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Progress Report May 15-31-1954

① 1. Accomplishments: Infrared spectra have been obtained for the group of 2,4-dinitrophenyl hydrazones as KBr discs.

2. Activities:

① a. 2,4 Dinitrophenyl hydrazones: Spectra have been recorded in the infra-red of all 2,4 DNP's used for the ultra violet studies by means of the KBr disc technique. These spectra are sharp and well defined and will be very useful for identification of unknown derivatives. It has been found that about .0015 gms of sample is sufficient to obtain good spectra with the round die presently in use. Examination of these spectra indicates that in addition to matching spectra as a means of identification certain other information may be obtained concerning the identity of the parent carbonyl compound. It is relatively simple to tell if the parent carbonyl compound is aliphatic or aromatic and if aliphatic whether or not it is saturated or unsaturated.

The paper on the ultraviolet studies of these derivatives is being revised and rewritten to incorporate preliminary suggestions.

② b. Mass Spectrometry: Three days of this period were spent in New Orleans at the meeting of ASTM Committee E-14 on mass spectrometry. This meeting is covered in a separate report.

The rest of this period has been spent setting up apparatus for gas chromatography. The apparatus has been assembled and a few runs have been made. Several refinements appear to be necessary before conclusive data can be obtained. Preliminary experiments indicate that separation of hydrocarbons is possible, and that the mass spectrometer is well suited as a detector for the system.

AEC approval for 1 liter of O¹⁸ enriched water has been received and samples of this water have been ordered.

③ c. Other The catalog of infrared spectra has been transferred to cards. This will aid in keeping accurate records of the spectra in the files.

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(4) A few new coumarin substitutes have been prepared but have not been tried on tobacco yet.

3. Plans for Action:

a. Infrared Spectroscopy:

The study of the carbonyl content of smoke has been delayed because of impure bromoform. This will be purified and these studies initiated as soon as possible.

b. 2,4 Dinitrophenyl hydrazones. The preparation of this paper will continue with the rough drafts being submitted to the department for criticism.

c. Mass Spectrometry: The gas chromatography studies will continue.

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