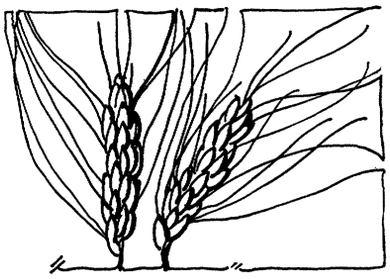
NUTRITION

## NATURE RAMBLINGS
*by Frank Thone*



### Nutritional Needs

FOOD that you eat may have all the calories you need and thousands to spare and yet leave you starving, if calorie content is the only criterion in its selection and choice of other essential factors is neglected. Emphasis is placed on this point in *Food and Life,* the new yearbook of the U. S. Department of Agriculture.

The whole alphabet of vitamins, the amino acids yielded by digestion of proteins, iron, copper, calcium, magnesium, iodine—these only start the list of food elements that human beings must get if they are to be spared the "hidden hunger" of functional malnutrition.

Want of means is not the only cause of malnutrition, Secretary Wallace points out sharply in his brief preface: "The lack of common-sense knowledge of nutrition even among many well-to-do people in the United States is appalling." Yet he continues, "Probably 99 per cent of the children of the United States have a heredity good enough to enable them to become productive workers and excellent citizens provided they are given the right kind of food, proper training, and ordinary opportunities."

Following the departure made by the preceding three Agriculture Yearbooks, this year's volume is devoted to one particular subject. Various research workers in the Department contribute 57 chapters on all phases of food and nutrition.

*Science News Letter, December 9, 1939*

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When possible, British museums are being kept open in wartime, for their educational and recreational value.

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The angle at which the upper front incisor teeth fit into the jaw differs in different races, an anthropologist reports.

CHEMISTRY

# Carbolic and Picric Acids And Toluol Are "Critical"

## But No Chemical on Essential List Can Be Classified As "Strategic"; Commercial Chemicals Not Pure Enough

TOLUOL, by-product of coke ovens, is the most "critical" of all the chemicals which the nation would need if it were forced to enter a war, Prof. Clark S. Robinson, chemical engineer of Massachusetts Institute of Technology, told the meeting of the American Institute of Chemical Engineers in Providence.

The essential chemicals needed to make explosives and war agents in large quantities include: acetic acid, acetone, ammonia, benzol, caustic soda, chlorine, ethyl alcohol, hydrochloric acid, methanol, nitric acid, phenol, picric acid, potash, soda ash, sulfuric acid, toluol.

The bulk of these chemicals go into the manufacture of explosives of various sorts and chemical agents. Practically all modern explosives are mixtures of nitrated organic compounds which require the use of sulfuric and nitric acids in their manufacture. Ammonia goes into ammonium nitrate, which is likely to be most widely used in high explosives, and into ammonium picrate which is used in armor piercing projectiles on account of its insensitive character. Acetone, acetic acid, and the alcohols are used as solvents for lacquers, plastics, and smokeless powder. Chlorine is the basic raw material used in the synthesis of most chemical war agents such as mustard gas, chlorpicrin, and so forth. Toluol is the basis for the famous T.N.T. and is largely used in other, less widely known, kinds of explosives.

Bottleneck in production comes because many of these chemicals, as made at present for commercial use, do not have sufficient purity needed in explosives, which must remain in good condition regardless of the climate and its conditions of temperature and humidity in which the explosives will be used.

No chemical of the essential list, said Prof. Robinson, can be classed as strategic. Three, however, he describes as critical: phenol, picric acid and toluol.

In discussing M Day plans for the chemical industry, Prof. Robinson noted that none of the chemicals cited are used, in themselves, as ammunition. Rather they are the raw materials for munitions and must be fabricated in special munitions plants. Such plants, he added, are virtually non-existent on a scale suitable for wartime needs. Probably only when and if war is declared will they be built.

*Science News Letter, December 9, 1939*

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Finland is about 35% forest and 11% lakes.

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Home economists say: Potatoes hold their vitamin C best when baked, next best when steamed, then boiled, mashed, and fried.


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