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HEADQUARTERS
CHEMICAL CORPS RESEARCH AND ENGINEERING COMMAND
ARMY CHEMICAL CENTER, MARYLAND

RCC2.950320.003

CMLRE-R

6 May 1953

MEMORANDUM FOR: Executive Officer
Cml C Research & Engineering Command

1. The following report of activities of the Research Division for the period 2 January to 31 March 1953 is furnished for your information and assistance in preparing the Historical Report.

2. The routine operations of this Division are not covered in this report.

Month of January

a. Policy:

Date

- 2 Supplementary funding for FY 53, as proposed by the operating agencies, was reviewed by Dr. Fox and approval recommended.
- 2 Dr. Fox concurred with the concept that the effects of GB might not be sufficiently rapid as to prevent effective return fire from an enemy tank.
- 2 Dr. Fox discussed with Col. Delmore changes in the project program concerning Project 4-08-06-015. These related to the division of responsibility between CRL and Bio Labs in the field of detection.
- 2 Dr. Fox reviewed and concurred in proposed division of supplementary funds for FY 55; reviewed and commented on the statement of missions of R&E Command and its components. Rewriting was indicated.
- 5 A brief discussion was held by Dr. Fox with the Comptroller as to the possibility of establishing "petty cash funds" with the operating agencies. It appears that provision exists for establishing funds of this type.
- 5 Dr. Harris had a discussion with Col. Delmore and Mr. Greene, CRL, on the necessity for increased work on cold weather agents.

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Higher Command Room
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6 Dr. Harris discussed with Mr. George Milly, Test Div, CRL, concerning his report of visit to Beni-Ounif. He stated that an official consolidated report of the three personnel who made the trip will be forthcoming, and his opinion is that we obtained nothing of technical value except possibly the details of the Dutch method for detection of G agents by horse cholinesterase. In fact, the trip was of very little value to them. It would have been better if we had been represented in the planning session which normally occurs some 6 months before the annual field trials at Beni-Ounif. Mr. Milly suggests that if we have any interest in continuing to cooperate on these trials, that we do so in the preparatory meetings. He further believes that if we are depending upon the capabilities of these countries (Belgium, Holland, France) we should give them at least enough help to keep them from making our past mistakes so that their experimental work is more fruitful.

6 The new Dept of the Army requirements for extreme temperature limits were reviewed with respect to all of the end items in the Research Division and our items were found to conform to the requirements.

6 Dr. Fox met with personnel of CRL to discuss division of effort between CRL and Bio Labs in the field of detection.

6 Interpretation of letter from the Navy Dept., subject, "Simplified Detector Kit" was discussed with Lt. Col. Appel, OCCm10. The Navy's proposal finally approved by the Chief Chemical Officer provided for short-cutting the development procedure.

8 Dr. Harris attended P&E Coordination meeting, wherein agenda items included the problem of restricting the topics that personnel of the operating agencies could talk on when visiting other installations, and "conflicts" of Air Force CW policy. Col. Ponder and Dr. Harris proposed that the first matter is the supervisory responsibility of the agency or office concerned, and should be left so, and that the second agenda item was impossible inasmuch as the Air Force as a using agency sets the operational policy and we produce items to implement the policy. It was agreed to wait for the forthcoming Air Force CW policy letter before discussing this matter further.

8 Dr. Josephson, OCCm10, reported to Dr. Fox directions given the Army Committee on Research concerning the use of European scientists for basic research. It was suggested to Dr. Marquand that this subject would be of interest to the Advisory Committee.

9 Supervisory responsibility for the projects of Bio Labs was reviewed. Responsibility for most of the projects remains with Lt. Col. R.G. Harris' group. Division responsibility in the field of detection was discussed with Col. Moree and Dr. Phillips. They concurred in the interpretation of this division. This opinion was later modified as a result of the conversations between Cols. Delmore and Orth.

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- 12 Dr. Fox, with Lt. Hamilton and Mr. Calder, attended meeting with representatives of the Quartermaster Corps to provide for implementation of the Tripartite recommendation for climatological studies.
- 12 Mr. E.K.G. James, ORG, brought in for concurrence a letter for Col. Currie's signature, requesting the operating agencies to render every assistance to ORG in the writing of a supplement to the PCS-9 report. The supplement is to cover work on nerve gases and will allow ORG to comment on gaps in our data which could be filled by future work. He agreed this would be coordinated with all people concerned before it was sent out.
- 12 Lt. Hamilton had conference with Environmental Protection Branch of Quartermaster General relative to collection of climatological data, as requested at 7th Tripartite Conference.
- 13 Col. Grendon, Cml C Board, advised that agreements have been reached between the Cml Corps Board and PT&I Div, OCCmlO, with respect to short-outs in development procedure for the simplified detector kit requested by the Navy.
- 14 Drs. Harris and Fox discussed with Mr. Hormats and Dr. Greene, CRL, the problem of producing a prototype simplified detector kit for the Navy and releasing it to them without Final Engineering Test. They agreed that if R&E Comd sent them an authorizing letter, spelling out exactly what they should and should not do, that they would carry out the directive.
- 14 Dr. Fox had discussion with Messrs. Keyser and Calder, Bio Labs, which resulted in clarification of directive to amplify the micrometeorological research, on travel of clouds in mountainous terrain.
- 15 Col. Bennett, Drs. Fox, Robinson, and Harris attended a meeting at Med Labs between R&E Comd (Prov. Gd. Div, Res Div, Lt. Col. Bacon, Dr. Lacher), CRL, Med Labs, and Cml Corps Board in regard to implementation of directives from the OCCmlO requesting the testing of specific mixtures of CW agents in the cold weather test program at Fort Churchill during the winter of 1952-53. Some latitude in the selection of agents and mixtures was allowed. The conference developed specific recommendations for the above implementation. Reference is made to Report of Conference by Dr. Robinson, and to the following correspondence: Letter, this Hq, CMLRE-R-3, subject, "Mixtures of CW Agents for Use in Cold Weather Test Program," dated 10 Dec 52, with 1st Ind, Med Labs, dated 15 Jan 53, attaching report, "Lab Tests on Mixtures Proposed for Use in Cold Weather Tests." It was agreed that for this winter efforts would be concentrated on ED-L, CK-AC, and CG.

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- 15 Dr. Josephson, OCCm10, called and informed Col. Bennett that General Loucks had signed a paper addressed to Commanding General, R&E Comd, which would authorize him the use of human volunteers in the CW field only.
- 16 Dr. Harris discussed with Dr. Eckert the establishing of a symbol for phosgene oxime. Cols. Bond and Franklin, and Res Div had agreed tentatively on the use of symbol CX. This was concurred in by Dr. Eckert, and Res Div prepared letter to Secretary, CCTC, 20 Jan 53, subject, "Symbol for Phosgene Oxime."
- 19 A conference was held in Res Div on the problem of Bio Labs utilizing the Shell Development Co. research contract on synthetic chemical agents. Those present were: Dr. H. Stubblefield, OCCm10; Drs. Harold Glassman, Charles Minarick, Bio Labs; Drs. Witten and Macy, CRL; Drs. Fox, Harris, and Lt. Col. Rhett Harris. Bio Labs personnel were briefed on the general intent and mechanics of the contract. They seemed to have a great deal of reserve when the meeting started, and at least some of these objections were apparently resolved. Dr. Minarick will discuss specific problems with Dr. Witten later as to work which Bio Labs would like to have done on the contract. Dr. Minarick raised the objection that it was undesirable to have this company, which is interested in plant growth regulators, work on this subject for the Bio Labs since they might steal the Bio Labs ideas. It was pointed out that this seems contrary to the thesis of contracting.
- 19 Lt. Hamilton visited Bio Labs to discuss implementation of agreements of the 7th Tripartite Conference that U.S. coordinate collection of climatological data for possible enemy target areas.
- 19 Mr. Treglia, CRL, called to sound out the Res Div concerning the desirability of releasing the field test kit, incendiary oil, without a moisture test. He was informed that this would be highly undesirable.
- 19 Col. Bennett attended a meeting between Res & Eng Comd (Res Div, Eng Div, Office of Spec. Asst for EW), Eng Agency, Bio Labs, Cml Corps Board, and Secretary, CCTC, to resolve differences of opinion on CCTC Top Secret Report (ZZ) presented at the Chemical Corps Technical Committee sub-committee meeting 15 Nov 1952. The main differences of opinion were those raised between Bio Labs and the Cml Corps Board and the P&E Office. These differences were resolved and the item will be revised by the Cml Corps Board and Bio Labs in coordination with the Secretary of the CCTC for presentation to the CCTC Sub-Committee at its February meeting.



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19 Rad Div, CRL (Messrs. Mitchell and Engquist) requested Col. Bennett to determine whether or not the Signal Corps could furnish an MDQ1 laboratory, radiological, to be available before 15 February 53, for Cml Corps tests to be conducted at Yuma, Arizona. Col. Bennett contacted Mr. Hedman, OCSigO, who indicated that two models of the MDQ1 laboratory would be available by the end of January - certainly by the end of February. One is scheduled to a designee of the Signal Corps and the other is to be available to the Chemical Corps. After further consideration of the need for the MDQ1 laboratory, the Chief, Rad Div, CRL, decided that they could not take a chance on the laboratory being there by 15 February, and decided the following be done:

a. CRL will use its own radiological equipment instead of the Signal Corps equipment (MDQ1) at Yuma.

b. The MDQ1 laboratory that was requested to be sent to Yuma, Ariz., should be routed to CRL, A Cml C, using the normal delivery time.

The above information was transmitted to Miss Quatman, OCSigO, extension 71954.

21 Resolution was initiated on the question of transferring funds to the project on the development of the Mobile Lab. This project being of lower priority, funds had been taken from it for higher priority work. Because development of the laboratory had been completed except for Final Engineering Test, it was ultimately decided, with the concurrence of the OCCmlO, to return the necessary funds to the project and complete the test.

21 Mr. Calder's opinion was asked concerning the consolidation of three of the meteorological projects into one. He concurred and stated that he had so proposed in a letter which had started through channels before Christmas.

21 Col. Bennett issued directive to CRL for the reclassification of the chemical dosimeter projects (4-12-80-001, 005, 006) to the Restricted category, in accordance with CCTC Item 2595, and invited attention to the termination of Project 4-12-80-006, "Administrative Dosimeter" by CCTC Item 2572.

21 Col. Bennett called a meeting between Med Labs (Dr. Kondritzer) and Res Div (Dr. Robinson and Capt. Swan) to determine what action could be taken in regard to a proposal by B.F. Goodrich Co. to cancelling an \$18,000 contract with Med Labs in connection with protective films for the skin against war gases and agents. The cancellation contract appears imminent, inasmuch as this work is being conducted by B.F. Goodrich Co. at Boyce-Thompson Institute on an unclassified basis, and the research has now reached a stage that further progress by the contractor requires

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knowledge on the part of the contractor of classified information resulting from evaluation tests of the films by Med Labs. The Boyce-Thompson Institute refuses to work on a classified basis, thereby virtually eliminating progress on this contract. Two possible solutions were worked out with Dr. Kondritzer for obviating the cancellation of the contract which normally terminates in May 1953. Med Labs is desirous of having the B.F. Goodrich Co. cleared, inasmuch as results so far indicate the desirability of extending the contract for another year.

21

Col. Bennett attended a conference between the Eng Div, R&E; Eng. Agency; and CRL (Eng Div - Mr. Treglia and Mr. Steinmetz) in regard to the preparation of an operating manual for the CW portion of the E4 Mobile Chemical Laboratory. CRL, having no funds with which to prepare this manual, had requested PT&I Div, OCCmIO, for funds. The preparation of manuals has been transferred from the Training Command by PT&I Div. to the Eng. Agency, by agreement with R&E Command. The funds made available for this work by PT&I are 1411 monies, which unfortunately are unavailable for research and development purposes; 1411 funds are for depot and maintenance purposes. If the operating manual desired by CRL is to be a set of operating directions for the laboratory, rather than a technical manual, then the 1411 funds could not be used by CRL but such funds could be used by the Eng. Agency for preparation of a technical manual for the laboratory. Conclusion reached at the conference was that the matter would be referred to PT&I by the Eng. Div., R&E, for resolution as to what is meant by an operating manual and whether or not the funds could be used by CRL. An answer was expected on this matter by 23 Jan 53.

22-23

Lt. Hamilton visited Meteorological Branch, Evans Signal Lab, to discuss a proposed micrometeorological telemetering net at Dugway Proving Ground.

23

Letter from CO, Med Labs, stating the requirements for human volunteers, was studied and discussed with Dr. Josephson, OCCmIO. It was held in abeyance awaiting a communication believed to be en route from the Secy of Defense. (This was received in March and has been difficult to follow.)

26-27

Col. Bennett held conferences with representatives of P&E Office in regard to tentative consolidation of projects.

26-27

Col. Bennett conferred with Mr. George Wilson, Chemical Div., in regard to the impact on the chemical dosimeter program of reducing the minimum reading for the chemical tactical dosimeter from 50 r to 15 r, as concurred in by Chief Chemical Officer, G-3, G-4, and Chief, Army Field Forces. It is anticipated that this will delay chemical dosimeter program by some 2-3 years.

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- 26 Dr. Josephson called Dr. Fox concerning a chart forwarded by Lt. Col. Evan Lewis from Porton, England. This related the quantity of GB released with distance therefrom at which it is safe to be unmasked. Copies had been made and previously distributed. The Commanding General, Cml C Materiel Command, wanted R&E concurrence. Experts of the Command had concurred in the table before it was distributed. Letter of approval was sent the Chief Chemical Officer.
- 27 An Ad Hoc Committee "Chaff Working Group" of the Res & Dev Bd, Committee on Electronics, Countermeasure Panel (Mr. Knoulton, Chairman) met at Army Chemical Center to review the Cml Corps program on radar screening agent. Mr. Gregory, USN, Bureau of Aeronautics, Maj. Jones, Wright Air Dev Center, and Mr. Jaszessult, OCSigO, were present. They approved of the Cml Corps program.
- 28 Cooperative efforts of Bio Labs and CRL on detection was discussed with Mr. Hormats, CRL.
- 28 Lt. Col. Gordon, PT&I, requested comments on letter from the Training Command which recommended cancellation of requirement for the "sniff set." He was reminded that the Navy has a standing unfilled order for several hundred of the kits. Further discussion led to preparation of letter from this Hq, discussing the role of odor in chemical warfare.
- 29 Col. Bennett wrote a Read for Record item for Dr. Eckert, indicating the impact on the chemical dosimeter program of changing the minimum reading of the chemical tactical dosimeter from 50 r to 15 r.
- 30 Col. Bennett conferred with Dr. Eckert in regard to revising CCTC Item 2465 to include the latest changes in requirements and military characteristics affecting the chemical dosimeter program. Col. Bennett furnished Dr. Eckert with all papers pertinent to incorporation of the latest desires of the Chief Chemical Officer; Chief, Army Field Forces; G-3, and G-4.
- 30 The program directed by General Bullene to study cloud travel in mountainous terrain was discussed with Lt. Cols. Bacon and Harris, Messrs. Grumb, Milly, Benjamin, and Lacher. Agreement was reached on phases of the program.
- b. Operations during period:
- 2 Dr. Fox concurred in extension of the contract to study the mass spectrometry of GB.

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2 Dr. Fox concurred with plans and recommendations of Mr. Calder, Bio Labs, on a meeting at Cambridge, Mass., to review plans for meteorological tests to be conducted during the summer of 1953.

5 Dr. Fox attended conference with Prov. Gd. Div. personnel concerning a directive for field testing the mixtures of HD-L and CK-AC.

5 Comments were given to Mr. Cruzab by Dr. Fox on correspondence concerning gasoline thickeners, which correspondence contained letters from Chemical Officer, FECOM, and Eng. Agency.

5 Dr. Fox concurred in discussion by Dr. Dill, Med Labs, of the use of supplementary oxygen or oxygen and carbon dioxide in artificial resuscitation.

5 Assistance was given the tracing of the shipment of M5 ointment and syrettes to Lt. Col. Evan Lewis, Liaison Officer to the United Kingdom.

6 Project progress reports were completed and forwarded to P&E Office.

6 Dr. Harris suggested to Dr. Robinson that nitrogen mustard be considered as an additive to GB. Since HL and phosgene oxime increase the percutaneous toxicity but GB is rendered unstable by the addition of acid, it would seem that nitrogen mustards might be alkaline and may therefore form stable mixtures with GB.

6 Letter was formulated by Dr. Fox and coordinated to implement directive by General Bullene on agents for use in cold weather.

6 Revision of the meteorological program at Bio Labs was discussed by Dr. Fox with Mr. Calder.

7 Letter from the Air Force, stating their requirements on plant growth regulators, was discussed.

7 Letter from Col. Batte, OCCmlO, containing criticisms of the Kit, Chemical Agent Detector, M9A2, was discussed with interested personnel of OCCmlO, GRL, and Eng. Agency.

7 The cold weather testing of HD-L was continued intermittently on 7 and 8 January.

7 Dr. Greene, GRL, reported that there were available at the Depot and GRL one ton of lewisite - no AC. He furthermore agreed that a mixture of diesel oil with mustard would be tried for freezing point lowering.

8 Arrangements were discussed with Mr. Brown, RDB, concerning a visit to A Cml C by members of an ad hoc committee of the Panel on Electronic Countermeasures of the RDB.

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7-8-9

Dr. Robinson attended meeting of the Joint Panel on Medical Aspects of Atomic Warfare in Washington.

9

Discussion was held by Dr. Fox with Col. Grendon, Cml Corps Board, concerning toxicity of GB and simplified detector kit.

9

Dr. Fox concurred with Dr. Eckert's suggestion that CX be the symbol for phosgene oxime.

9

Dr. Silver supplied advance information concerning penetration of cloth by candidate agents.

9

General Bullene changed his letter requesting additional micrometeorological research eliminating N.Y.U. from initial consideration for the studies in mountainous terrain.

9

Biological Branch of Res Div moved physically to the Office of the Special Assistant for BW. They nominally continue to be carried as a part of Res Div.

10

Drs. Fox and Harris attended the 42nd Meeting of Advisory Committee on New CW Agents. (WRC-S-631.)

12

Dr. Harris sent the Res Div comments on the BW-CW Coordination Committee's request for G agent tests on man with and without clothing, to P&E for coordination. Our comments were generally that the tests are in progress.

12

Dr. Harris discussed with Dr. Love, CRL, the use of chlorinated water in the G agent test in the M9A2 kit. The E16 kit which we have in the office allows the use of chlorinated water and the kit as standardized does not. Dr. Love stated that one halazone tablet per pint is allowable, which gives the residual chloride ion concentration of 0.4 ppm. Clear river water has been tested, as has naturally occurring water from the Salt Lake City River, and no significant interferences have been noted. This information was communicated to the Eng Div for revision of the instructions in the M9A2 kit.

12

Dr. Harris discussed perfluoroisobutylene with Dr. Macy, CRL. (This material is a candidate agent for canister breaking.) The LCT_{50} for mice on a 10 minute absorption is 1160 compared with phosgene at 3200. The boiling point of the material is $6.4^{\circ}C$. Minneapolis Mining & Mfg. Co. had an impure sample which they could supply to us by 16 Feb. In addition, work is going on in Cml Div. on the isomerisation of perfluorocyclobutene and on the polymerisation of tetrafluoroethylene.

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- 13 Problems in plant design were discussed with Mr. Wing, Eng Agency.
- 13 Drs. Fox, Harris, and Robinson attended the 43rd Meeting of Advisory Committee on New CW Agents. (See WRC-S-772.)
- 14 Dr. Harris discussed with Mr. C.E. Miller of CRL the cost of thickened JP5 fuel tests, involving fire bomb drops. Mr. Miller and Mr. Benjamin estimated that the costs would be about \$250.00 per bomb for 50 bombs. Dr. Harris discussed with Mr. Ortynsky of CRL the cost of the bombs which is about \$225.00 per bomb, including cost of the bomb itself at \$150.00. These costs were checked with Dr. Greene, CRL. It was estimated that a complete series of tests could be accomplished in 3 months from examination of equipment and availability of plane. These data were used as a basis of reply to the Navy's request for funding estimates on studies of thickened JP-5 fuel.
- 14 Dr. Fox attended meeting at Med Labs at which the activities of the Clinical Research Div. were reviewed by Dr. Marrassi, Med Labs.
- 14 Dr. Stubblefield, OCCm10, inquired as to the requirements of the R&E Comd for research at the Congress of Applied Chemistry at Stockholm. He was advised that limitations on attendance at scientific meetings would probably rule out any applications for attendance at this meeting.
- 14 Drs. Fox, Robinson, and Col. Bennett attended a technical conference given at Med Labs regarding the organization and status of progress of the program of work conducted by the Clinical Investigation Division of Med Labs.
- 15 Mr. Cart, OCCm10, requested a copy of Final Engineering Report on Automatic Alarm, E17, to inclose in letters to Navy, Air Force, and AFF, as requested by this Hq, in letter of 23 Dec 52. NOTE: The letter finally went out of the Chief's Office on 30 Mar 53.
- 15 Mr. Campanetti, OCCm10, asked for recommendations on a lacrimatory agent less explosive than CNB. It was suggested that the standard agent CNC would probably be satisfactory.
- 19 Dr. Rankin, Food and Drug Administration, advised us of the toxicity of disulphur decachloride, a compound which has been thoroughly tested and discarded on a Tripartite level. Letter of appreciation was sent to Dr. Rankin.
- 20 Arrangements were made with Mr. Calder, Bio Labs, to send Cml Corps personnel to Cambridge Field Station to a conference on aerosol travel.

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- 21 Mr. Calder was advised of a meeting of the Panel on the Atmosphere, RDB, and invited to attend. He declined on the basis that nothing in the agenda was of interest to the Cml Corps.
- 21 Mr. Leonard Cohen of CRL called Dr. Harris concerning lack of availability of the specification for JP-5 fuel and questions concerning the grade of gasoline the Navy was interested in for fire bomb work. Dr. Harris called Lt. Comdr Tatum, who agreed to obtain the necessary information and a 50 gal. sample of each of the fuels involved.
- 22 Dr. Robinson attended meeting of Plans Coordination Group.
- 22 Col. Bennett, Drs. Fox and Harris attended technical conference held by CRL on the progress and status of the research and development program of the Chemical Div, CRL.
- 22 Drs. Fox and Harris attended a Cml Div. orientation meeting at CRL wherein the following topics were discussed:
- a. The perfluoroisobutylene had been received 21 Jan and would be tested against canisters as soon as an analysis procedure was worked out.
 - b. The necessity of having additional screening work done at Med Labs. Dr. Macy's opinion was that the staff there should be increased since compounds now stand so long before tests that there is some possibility they may change.
 - c. The desirability of extending the Arthur D. Little contract on chemistry countermeasures to 30 June without additional funds. Arthur D. Little personnel have suggested about 10 candidate compounds for this effect and have recommended them for tests. They have stated that they believe this to be the most feasible approach to break the canister.
- 23 Mr. Campanetti, OCCmlO, was given information concerning Thickener M1.
- 23 Dr. Stubblefield, OCCmlO, advised of a letter from the Federal Civil Defense Agency concerning information received there on the British Detector Powder. This Command has complete information on the powder, and information concerning it was given to Dr. Stubblefield. However, he said he would send the letter from FCDA to this Command for precise information on which to base reply.
- 23 An article by Dr. Wilbur, Med Labs, was reviewed and questioned, for it seemed to be primarily USAF business.

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- 25 Col. Bennett, who has supervisory responsibility for the Cml Corps dosimeter program, attended an all-day dosimeter meeting called by CRL, to discuss the progress on the Cml Corps dosimeter program, and to exchange information in connection therewith, between the interested personnel in CRL and the various contractors. The conferees were representatives from Prot Div, Cml Div, CRL; MIT; U of Wisc; U of Ill; Tracerlab; Distillation Products Industries; UCLA; and Cml Corps consultants in this field. Col. Bennett discussed the impact of recent changes in the sensitivity requirements, the elimination of the requirement for the administrative dosimeter, and the change in security classification for the dosimeter program.
- 26 Dr. Fox assisted in preparation of letter to Chief Chemical Officer, in which the cooperation of this Hq was offered in arranging for and conducting the 8th Tripartite Conference.
- 27 Dr. Fox discussed with Lt. Col. Vincent, Cml C Liaison Officer in Canada, Mr. Sheppard, RDB, research on subjects of mutual interest, for example, extension of the cloud travel studies to Winnipeg, and impending visit of Dr. Grant to discuss blue-green algae toxins.
- 27-28 Dr. Harris attended Rheology conference at CRL.
- 28 Col. Bennett attended staff meeting of Med Labs involving reorganization and program of the research and development status of the Physiology Div, Med Labs.
- 28 Assistance was given by Dr. Fox to Dr. Metcalf, CRL, in arranging for trip to Palmyra Island by Dr. Halstead under Shell Development contract, to obtain toxic fishes.
- 29 Report of Cml Corps Board study on toxic agents was distributed to the operating agencies with instructions thereon.
- 29-30 Lt. Hamilton visited Air Force Geophysics Research Directorate to attend conference on the Great Plains Field Turbulence Program.
- 30 Maj. Stubblefield, CRL, requested Col. Bennett, Drs. Fox and Harris to discuss a new project on G agents with him and Dr. Macy in Col. Delmore's office. The proposed funding for this project for 1954 was \$576,000, including \$162,000 of contracts and seven separate tasks, as follows:

- (1) Process.
- (2) Analytical methods and control.
- (3) Reactions for detection.
- (4) Chemistry of agents.
- (5) Stability and corrosion.
- (6) Thickening.
- (7) Mixtures with other toxics.

A complete breakdown of the project was presented.

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Res Div spent considerable time revising technical estimates for the P&E Office.

Res Div spent considerable time in effecting and monitoring the consolidation, and in the preparation of, RDB 1A cards for the new projects into which the old projects were consolidated.

Month of February

a. Policy:

- 2 Col. Bennett attended meeting held by General Creasy in his office, to resolve difference of opinion as to the degree to which the Prov. Gd. Div. will fit into the R&E Command research and development picture. P&E Office (Col. Sullivan) will incorporate the results of this conference into the development procedure for R&E Comd.
- 4 Col. Bennett, in cooperation with Dr. Robinson, prepared a reply for General Creasy's signature, to Col. William Stone, Army Medical Service Graduate School, outlining further possible Cal Corps participation in studies on shock being carried out at Med Labs on wounding with high velocity missiles. See Memo for Record on letter dated 4 February 53 to Col. Stone.
- 3 Letter dated 9 Feb 53, subject, "Peak Range - Dosage Diagram" addressed to Chief Chemical Officer, was prepared for signature of Col. Currie, explaining the opinions expressed by members of R&E Comd as regards a peak dosage - range diagram for GB agents. This diagram was prepared in England and expresses safety distances for handling GB agents under various meteorological conditions.
- 10 Dr. Fox prepared a letter for Ralph M. Parsons Co. representatives in Minneapolis, formally outlining restrictions on publications with respect to studies on aerosol cloud travel.
- 11-12 Col. Bennett and Dr. Fox spent considerable time in correcting and revising certain CCTC items taken up at the 11 Feb 53 Sub-Committee meeting.
- 12 Col. Bennett furnished justification to the P&E Office for increasing funds on Project 4-12-80-001. See Comment No. 2, Res Div, to Chief, P&E Office, dated 12 Feb 53, subject, "Justification for Transfer of Funds."
- 12 Res Div (Dr. Fox and Col. Bennett) reviewed the changes in project priorities set forth in Report I of CCTC Sub-Committee meeting of 11 Feb 53, for those projects over which Res Div has supervision. This review was requested by Col. Currie's office in order to reduce the number of changes in priority. As a result of this review, Res Div made further recommendations in regard to the changes in priorities. See Memo for Chief, P&E Office, from Res Div, dated 12 Feb 53, subject, "Changes in Project Priorities (Reference Report I, dated 30 Jan 53, of CCTC Sub-Committee Meeting of 11 Feb 53)."

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- 13 The changes in technical estimates agreed to at the meeting on 11 Feb and written up by Dr. Josephson, OCCm10, were reviewed. The section pertaining to processes for the manufacture of G agents was contrary to agreements of the meeting. This was reported to Mr. Morgan, Eng Div, and Col. Stubbs, OCCm10, and that portion rewritten.
- 17 Incendiary agents were discussed by Dr. Greene, CRL, and Dr. Fox. It was agreed that thorough studies should be completed on candidate flame thrower agents before concentrating on liquid-liquid and fierce burning systems.
- 18 Reply was prepared to letter from CRL, reiterating the 7th Tripartite Agreement with respect to dosage levels for comparison of munition; that 0-30 seconds should continue to be considered as a time interval for reporting Ct. This is related to surprise effect.
- 24 Mr. McConeghy, OCCm10, asked for an opinion with respect to declassification of Kit, Chemical Agent Detector, M9A2. It is wanted by the Federal Civil Defense Agency, and at present only unclassified material can be given to them. It was subsequently decided to request that FCDA be appropriately cleared to handle classified information.
- 25 Col. Bennett prepared comments to the Executive Officer on letter from Med Labs, subject, "Assignment of Medical Officers," to the effect that the cover letter should be rewritten stating its objectives. Mr. Crumb and Col. Currie both concurred that the cover letter to the Surgeon General should be rewritten, inasmuch as it had no stated objectives, in spite of the fact that the inclosures indicated that (a) Med Labs were going to lose 11 officers out of a total of 18 in 1953; (b) that replacement of the released officers was imperative; (c) that there was an FY 54 requirement for approximately 20 medical officers. This letter was also coordinated with Col. Tegnell, who indicated that this is only a part of the medical officers picture, and that the Comptroller should control the total medical officer spaces for R&E Command.
- 26 Col. Moree was informed of previous work by the Bio Labs on BKL and BKA which had been standardized as defoliants. Bio Labs had suggested that a project for continued studies on defoliation be re-established.
- b. Operations during period:
- 2 Dr. Fox discussed with General Loucks, Col. Hutchinson, Col. Appel, and Col. Stubbs, OCCm10, the reports of World War II on the Sphinx Project and studies in the Targhee Forest as applicable to the problem stated in directives from the Chief's Office on penetration of CW agents into fortifications and the travel of gas clouds on mountains.

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- 2 Col. Hale, CO, DPG, concurred in program for study of cloud travel in mountains.
- 2 Dr. Fox attended meeting at CRL to evaluate proposed contract for the preparation of an operating manual for the Mobile Laboratory, E4.
- 4 Mr. Collins, General Electric Co., Baltimore, Md., telephoned information concerning the program for a symposium on mass spectroscopy. Cml Corps personnel who had previously indicated interest were notified.
- 4-5 Res Div reviewed assigned projects in regard to the status and proposed expenditure of FY 53 funds.
- 5 Col. Bennett reviewed finalized version of Res Div quarterly technical report.
- 4-5 Col. Bennett reviewed agenda for CCTC Sub-Committee meeting of 11 Feb 53.
- 4-5 Col. Bennett conferred with Mr. Lindworm, Special Projects Office, R&E Comd; Mr. Engquist, Rad Div, and Mr. Chaney, Protective Div., CRL, in regard to letter dated 27 Jan 53, from Dr. George V. Taplin (GS-15), Chief, Colorimetric Dosimetry Section, UCLA, requesting Col. Bennett to make arrangements for him and Dr. Sanford C. Sigoloff (GS-11) to attend Program 6.4 (Shot 9) in which CRL will participate. CRL will resolve the request based on number of personnel spaces which will be made available to CRL for 6.4.
- 5 Col. Bennett and Dr. Eckert cooperated in writing Report T for CCTC Sub-Committee meeting of 11 Feb.
- 6 Drs. Fox, Robinson, and Harris attended 44th Meeting of Advisory Committee on New CW Agents. (See WRC-S-1823).
- 6 Arrangements were made to send Mr. Show, CRL, to attend meeting of a sub-committee on the Panel on Chemicals and Protective Materials.
- 6 Dr. Treichler, OQMG, asked for Cml C assistance in preparation of technical estimates.
- 6 The RDB Panel on the Atmosphere was scheduled to meet on 9-10 Feb. Mrs. Whedon, OCSigO, advised that little of interest to the Cml Corps would be discussed.
- 6 Dr. Fox reviewed a letter by Mr. Milly, CRL, on the tactical use of G agents.

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6 Mr. Campanetti, OCCm10, had a letter from Lt. Col. Evan Lewis, Cml C Liaison Officer at Porton, England, asking condition of an automatic alarm loaned by the United Kingdom to the United States. Dr. Love, CRL, advised that the set was all right except for the pumps.

10 Col. Bennett attended conference between Dr. Bushy and representatives of Hq, R&E Comd; CRL; and Eng Agency, in order to brief Dr. Bushy on available information on the status of the GB program in regard to possible expansion of sites A and B.

10 Dr. Macy, CRL, advised of the hazard in conducting stability studies of mixtures of AC and CK. Special buildings must be constructed for these studies.

11 Some Med Labs projects were revised by Dr. Chambers, with the assistance of Dr. Fox.

11 A conference was held to review and recommend revision of the 1953

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- 16 Meeting of the Panel on Agents, CW Committee, RDB, Washington, DC, was attended by Dr. Fox, an associate member.
- 16 Dr. Connor, Rohm & Haas Co., and a member of the Panel on Agents, in private discussion with Dr. Fox, suggested that his company had information that might be of interest to this Corps. One was on a salt molecularly dispersed in a plastic, and the other was on methods of preparation and stabilization of nickel carbonyl (for radar screening agent). This information was subsequently transmitted to Mr. Bolgiano, Project Engineer, CRL, who visited Rohm & Haas Co. to get additional information. Samples of the plastic were supplied to CRL for test.
- 17 A review was made of the development of automatic gas alarms for use in plants or pilot plants manufacturing GB. CRL has reported that the alarm developed by the Vitro Corp. under Corps of Engineers contract is not entirely satisfactory.
- 17 Capt. Swan was on special duty with Hq. 6570 Chemical and Ordnance Test Group, Aberdeen Proving Ground, Md. (Authority SO 43, par. 7, Hq. Army Chemical Center, Md., dated 24 February 53.) This duty was for approximately 10 days beginning 16 Feb 53, and was requested by the Group CO, Maj. E.J. Weide, and approved by Col. Bennett and General Creasy. The purpose of the trip was to prepare an SOP for airlift of toxic material and an orientation and training program for aircrews participating in such airlifts.
- 17 Information was obtained from Maj. Stubblefield, CRL, and transmitted to Col. Sullivan, P&E Office, on detailed breakdown of proposed expenditures for the project on incendiary oil.
- 17 Col. Bennett revised the G alarm chart for General Bullene and incorporated into the chart the latest information on G Alarms.
- 18 Dr. Reetz, formerly engaged in CW research in Germany, sent several suggestions to General Loucks, which have been referred to CRL. Some of the suggestions were novel and an evaluation program has been established.
- 18 Col. Bennett attended the 14th Development Committee meeting and gave a presentation to General Bullene on the status of the research and development program of the G alarms and the relative merits of the various alarms.
- 19 Col. Bennett, Dr. Fox, and Lt. Heighton attended meeting at Bldg. 250, A Cml C, Md., concerning workshop on field evaluation problems. The reports of the 3 working groups on BW, toxic CW, and flame and smoke warfare were presented and there was a brief summary meeting to take up problems of a general nature. This was the final meeting of a series arranged by Prov. Gd. Div. to cover the Prov. Gd. aspects of CBR.

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- 19 Drs. Robinson and Fox attended meeting of the Panel on Medical Aspects of CW, CW Committee, RDB.
- 20 Dr. Fox attended Bio Labs Contract Evaluation Committee meeting. The contracts on shellfish poisoning were approved. Arrangements were made for Mr. Grant, Canadian Defence Research Board, to visit Bio Labs to discuss blue-green algae poisoning. It was learned that Dr. Jensen is being transferred to Bio Labs.
- 20 Dr. Harris and Col. Bennett attended a CRL technical conference on the status of research and development conducted by the Cml Div, CRL. This conference covered the entire program of Cml Div. It lasted from 0830 to 1330 hours.
- 24 Dr. Fox and Col. Bennett attended the CRL technical conference on status of research and development program of the Protective Div. It lasted from 0830 to 1330 hours.
- 24 Col. Bennett had a conference with Mr. Treglia, CRL, in regard to a proposed \$25,000 contract for preparation of instruction manual (Cook Book) for the Chemical Section of the Mobile Chemical Laboratory. It was decided that the contract should be let. This contract had been duly processed by CRL and was in Hq, R&E Comd, for approval. Col. Bennett thought it was necessary to review further the contract, as the contract price of \$25,000 appeared to be too high.
- 24-25 Dr. Robinson attended conference at Red Stone Arsenal to discuss the health hazards involved in the handling of guided missile fuels and the launching of the missiles.
- 24 Lt. Hamilton visited Environmental Protection Branch, OQMG, for the purpose of obtaining meteorological and micrometeorological data records from mountainous regions in Korea. On 26 Feb Lt. Hamilton visited the Climatology Section of Air Weather Service, Andrews Air Force Base, for the same purpose. This is in relation to the extension of the Cml Corps - Stanford Univ. contract of long range cloud travel, to include studies of travel of aerosols and vapors in mountainous terrain.
- 24 Mr. Van Hees, Johns Hopkins University, School of Chemical Engineering, applied for position at A Cml C. He was advised that being a citizen of the Netherlands he could not be employed in classified research.
- 24 Arrangements were made for a meeting with Stanford Univ. personnel and personnel from other branches of the Cml Corps, for 10 March.

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- 24 Col. Hutchinson indicated that PT&I Div. has no interest in implementing the suggestion of Dr. Mason, Cornell Univ., that a contract be established there to train mobile or base laboratory personnel in chemical microscopy.
- 24 Letter from the CO, Med Labs, regarding assignment of medical officers to the Cml Corps, was discussed.
- 24 Dr. Fox attended bi-weekly meeting of the Med Labs.
- 24 The Army Committee for Insect and Rodent Control had made inquiries, through Dr. Chadwick, of the work on ecology at DPG. Necessary information was obtained for a reply.
- 24 Letters were prepared by Res Div for General Creasy's signature to CRL, Med Labs, Cml Corps Board, and OCCmlO, subject, "Chemical Corps Board Study 13-52, 'Toxicities of the Various G-Agents,' implementing the recommendations of Cml Corps Board Study 13-52, as directed by OCCmlO. Prov. Gd. Div., R&E, has forwarded implementing letter to the Dugway Proving Ground.
- 26 At the request of Col. Stubbs, CRL prepared a letter estimating funds necessary for completion of studies on G agents. This was given to the Eng Div for information.
- 26 A letter was prepared jointly with Prov Gd Div, reporting the evaluation of a mixture of HD and lewisite as a cold weather agent.
- 26 Col. Bennett attended monthly meeting of the Plans Coordination Group.
- 27 Col. Bennett had a conference with Mr. Fohner, Comptroller's Office, in regard to preparation of mobilization organization for the Res Div.
- 27 Col. Bennett, Capt. Swan, and Dr. Harris attended film on DPG, and "Operation Cauldron," a British film.
- During the month of February Lt. Hamilton consulted the Historical Section, A Cml C, numerous times and records of smoke operations in Korea were obtained. These records are to serve as background material for the Stanford contract.
- Meteorological Section of OCSigO was requested to obtain and forward to Res Div existing meteorological records compiled by Signal Corps meteorological teams in Korea. This pertains to Stanford Univ. contract.

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Information pertaining to Dugway Proving Ground, Project 4-11-03-002, "Field Test Methods for BW Agents," and Signal Corps equipment requested for support of this project, was furnished by Lt. Hamilton to the Meteorological Section, OCSigO.

Information pertaining to a request for Signal Corps meteorological equipment at the Cml Corps "Big Delta" Test Area, Alaska, was supplied by Lt. Hamilton and coordinated with the Meteorological Section, OCSigO.

The present Stanford Univ. contract, Project 4-11-04-005, "Toxic Aerosol Behavior" is being extended to include studies of travel of aerosols and vapors in mountainous terrain. The results of this extension are intended to determine: (1) what concentrations of aerosols or vapors can be established inside dugouts in mountainous terrain and on mountainsides and ridge lines; (2) what meteorological conditions would permit the most effective use of gas for such purposes; (3) what methods can be developed for forecasting these conditions.

Existing information bearing on the above objectives is being assembled by this office. This information includes: (1) former work on cave and mountainous slopes; (2) characteristics of munitions and agents developed since the above work was done; (3) data on terrain, meteorology, nature of fortifications, troop dispersal, behavior of smoke clouds, etc., in their actual theater.

As the above information is being assembled, it is being reviewed in terms of specific objectives in order to: (1) determine to what extent this information can give the answers; (2) specify what additional work is necessary.

Month of March

a. Policy:

2 Col. Bennett attended, in the morning, SCTC Meeting No. 495, Room 2C243, Pentagon. Col. Bennett ~~was~~ ~~mentioned~~ in Exhibit A of Item 3082, pertaining to the revision of military characteristics for the individual dosimeter. Item 3082, which pertains both to individual dosimeters and radiao survey instruments, was approved by the Committee with the proviso that Exhibit A be revised by the coordinated effort of the Signal Corps and Chemical Corps. This revision was effected by Mr. Hedman, OCSigO, and Col. Bennett, at the Pentagon, the same day.

2 Col. Bennett, in the afternoon, conferred with Col. Stubbs' office, to the effect that Col. Bennett left an information copy with Col. Stubbs as to the G agent program of the Chemical Div, CRL, covering up to 1955. This program amounted to a total of 1.675 million dollars. Col. Bennett obtained from Col. Stubbs a 4-page document containing questions on the

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various GB processes on which the R&D Div required answers. Col. Stubbs and Col. Merrill were to attend a conference at R&E Command on G agent processes on 4 March, to discuss answers to these questions.

- 2 Dr. Harris called Mr. McConeghy of Materiel Div, OCCmlO, regarding the classification of the M9A2 Kit. He has been quite interested in downgrading this kit to unclassified in order that it can be released to the FCDA. This time he had reference to an article in JACS 70, 416 (1948) which turned out to have nothing to do with the detection tests in the kit and he was informed that we nonconcurred in such proposed downgrading.
- 3 A request from DPG for Signal Corps meteorological personnel support of two officers and 28 enlisted men was coordinated by Lt. Hamilton with Meteorological Section, OCSigO, and Prov Gd Div, R&E Comd. It was pointed out to Prov Gd Div that Signal Corps personnel will be loaned to the Cml Corps only, and no transfer of personnel will take place.
- 4 Dr. Harris conferred with Mr. Hornats and Drs. Kramer and Love of CRL on the proposed revision of the M9A2 Detector Kit. They wished guidance as to whether to standardize a kit containing a new mustard tube which requires no heater and a new G test more sensitive than the present indole test. It turned out in the discussion that ~~there were~~ additional items which might be included in any such proposed revision. These tentatively are the use of the tear wire on the lead cover and substitution of a bulb for the pump.
- 6 Dr. Eckert questioned Res Div concerning the downgrading of the M9A2 Kit. He opposes this action and we indicated that our position was the same and informed him of the discussion with Mr. McConeghy noted above.
- 10 Dr. Fox prepared memo suggesting a policy for attendance of Cml Corps personnel to scientific meetings. Col. Moree concurred.
- 11 Res Div personnel, together with Mr. Webster of Stanford Univ, reviewed Training Films 3-1496, 3-1719, 3-1535, in connection with proposed Stanford contract expansion.
- 11 Col. Bennett contacted Mr. Hedman, OCSigO, by telephone, in regard to Sig Corps coordination on a Cml Corps proposed research and development contract for the design, development, and fabrication of a prototype of an instrument to measure continuously the concentration of radioactivity in air. Mr. Hedman indicated that a letter should be written to the Eng & Tech Div of OCSigO, requesting Sig Corps comments and recommendations in regard to this proposal.

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13

Col. Bennett attended a conference at Camp Detrick (in Bldg. 426, Bio Labs) to coordinate future plans for the program on "N" and action necessary to have a capability with "N" and a munition for this capability by the date set by the General Staff. This was an all-day meeting. The following items were discussed:

- a. The existing evidence concerning the effectiveness of Agent N.
- b. Consideration of current research and development projects, on Agent N, as they apply to future plans.
- c. The additional evidence which might be required prior to any future action on Agent N.
- d. Proposals for field trials on Agent N.

For details see report of this conference by ^{Lt.} Col. Harris, Office of SA/BW. Conferees were division heads of Camp Detrick, representatives of R&E Command, and representatives of the Air Force. Dr. John Schwab acted as Chairman.

16

Dr. Harris attended a meeting in Dr. Katz's office, CRL, on the proposed contract for new thickeners for the approximate sum of \$120,000, utilizing \$20,000 of Air Force money, plus the \$100,000 recently transferred by the Marine Corps. CRL's intention was to let this for new thickeners, and particularly liquid thickeners, and they were informed that R&E would not approve a contract but preferred to see a comprehensive contract let in the field of incendiary agents with a contractor capable of both technical and applied phases of the work, including field assessment.

16

Dr. Fox concurred in transfer of \$150,000 from the toxic aerosol project only after assurance was obtained that the funds would be transferred back to the project, if required, for the implementation of the directive regarding meteorological studies in mountains.

16

Drs. Harris and Fox had a conference with Messrs. Sinclitico, Moseley, and Dr. Love on the proposed modification of the M9A2 Detector Kit. Dr. Love was informed that the two suggested changes, namely the improved mustard test and the improved G test were not sufficient to restandardise the kit, but that if a significant development in the kit could be obtained, restandardisation would be indicated. It was suggested that additional factors might be: incorporation of the tear wire in the lead coatings; inclusion of the M6 detector paper; a better fitting carrier; and above all, substitution for the highly undesirable present pump. Dr. Fox questioned the desirability of having both the crayon and the M6 detector paper, but Dr. Love pointed out that by utilizing these two items it would be possible

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to distinguish between liquid G and liquid H. Mr. Sinclitico was asked to re-examine the Eng Agency intention to let a contract on the rigid plastic carrier for the present M9A2 Kit in light of the fact that the AFF had made a decision in the past concerning the undesirability of a rigid carrier for use by field troops since such were uncomfortable, particularly in crawling operations. The Navy has produced such a rigid kit in the past but it was never generally accepted.

24

a. Dr. Fox and Col. Bennett attended an emergency meeting called by P&E Office at the R&E staff level, to determine R&D areas where reductions could be made to meet a sudden request by G-4, that the Cml Corps reduce its last quarter FY 53 R&D funds by 1 million dollars. This 1 million dollars is the Cml Corps portion of a 12 million dollar R&D out to build up the Army R&D Reserve fund. The 1 million dollars was tentatively scheduled to come out from the following areas: Eng Agency anti-animal and anti-crop BW and CW protective.

b. Following the conference in a above, a short conference was held in connection with the implementation of letter, Deputy ACofS, G-4, for Res & Dev, G4/F1 17540, subject, "Review of Current Research and Development Projects."

24

Col. Bennett and Dr. Harris attended a meeting of the CRL Contract Evaluation Committee in Dr. Katz's office. This meeting concerned the scope of a proposed prime contract in the field of fuel thickeners. The contract visualized requiring some \$250,000, whereas only a little more than \$100,000 was available. It was indicated that a contract should be let with available money and so written that it could be later expanded to include the desired number of tasks. Major emphasis on the contract is to be placed on solving the problems associated with the present thickeners presently standard and experimental thickeners.

26

Col. Bennett and Dr. Robinson prepared a letter to Commanding General, Cml Corps Materiel Command, indicating suggested agreement to be included in the contract for operation of the IOP, Rocky Mountain Arsenal. This suggested agreement stipulates a close working relation, including direct contract between the Contractor's Safety and Medical Divisions on the one hand and the principal investigator on Contract No. CML-2412, or such other principal investigator as may be designated by the Cml C Med Labs, and the CO of Rocky Mountain Arsenal on the other hand. Refer to letter, CMLRE-R-3, dated 26 Mar 53, subject, "Suggested Agreement to be Included in the Contract for Operation of the IOP, Rocky Mountain Arsenal."

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26 Col. Bennett conferred with Lt. Col. Cook, Special Projects Office, in regard to a letter from the Army Field Forces, intimating that the Cml Corps dosimeter program should be reviewed and perhaps terminated. In view of this letter, it was decided that a reply to AFF should be made by Spec Proj Office justifying the existing Cml Corps program on the basis that the Cml Corps dosimeter is better than anything the Army has at the present time, and setting forth the comparative merits of the Taplin dosimeter. It was felt that due to this letter, a major emphasis should be placed immediately on finalizing the development of the Taplin dosimeter, and funding program was revised accordingly.

b. Operations during period:

- 2 Mr. John H. Albrecht, Timken Detroit Axle Co., and Mr. M.A. Orieko, J.M. Beach & Associates, Dayton, Ohio, called on Col. Bennett to discuss possible contracts in regard to the Mobile Chemical Laboratory. Mr. Albrecht was under the impression that the Chemical Corps was going to construct several hundred of these laboratories, and indicated desire to bid. However, when he found out that approximately 10, and to a very maximum, not over 20 laboratories would be built, he apparently lost interest in the project and returned to Washington, taking Mr. Orieko with him. Mr. Orieko indicated that he worked for the Air Force at the Wright Field in the BW field, and particularly as concerns transportation of BW agents. Mr. Orieko indicated he would contact us at some later date in regard to the BW aspects. Arrangements were made with Mr. Treglia of CRL to interview both these gentlemen in the afternoon, but they were unable to wait that long, and in addition, lost interest and returned to Washington, as indicated above.
- 2 Dr. Harris discussed problems with regard to Project TRAC with Dr. Perkins of Stanford Research Institute. See Memo for File, 4-11-04-006, dated 2 March 1953.
- 2 Mr. Cort, OCCmlO, called Dr. Harris about a letter from the Training Command which proposes the dropping of the E9 Gas Instructional Kit. He was informed that if he wished R&E comments he should send a letter for our perusal.
- 3 Mr. Hultin of the Patent Office, OCCmlO, called Dr. Harris concerning a catalyst for the decomposition of hydrogen peroxide upon which the British have a patent. He wanted to know if we should file on this. He was informed that this matter was under the cognizance of the Air Force and of the Ordnance Corps, and should be sent to them for action.
- 3 Col. Escude, N.Y. Procurement District, called Dr. Harris concerning a proposed visit of two people from the Golwynne Chemicals Corps. on micronized magnesium. The meeting was tentatively set for 9 March.

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3 Personnel of Res Div prepared a suggested organization for the
Division to be implemented on M-Day.

3 Dr. Robinson conferred with representatives of the AFF and per-
sonnel of Bio-Physics Lab on relative value of flame and WP as anti-
personnel weapons.

4 Dr. Fox attended a meeting to review work on GB. This meeting was
called at the request of Col. Stubbs.

4 Dr. Dill asked assistance in arranging for medical officers Ward
and Gammill to attend a meeting during the meetings of the Federated
Societies of Experimental Biology.

4 Col. Bond advised that the Defence Research Board of Canada has
obtained permission for the R.M. Parsons Co. to conduct at Winnipeg,
Canada, the studies planned for Minneapolis during the summer of 1953.
Mr. Calder was so informed.

4 A proposal by R.M. Parsons Co. to move from Minneapolis to Winnipeg,
Canada, for summer field tests has been reviewed and recommendations
have been made by the Signal Corps Liaison Officer. These tests are
in conjunction with a project designed to provide the field experimental
data necessary to estimate munition requirements for the strategic use
of chemical and biological agents against cities.

4 Mr. Jarman, CRL, asked for comments on classification of candidate
gasoline thickeners for use in flame throwers.

4 Meeting to review personnel requirements was attended by Maj. Bingham
and Mr. Nelson, OCCm10.

4 Col. Bennett and Dr. Fox reviewed CCTC Agenda for CCTC Meeting
6 March 53.

4 Col. Bennett and Dr. Fox attended meeting called by OCCm10 for review
of the G-agent processes and production program. Other persons attending
consisted of General Creasy; Col. Stubbs, OCCm10; Col. Merrill, Materiel
Div., OCCm10; and representatives from CRL, Eng Div, and various offices
and divisions of Hq, R&E Comd.

4 Col. Bennett prepared suggestions for revision of the questions to
be submitted to the Ad Hoc Committee on BW testing at Dugway Proving Ground.

4 Col. Bennett prepared comment to Col. Currie on the preparation and-
handling of correspondence to CCTC.

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- 5 Col. Bennett attended CCTC meeting held at Gravelly Point (OCCml0).
- 5 Col. Bennett contacted Mr. Hedman, OCSigO, in regard to Signal Corps - Chemical Corps Coordination rewrite of SCTC Item Report No. 3082 presented at SCTC Meeting 495, 2 March 1953.
- 5 Dr. Harris conferred with Col. Bond concerning the requirements for radioactive phosphorus to implement the radioactive GB studies. Since Chalk River has been forced to discontinue operations, it is necessary that we try to find an alternative source of supply. The minimum activity is 2.2 curies per gram. The details of the supply of the phosphorus, the billet size, transportation, and scheduling were discussed.
- 6 Mr. R.W. Crary, Calif. Research Corp., discussed with personnel of this Division a proposal they are making for contract with CRL on gasoline thickeners.
- 6 Col. Bennett and Dr. Fox attended meeting of the Sub-Committee on Agents of the Advisory Council.
- 9 Dr. Fox interviewed USAF 2d Lts. being assigned to the Chemical Corps.
- 9 Messrs. Ernest Barth and James Hudson of the Golwynne Chemicals Corp. discussed their atomized magnesium powder. They regularly produce a 65/35 magnesium aluminum alloy in the range of 100-200 mesh so they have a large quantity of /100 and -200 mesh material. Furthermore, they produce a product containing an average of 11 micron spherical particles and exhibited a sample of 4 micron particles. They were referred to CRL - Drs. Magran and Finkelstein - to discuss this matter.
- 9 Col. LaPiana, OCCml0, interviewed Col. Bennett in regard to research activities from the standpoint of the Office of the Inspector General. At this particular time Col. LaPiana was representing the Office of the Inspector General.
- 9 Col. Bennett outlined charts and material for briefing to be given General Bullene at the Development Meeting to be held 20 March on incendiary bomb filling and flame thrower fuels.
- 10 The Meteorology Branch of Evans Signal Lab has been requested by Lt. Hamilton to furnish photographs of the micrometeorological station set AN/PMQ-2 to Mr. Traina of the Cml Corps Board. The Cml Corps Board is planning the feasibility test of this item for possible inclusion as a standard Chemical Corps item.
- 10 Dr. Harris called Col. Levy, Liaison Officer, Cml C Materiel Command, to request that a sample of isobutyl methacrylate be forwarded to R&E Command as soon as Materiel Command receives delivery from the American Polymer Corp. Col. Levy will follow this up and expects delivery about the end of April.

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- 10 Dr. Fox participated in review of patent application for a low pressure filter. Opinions of others of the headquarters were solicited.
- 10 Dr. Fox and Col. Bennett held a day-long conference in connection with expansion of the Stanford contract to include cloud travel up and/or down mountainsides for the penetration of caves and field fortification on or near tops of mountains. Conferees were representative from Stanford Univ (Mr. Webster); Res Div; Office Scientific Advisor (Col. Bacon); ORG (Dr. Reynolds); Prov. Gd Div; R&E (Mr. Thompson); CRL; Camp Detrick.
- 11 Dr. Fox attended second and last day of meteorology conference.
- 11 Dr. Treichler, OQMG, called with respect to bactericidal impregnate for clothing. Salesmen are pestering the Quartermaster; the Cml Corps has been conducting investigation; Dr. Berger was asked to reply.
- 11 Col. Bennett reviewed and revised charts for talk on flame fuel thickeners and flame thrower fuels for dry run of the 20 March Development Committee meeting.
- 12 Drs. Fox, Robinson, and Harris attended the 45th Meeting of Advisory Committee on New CW Agents. (See WRC-S-2607).
- 12 Dr. Fox concurred in refusal of permission to a company to use in its advertising, results of development under Cml Corps contract.
- 12 Dr. Fox substituted for Col. Bennett at a dry run of presentations for the Development Committee meeting.
- 12 Drs. Fox and Robinson attended meeting of critique by the Inspector General's Team.
- 12 Drs. Fox, Robinson, and Harris attended the 45th Meeting of Advisory Committee on New CW Agents. (See WRC-S-2607).
- 12 Col. Bennett and Dr. Fox conferred with Drs. Schantz and Brewer of Camp Detrick in regard to the status of the progress on the blue-green algae poison program.
- 16 Dr. Fox and Col. Bennett attended conference with CRL and Eng Agency representatives in regard to M9A2 Kit.
- 16-17 Col. Bennett and Dr. Harris revised the charts and the talk for the 18 March Development Committee meeting for the briefing of General Bullene on fuel thickeners and incendiary bomb fillings.
- 16 Mr. Jarman, CRL, inquired as to whether or not \$10,000 could be made available for investigation of a contract on GB with Kellogg, which company has of late been obtaining promising results.

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- 17 Dr. Summerson inquired as to procedure in advising on an article submitted by an American to an international journal on CW. The article contained information contrary to fact.
- 17 Dr. Fox reviewed RDB guidance Report with P&E Office personnel.
- 17 Dr. Stubblefield, OCCmLO, called requesting information for Col. Rothschild, Far East Command, concerning the fog oil on silk worms and mulberry trees. The Japanese government has been concerned over this matter. No adverse information was in hand and he was so informed.
- 17 Col. Bennett wrote a Report of Conference to CG, R&E Comd, regarding Signal Corps Technical Committee Meeting No. 495 of 2 March 1953.
- 18 Dr. Fox contacted Dr. Glassman, Bio Labs, with respect to Mr. Epstein's desire to attend an evaluation of water purification at Fort Belvoir, Va.
- 18 Col. Bennett attended Development Committee Meeting at OCCmLO, Gravelly Point, Va., and gave a presentation on fuel thickeners and incendiary bomb fillings.
- 18 Drs. Harris and Fox met with Dr. Langstroth, Superintendent of the Suffield Experimental Station, Canada. Cloud travel studies in Winnipeg, HD-L as a cold weather vesicant mixture, and penetration of clothing by aerosols were discussed.
- 18 Dr. Fox assisted in the preparation of a reply to a General Staff request for evaluation of HE vs incendiaries.
- 19 Dr. Frederick Ladder from Bradford, Pa., conferred with Col. Bennett in regard to the procurement of isobutyl methacrylate. Dr. Ladder was representing himself and indicated that he and several associates were interested in the production and sale of isobutyl methacrylate. Inasmuch as this was a matter of interest for the Cml C Materiel Command, Col. Bennett placed Dr. Ladder in contact by telephone with Col. Willmann, Materiel Command Hq, Baltimore, Md. Dr. Ladder made an appointment with Col. Willman for that afternoon to discuss the matter.
- 19 Dr. Macy was advised that approval would be recommended to a request submitted by him for loan of a Mobilometer to Dr. Urquardt, now connected with the Pyrene Co.
- 19 Dr. Fox attended a meeting to plan for the 8th Tripartite Conference. Dr. Fox has been appointed Chairman of the Chemistry and Toxic Agents Committee.

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- 19 Dr. Stubblefield, OCCmLO, asked for an opinion with respect to giving 100 grams each of mustard, lewisite, and GB to the Food and Drug Administration. Approval was recommended on receipt of a statement of the FDA that they are acquainted with the hazards involved and have protective and therapeutic measures at hand.
- 20 Dr. Robinson attended meeting of the Medical and Related Problems Committee of the Advisory Council, at CRL. The chief problem discussed was experimentation on human volunteers; also best ways in which to carry out clinical investigation within the Chemical Corps.
- 20 Col. Bennett commented on and made recommendations for revision of regulation drafted by P&E Office to establish an R&D program guidance control system of the R&E Command.
- 20 Res Div furnished verbal comments to Mr. Katz, P&E Office, on the Consolidated Committee Program Guidance, RDB 107/12, 16 Dec 52.
- 20 Dr. Harris attended meeting in Dr. Katz's office, CRL, on proposed contract for \$100,000 for fluorescent quenching and enhancing as applied to detection of G agents.
- 20 Dr. Harris discussed proposed budget for FY 54 with Mr. Hornats.
- 23 Dr. Fox, with others of this headquarters, discussed budget problems.
- 23 Dr. Fox arranged for Mr. Ramsey of the Food and Drug Administration to visit A Cml C to obtain latest information on GB.
- 23 Col. Bennett made comments and recommendations on "Proposed Guidance in CEHAR Area" as delineated in REG-TS-81 (53).
- 24 Dr. Hewitt, of Evans Research and Development Corp., visited A Cml C and this Hq.
- 25 Dr. Harris discussed the proposed FY 54 budget with Maj. Stubblefield and Mr. Hornats. The reflected changes were consolidated and letter sent out subsequently (30 March).
- 25 Dr. Fox and Col. Bennett prepared directive to Med Labs requesting that the Med Labs collect applicable data to conduct tests to obtain additional data and forward evaluation of the data in regard to casualty effects under varying conditions of flame, white phosphorus, and high explosive agents. This information is desired by ACofS, G-4. Refer to letter, CMLRE-R-3, dated 25 Mar 53, subject, "Comparative Personnel Casualty Effects of Incendiary Agents and High Explosives."

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- 25 Sub-Committee Chairmen for the Chemistry Committee of the 8th Tripartite Conference met to plan agenda.
- 26 Dr. Fox visited Bio Labs with Col. Bond and Mr. Grant to review with Dr. Olsen of the Univ of Minnesota and personnel of the Bio Labs, Canadian and U.S. work on blue-green algae. The efforts are to be increased in both countries.
- 26 Mr. Schleck of CRL asked assistance in determining how far Stanford Research Institute has progressed in the development of a detector for hydrogen fluoride by a means suggested by personnel of CRL at a Secret conference. It is true that the basis for the development is described in the open literature. Letter of inquiry was sent to Dr. Rand, Stanford Research Institute, who, in reply, promised a progress report. Dr. Fox arranged for additional reports to be sent on loan to Stanford Univ., on meteorology in the mountainous areas of Korea.
- 26 Maj. Kavanaugh, AFF Board No. 1, together with Lt. Col. Freudendorf, AFF Liaison Officer, interviewed Col. Bennett as to the status and progress of research and development in the anti-radar and infra-red fields. For more detailed information, Maj. Kavanaugh was referred to Dr. Hollingsworth and Mr. Show, Munitions Div., CRL. Maj. Kavanaugh is Sig Corps officer assigned to AFF Board No. 1.
- 26 Letter was sent to First Army discussing the experimental work on lacrimatory agents for use in Exercise SNOW STORM.
- 27 Dr. Harris and Col. Bennett attended the monthly CRL technical conference reviewing the progress of the Chemical Div. R&D program.
- 30 Col. Bennett reviewed a number of TS documents and prepared pertinent comments.
- 30 Res Div forwarded information to OCCm10 as to chemical agents suitable for cold weather use.
- 31 Dr. Fox attended meeting at OCCm10 to discuss conditions for making available the M9A2 detector kit to the FCDA.
- During the week of 23 March Res Div spent considerable time preparing comments and justification for changes in the FY 54 funding program in regard to the projects for which Res Div has advisory responsibility. Refer to Comment 2 to Comptroller, CMLRE-R-2, subject, "Fiscal Year 1954 Funding Program," dated 30 Mar 53 (basic letter dated 17 Mar 53).
- A monthly report is prepared by Lt. Hamilton, Sig C Liaison Officer. These reports are on file in Res Div.

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