at points directly in line with the axis, while aside of it the pitch will be undulating. The undulations will reach their maximum amplitude at points located in the plane of rotation, being of opposite character at any two points symmetrically located with respect to the axis.

In the terminology of optics, the sound may be said, in the latter case, to have been circularly polarized with respect to the axis *A*.

Polarized sound-waves may be of value in acoustic research, for investigations involving the direction of sound. They are also applicable to practical purposes, like fog signalling. The signals may be polarized in such a way as to enable a pilot to determine with ease and certainty, *and by the unaided ear*, the direction from which they are coming. A device for this purpose has already been constructed by the writer and has successfully stood the test, it being possible to locate the source within a "point" of the compass.

ANDERS BULL

CHICAGO, ILL.,
June 27, 1921

THE AMERICAN CHEMICAL SOCIETY

(Continued)

DIVISION OF CHEMISTRY OF MEDICINAL PRODUCTS

Charles E. Caspari, *chairman.*
Edgar B. Carter, *secretary.*

N-derivatives of arsphenamine. I. Introduction of fatty acids: GEORGE W. RAIZISS and JOSEPH L. GAVRON. *II. Aldehyde addition products:* GEORGE W. RAIZISS and ABRAHAM C. BLATT. The authors introduced various atomic groupings in arsphenamine and studied the biological properties of the resulting compounds. They observed that the amino groups have a controlling influence upon the toxicity of the drug. Five derivatives of arsphenamine each containing a fatty acid substituent in both amino groups have been prepared. On the whole they are less toxic than the parent substance. Addition products of arsphenamine and various aldehydes, in which two molecules of the aldehyde are combined with one of arsphenamine, have also been prepared. Some of these have characteristic colors and may prove to serve as a means of identification. The biological study of these compounds is still in progress. One has been found less toxic than arsphenamine and also exhibits marked trypanocidal properties.

Some recent observations on protoplasmic stimulus: G. H. A. CLOWES. It has long been known that the sperm of sea urchins and other marine forms may be stimulated to excessive activity and their fertilization capacity promoted by treatment with extracts and secretions of eggs of the same species. This substance has now been proved to be a volatile, readily oxidized, non-specific, organo substance, resembling the lower alcohols or mercaptans. Similar sperm stimulating and fertilization promoting results may be obtained by utilizing a large variety of organo substances at dilutions of one in a hundred million or more.

Significance of residue determination as a test for the purity in drugs and chemicals: H. V. FARR. Salts of potassium and sodium are apparently more volatile in the presence of vapors of other metals, making their determination by ignition difficult in such compounds as mercury salts. The results seems to indicate widely different interpretations of the ignition test by different chemists. A much more accurate definition of the U. S. P. requirement is essential.

A new use for edible oils in surgery: CHARLES BASKERVILLE. Numerous efforts have been made to introduce gaseous anesthetics, as ether vapor, into the lower bowel until Dr. J. T. Gwathmey, of New York, conceived the idea of utilizing the solubility of ether in oil and administering the mixture as an enema. Fundamental factors were established by the investigations of the author before the proposal was tried with human beings. He determined the rates of evaporation of ether from various oils, mainly vegetable, although Russian mineral oil was also used. It was conclusively proven that ether evaporates from its solution in or of various oils suitable for internal use at a definite rate at the temperature of the human body. Nearly 30,000 operations, every one successful from the patient's point of view, have been performed by using this method. Not a single untoward circumstance has been reported. Vomiting, post-anesthesia nausea and many other uncomfortable accompaniments have been reduced to a minimum. Gwathmey also introduced the oral administration of the oil-ether mixture to produce analgesia during the dressing of wounds. Some surgeons have utilized the method in civilian practise in dressings after operations.

Further study of saligenin and allied compounds:

Arthur D. Hirschfelder. Saligenin in two to four per cent. solution is a practical local anesthetic not only for minor but also for major surgical operations such as thyroidectomies and laparotomies, and for caudal anesthesia; in 4 to 8 per cent. solution it is particularly useful in anesthesia of the male and female urethra for cystoscopy. Quigley and Hirschfelder have shown in a series of phenyl carbinols that substitution for one of the inactive hydrogens of the carbinols lessens the anesthetic action and substitution of both causes it to be lost. Ethyl, propyl, *n*-butyl, iso amyl and benzyl ethers of saligenin were prepared from potassium saligenate and the corresponding halide. They all numb the tongue like cocaine, the butyl ether most, but all also produce a stinging sensation as well. Emulsions made with acacia lower the blood pressure on intravenous in rabbits, the benzyl ether producing the most lasting effects. The mono acetic, di benzoic and mono benzoic esters of saligenin have been prepared, as well as the acetate and salicylate of bromsaligenin.

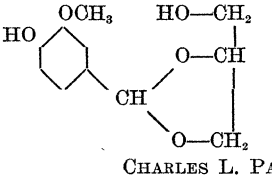
Molecular magnitude and physiological action: Oliver Kamm. Molecular volume data were utilized to predict the relative acute toxicities of monohydroxy alcohols belonging to several different homologous series. Benzyl alcohol and its homologues were found to agree with predicted values.

Preparation and hydrolysis of benzyl esters: E. H. Volwiler. Benzyl benzoate as an antispasmodic has come into increasingly general use since it was first suggested by Macht. With the purpose of finding the benzyl esters best adapted as antispasmodics, a number of other benzyl esters, both new and old, were prepared and their hydrolysis rates determined. The rates of hydrolysis of these benzyl esters increase in the following order: salicylate, benzoate, stearate, cinnamate, acetate, succinate, and fumarate. Benzyl acetylsalicylate, a new compound melting at 26°, was prepared; its rate of hydrolysis is very rapid, due to the presence of the acetyl group. It is therapeutically the most active of all the benzyl esters investigated.

Arsphenamine: Some factors which influence its colloidal properties: A. E. Sherndal. When the pentavalent aryl arsenic acids are reduced to the trivalent arseno compounds, their well marked crystalloidal characteristics are suddenly replaced by decidedly colloidal tendencies. This may be caused by the formation of large complex molecular aggregates. Arsphenamine in dry form shows marked colloidal properties, which vary in degree with the method of preparation. Precipitation from ionized solutions tends to increase these colloidal tendencies, while anhydrous non-electrolytes tend to reduce them to a minimum, as shown by experiment. These variable colloidal characteristics are paralleled by differences in the disperse state of acid and alkaline arsphenamine solutions, and may account for hitherto unexplained toxic and biologic phenomena exhibited by such solutions.

Laboratory tests vs. clinical results: Robert P. Fischelis. A discussion of the need for clinical evidence of the value of medicinal products and how such evidence may be obtained. The author included a discussion of the necessity for drawing proper conclusions from laboratory tests, as compared with clinical results.

Vanillin glyceride: Francis D. Dodge. A crystalline deposit which had formed after a time in a flavoring mixture composed essentially of vanillin, glycerin and alcohol was found to be a compound of vanillin and glycerin, apparently analogous to the benzol-glyceride described by Fischer. The compound is obtained more readily with acid catalysts (hydrochloric or sulfuric acids) and when purified melts at 159°. It is very slightly soluble in water or ether, more readily in alcohol, and may be recrystallized from hot alcohol. It is soluble in aqueous potassium hydroxide, and is reprecipitated by acids. The compound is hydrolyzed by hot water, yielding vanillin and glycerin in equivalent amounts. It is also very quickly hydrolyzed in acid solutions, so that the preparation requires much care. For purification, the crude crystals are dissolved in the calculated amount of 0.5*N* KOH, and reprecipitated by somewhat less than the theoretical amount of acid. The compound thus obtained forms thin plates, which are stable in dry air. Under the microscope, the crystals show, in convergent polarized light, an orthorhombic interference figure, and are thus easily distinguished from the monoclinic needles of vanillin. The formula is probably:



Charles L. Parsons,
Secretary