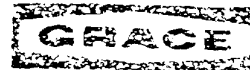


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**RESEARCH DIVISION**

Washington Research Center, Clarksville, Maryland 21029



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**CONSOLIDATED MONTHLY SUMMARY**

**AUGUST 1970**

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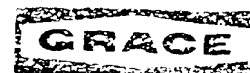
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September 21, 1970

MONTHLY REPORT FOR AUGUST 1970

CONSOLIDATED EDITION

GRACE CONFIDENTIAL

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This report contains information on the following  
activities at the Washington Research Center.

INORGANIC RESEARCH

- I-1 ADVANCED NAVAL FUELS
- I-2 ADVANCED SPACE FUELS
- I-3 AUTO EMISSIONS CATALYST
- I-4 NEW MOLECULAR SIEVE COMPOSITION
- I-5 ZEOLITE STABILITY AND ACTIVITY
- I-6 EXPLORATORY - MICROSPHEROIDAL TITANIA CATALYST BASE
- I-7 EXPLORATORY - DISPERSION HARDENING OF LEAD
- I-8 EXPLORATORY - CLAY COMPOUNDS
- I-9 EXPLORATORY - FIRE RETARDANCY/POLYESTERS
- I-10 EXPLORATORY - RECOVERY OF MERCURY

ORGANIC RESEARCH

- O-1 CURABLE POLYMERS - CLP PRINTING INKS
- O-2 CURABLE POLYMERS - LOW COST CLP SYSTEMS
- O-3 CURABLE POLYMERS - ALTERNATE CURING AGENTS
- O-4 CLP - PHOTORESISTS
- O-5 CLP - CLP METAL OFFSET PLATES
- O-6 POLYMERIC ADHESIVES - CAN END FASTENING SYSTEMS
- O-7 SILVERLESS PHOTOGRAPHIC FILM

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ORGANIC RESEARCH. Cont'd.

- C-8 FIRE RETARDANT MATERIALS
- O-9 ADHESIVE STUDIES - CRYOVAC COOPERATIVE STUDY
- O-10 EXPLORATORY - GENERAL
- O-11 EXPLORATORY - ALTERNATIVE CLP SYSTEMS
- O-12 EXPLORATORY - WATER FILLED POLYESTERS
- O-13 EXPLORATORY - CLP CASTS
- O-14 EXPLORATORY - PHOTOGRAPHIC HALF TONES

AGRICULTURAL RESEARCH

- A-1 MONO-KOTE
- A-2 HERBICIDE COATED UREA
- A-3 VERNICULITE-MOSS PLANTING DEVICES

BIOCHEMICAL RESEARCH

- B-1 ADAPTED RUMEN MICROBES (ARM)
- B-2 ARM FOR THE TREATMENT OF CHRONICS (CHRON-X)
- B-3 SALTS OF ISOBUTYRIC ACID AS A POULTRY FEED ADDITIVE
- B-4 EXPLORATORY

GOVERNMENT CONTRACT RESEARCH

- G-1 FIRE RETARDANT PLASTICS - NAVY
- G-2 HAZARDOUS CHEMICALS INFORMATION SYSTEM - COAST GUARD
- G-3 CLP's IN THE BARE BASE - AIR FORCE

OTHER R&D

- OT-1 GRACE SUGAR PROCESS

These items are included in the various editions of the report as shown below:

|                                 |                                                                      |
|---------------------------------|----------------------------------------------------------------------|
| ACC Edition                     | I-8; A-2,3; B-1,2,3,4; G-2                                           |
| DAV Edition                     | I-3,4,5,8,10; O-12; B-4; G-2                                         |
| HAMP Edition                    | I-9,10; G-2                                                          |
| COV Edition                     | O-9                                                                  |
| HATCO Edition                   | I-8,9; O-10B,12; B-3; G-1,2                                          |
| European Edition                | I-4,5,6,8,9,10; O-1,2,3,5,8,10A,10C,12,13;<br>G-2; OT-1              |
| SPG Edition                     | G-2                                                                  |
| PFD Edition                     | I-6; O-1,2,3,5,7,8,10A,10C,14; G-3                                   |
| CPD Edition                     | O-8,12; A-1,3; G-1,3                                                 |
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| Consolidated<br>Edition         | All Items                                                            |

These negatives will be cut, arranged in random pieces to eliminate differences in illumination on the LETTERFLEX platen, and used to make LETTERFLEX plates to be printed at ANPA. Meanwhile, we are attempting to devise methods that will show variations in the density (i.e. the "hardness") of half tone dots. (Ideally this could be done using a microdensitometer - however, no such unit is available at WRC.) Three methods are being developed:

- 1) Dots are photographed under a microscope using oblique lighting. Areas of low density at the edge of dots show up as halos. ("Halftone Photography", GATF publication.) This shows promise as a qualitative test for dot "hardness" - dots in a Chemco camera negative show distinct halos whereas the Tylon test negative shows no halos, indicative as expected, of much "harder" dot structure in the latter.
- 2) Dots are photographed at low contrast on Polaroid P/N film in a microscope and then the negative and positive sandwiched slightly out of register around a plane of rotation. Low density edges again show clearly as halos.
- 3) P. W. Mitchell is assisting the project by building a true microdensitometer. Hopefully, the most basic information will be yielded by this instrument - however, we hope that methods 2) and 3) may be developed to give quick evaluations of negatives in the field.

(Ketley)

#### AGRICULTURAL RESEARCH

##### A-1 MONO-KOTE (CONSTRUCTION PRODUCTS DIVISION) (Project 2659)

The Construction Products Division has given high priority to the development of a Mono-Kote formulation which does not contain asbestos. Research has been working directly with CPD to collect and correlate existing data on the present Mono-Kote formulation (MK-3). The specific assignment to the Research Division from CPD is preparation of a research program for longer range studies of chemical bonding forces that develop in the steel Mono-Kote system. A proposed program is virtually completed and will be prepared for discussion and critical review by CPD in Cambridge on September 8, 1970.

##### A-2 HERBICIDE COATED UREA (Project 4834)

The first report from the Amchem Company on urea coated with 2% Amiben is favorable with regards to its physical characteristics. Members of the Research Division and the Agricultural Chemical Group, Memphis, met with Amchem at Ambler, Pennsylvania during the