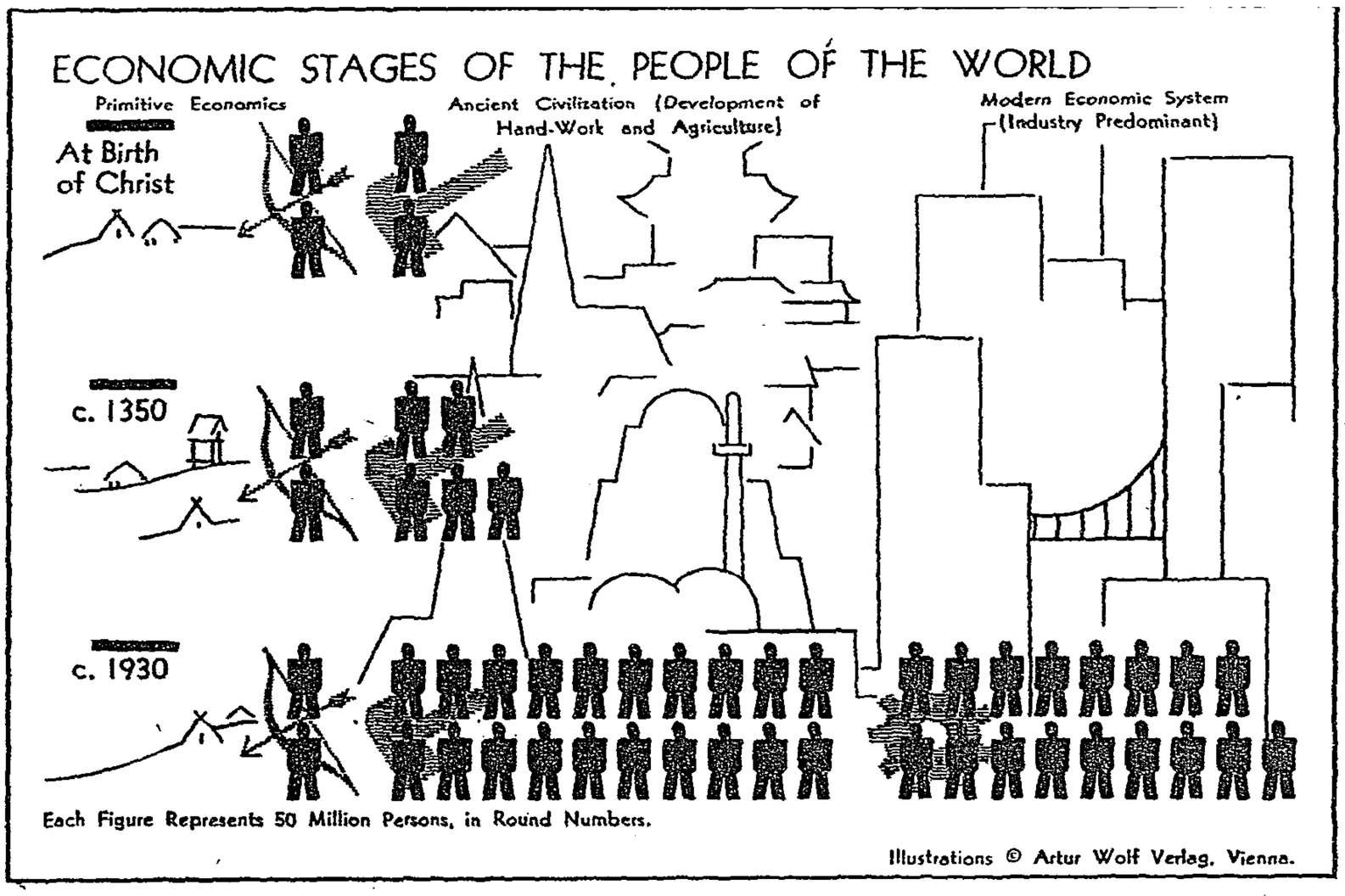

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The New York Times
Published: January 22, 1933
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SPEECH FOR SILENT STATISTICS

From Vienna Comes the Pictograph, Which Gives New Meaning to Facts and Figures

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competent draftsman who is not permitted to express himself or depart from the strict specifications that are given him. He is merely the animated pen and brush of the statistician who stands over him.

The artist is ruled out of the method because he interprets what he sees emotionally and imaginatively. A house, a cow and a running brook are presented not exactly as they are but in the light of what they signify to him personally. He injects himself into the scene, accentuates the elements that appeal to his sense of line, composition and color. Hence his painting is not a fact picture. Facts must speak for themselves. As soon as we color them they cease to be facts.

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IF we have a row of babies in swaddling clothes to represent the 20,000 infants born in public hospitals of a given city during the course of a year, nothing is statistically gained by showing them in the various attitudes of crying or laughing. One infant must be exactly like another in a row; one green or red soldier like his neighbor. So the statistician sees them. It is not the function of a fact picture to stir the emotions, but to present the facts impersonally.

In accordance with this conception of what the pictograph should be, Neurath reduces his Frenchmen, Germans, automobiles, babies, soldiers, factories and teachers to symbols. A man with a turban is obviously a Hindu: one with a sombrero a Latin-American; a third with a bowler hat an American or a European. A bridal couple is identified at once by the clothes it wears—the veil of the bride and the dress-suit of the groom. A human silhouette with an arm in a sling denotes an accident case. A physician is a man in white with a stethoscope around his neck. A black bottle with a white cross can stand only for medicine. Thus, hundreds of stylized or conventional signs have been developed for men, women, plows, coffins, ships, vehicles, agricultural products and the like.

No more appears in a pictograph than is contained in a brief, systematic, scientific description. Human figures lack eyes, noses, mouths and even feet where they are unnecessary. It is astonishing to what few pictographic terms a man or a woman can be reduced and still be immediately identified as a member of the human family.

Neurath has learned much from savages, children and ancient monuments in devising his symbolism. Perhaps that is why school children take such delight in his pictographs. To a child it is certainly enough to draw a circle or oval for a head, a line for a neck, a large circle for the body, and straight lines for arms and legs. Only a human being is thus equipped. What we have are the essentials, and it is only with essentials that the Viennese method is concerned. Never is there more than one main fact on which the attention is focused. Behind this there may be secondary and even tertiary facts, relegated to their proper places by giving them smaller sizes or presenting them in subdued tints. If it is necessary to consider a fourth fact it is time to prepare another pictograph to represent it.

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COLOR, too, plays its part in this symbolism. Indeed, color often gives a pictograph a certain unintentional decorative effect and thus avoids monotony. Green invariably stands for agriculture, vegetation, fertile land; red symbolizes life, fire, activity in general; white stands for water; the indefinite or unorganized is gray. Color may also be used primarily for its contrast value. Pig-iron production may therefore appear in the form of ingots or blast furnaces which are blue for America but black for the rest of the world.

A pictograph is the result of careful planning. The statistician selects the facts to be represented, rounds off the numbers to be reduced to hieroglyphics or pictographic form; in a word, condenses. This is no mean task. Statistics often conceal as much as they reveal. To lift the essential out of the mass of bewildering detail calls for judgment and real pedagogic ability.

The facts having been selected, they are passed on to the "transformer," whose duty it is to visualize them. This he does by deciding what standard symbols are to be utilized or what new ones are necessary. Visualization having been completed, the draftsman enters and carries out his instructions as methodically as if he were laying bricks. His personality never obtrudes itself. His pictorial facts must be as unemotional as the numeral 2,132. Even hand lettering is dispensed with. Simple, easily legible block type conveys the little descriptive information needed beyond the pictograph itself.

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IT must not be assumed that the Viennese Method is limited to the visualization of statistics. The operative principle of a machine, a chemical process, the origin and progress of a disease in the body, the manner in which organisms develop—anything that is factual can be reduced to its bones, as it were, and pictured. Again the whole art of visualization is concentrated on the omission of unessentials. Four pictures suggestive of X-ray photographs show the progressive stages of a falling arch and the inevitable flat foot. White bones embedded in black flesh. That is all.

"Rickets Can Be Cured," is the heading of a pictograph that contrasts a rickety infant before and after treatment. Again we have only four pictures, and again the facts are allowed to speak for themselves without any emotional aid from an artist.

"Intestinal Tract of Man" is the title of a pictograph that shows the relative positions of the digestive organs, but without that mechanical angularity so often regarded as pedagogic. Curves are represented by curves, but only those that are indispensable are shown. The colors are so distributed that the eye is immediately attracted to the beginning of the pictograph, or the point from which it should be "read." Hence the mouth is scarlet. The sections that follow are progressively darker until at last dark brown is reached.

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IF realism is essential to drive home a point Neurath prefers photographs to the most vivid drawings that an artist can make. Photographs deal only with facts. Their one fault is that they usually include too many details—too many facts. It is Neurath's contention that only a Michelangelo or a Leonardo can make a realistic fact-picture. Some of the anatomical and military drawings that have come down from the fifteenth century prove his point. They are masterpieces of draftsmanship and examples of realism that can hardly be matched. But they are also essentially factual and unemotional.

It follows that a Viennese pictograph must be judged not by its artistic effect but by the clarity and immediacy with which it presents its facts. It is in that respect like the headline of a news article, which tells in five or six words the essential facts about a fire, an election or a football game. Indeed, a pictograph is read like a series of headlines and not contemplated like a work of art. It justifies the hoary saw that a picture is worth a thousand words—but only if it is the right kind of fact picture.

The New York Times
Published: January 22, 1933
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