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QUARTERLY SUMMARY OF PROJECTS^{1, 2}

NAVAL MEDICAL FIELD RESEARCH LABORATORY
CAMP LEJEUNE, NORTH CAROLINA

1 October 1963

¹Detailed accounts of active and completed projects, tasks, and sub-tasks, of which this report is a quarterly addendum, may be found in the Naval Medical Field Research Laboratory RDT&E TASK REPORT for the period of Jan-Dec 1962. Additional material will also be found in the QUARTERLY SUMMARY OF PROJECTS dated 1 April 1963 and 1 July 1963.

²Additional information regarding any of the tasks or subtasks reported herein may be obtained by addressing a request to Commanding Officer, Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

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100-421371-1

Task & Subtask Identification No.	Title of Subtask	Principal Investigator	Status
MR005.01-0030 (Task started: June 1959; continued indefinitely)	(Task) The Effect of Environmental Factors on Performance of Marine Corps Personnel	P. J. Rasch, Ph.D.	Work is in progress on the development of a battery of tests to be used as a criterion in the evaluation of certain performance activities of Marine Corps personnel. A pilot study is being conducted to evaluate the effect of heat stress on marksmanship. Preliminary work is being conducted to investigate the value of dl-aspartic acid in offsetting the effects of environmental stress on the performance of Marine Corps personnel. A Review entitled "Anthropology and Clinical Medicine" by Capt. G. L. Calvy was distributed during this quarter.
MR005.01-0030.1	The Effects of Heat and Humidity on Operational Performance of USMC Troops Wearing Body Armor and Load-Carrying Systems	"	Work on this project has been concerned with the installation and testing of the new Multichannel Temperature and Heart-Rate Measurement Programmer.
MR005.01-0030.2	Effect of Environmental and Individual Factors on Development of Heat Acclimatization	"	A proposed study in this field has been submitted to Gen. Berkeley, Fleet Marine Force, Atlantic, for his consideration, following his request. Report entitled "Regional Variations in Blood Lactate Concentrations" by Dr. J. J. Burt and Cdr. J. J. Martorano was published in August 1963.

Task and Subtask Identification No.	Title of Subtask	Principal Investigator	Status
MR005. 09-0010. 1 (Task started: Dec 1948; est. completion date: 1964)	Biology and Control of the Salt Marsh Mosquito	K. L. Knight CAPT MSC USN (Ret)	Principal investigator retired from active duty. Project kept open for additional reports which are yet to be published.
MR005. 09-0010. 2 (Task started: Dec 1959; est. completion date: 1964)	Control of Ticks and Tick-Borne Diseases	"	Principal investigator retired from active duty. Project kept open for additional reports which may be published. Published during quarter: "Induced Removal of Embedded <u>Amblyomma americanum</u> (L.) Ticks" which appeared in the Iowa State Journal of Science, 37:399, 1963.
MR005. 09-1204. 3 (Task started: Feb 1959; task continued indefinitely)	Relationship of Enteroviruses to Diarrhea Syndrome	H. H. Bloom LCDR MSC USN	Investigator separated from service. Subtask cancelled 27 June 1963.
MR005. 09-1204. 4 (Task started: Mar 1953; continued indefinitely)	The Relationship of Newer Viruses to Respiratory Illness	B. F. Gundelfinger CDR MC USN	In collaboration with NIH, preliminary serologic identification of the various strains of rhinovirus is being carried out. There will probably be in excess of 20 distinct serotypes of rhinovirus. Preliminary analysis of the results of the adenovirus vaccine evaluation reveals that the standard commercial vaccine did afford some measure of protection against respiratory illness as measured by the number of dispensary visits for respiratory disease. (cont)

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MR005.09-1204.4 (cont)			<p>The final evaluation is in progress. Serologic studies are being done in collaboration with the Div. of Biological Standards of the NIH. The serologic determinations for the typhus immunization study are currently being performed in Dr. Smadel's laboratory (Div. Biol. Stds).</p> <p>A standardized method for preparing PPLO complement-fixing antigens has been devised in collaboration with NIH. The method allows identification of the majority of oral PPLO strains by the complement-fixing technique. Antisera to new strains are currently being prepared in rabbits for future inclusion in the serologic battery.</p>
MR005.09-1501.1 (Task started: March 1952; continued indefinitely)	A Study of the Etiology, Epidemiology and Therapeusis of Non-Specific Urethritis	M. C. Shepard Ph. D.	<p>Journal article published during quarter: "Patterns of Illness in Rhinovirus Infections of Military Personnel" by B. R. Forsyth, et al. New England Journal of Medicine, 269:602-606, Sep 1963.</p> <p>The study of wives of NGU patients is continuing. This is a cooperative study with Cdr. R. L. Baker, OB-GYN Clinic, USNH, Camp Lejeune, N. C.</p> <p>The NGU Study Group has been limited to (1) single NGU patients with their initial NGU infection, of duration not over 7 days, and who have not received drug therapy of any kind for 14 days; and (2) married NGU patients whose wives are living in the local area.</p> <p style="text-align: right;">(cont)</p>

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The Prenatal Study, initiated 2 May 1963 at USNH, in cooperation with Cdr. Baker, has been completed and the results tabulated. A preliminary report is in preparation. A companion study of Women Marines reporting for duty and training at Parris Island, S.C. is scheduled to commence in the late fall of 1963.

A Urethritis Study Center has been established under the office of the Division Surgeon, 2d Marine Division, Camp Lejeune. The Study Center is staffed by two medical officers and three laboratory technicians. All urethritis cases (gonococcal and non-gonococcal) originating in the 2d Marine Division will be referred to the Study Center for interview, diagnosis, laboratory study, treatment and follow-up. NMFR is assisting in the operation of the Urethritis Study Center.

A control study of Marine recruits at the Infantry Training Regiment was initiated 19 Aug 1963. This is a basic study of young Marines who have recently completed basic training at Parris Island and have arrived at ITR for advanced training. When the study is completed, 600 men will have been studied. Collection of basic information and materiel for cultural studies will be completed 11 Oct 1963 on the 600-man sample.

Follow-up reports on all men of the study
(cont)

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MR005. 09-1501.1 (cont)			group are due in six months from date of interview and culture.	
MR005. 12-2504.1 (Task started: Sep 1962; est. completion date: 1964)	Development of Psychometric Instru- ments for Use in the Selection and Train- ing of Motor Vehicle Operators	G. H. Malone, Jr. LTJG MSC USNR	Preliminary statistical analysis of data has been accomplished. No reports issued.	
MR005. 12-6001.5 (Task started: Feb 1950; continued indefinitely)	Development of Medical & Dental Material for Field Use 1) Medical Records Chest for Marine Corps Use 2) Compact Light- weight Litter for Forward Area Combat Use 3) Floor Covering for Field Surgical Tents 4) Dental Operating Light	Staff, NMFRL E. R. Babcock Engineer " "	The design necessary for durability precludes the use of this item because of cost (approx. \$300). The study is being postponed indefinitely. Apron has been redesigned and is being tested. Sample of recently developed nylon mesh coated with conductive material has been received from Custom Materials Co. This appears to be too light but a heavier version may be suitable for tent flooring.	Search has been conducted during this quarter for components which will fulfill requirements. (Trial and re-jection of one model)

Task & Subtask Identification No.	Title or Subtask	Principal Investigator	Status
MR005.12-6001.5 (cont)	5) Air Compressor	F. W. Hughes CDR DC USN	Correspondence has been carried on in search of a compressor which will fulfill requirements.
	6) Portable Office	"	Preliminary studies, accumulating material.
MR005.12-6001.6 (Task started: Feb 1950; continued indefinitely)	Test & Evaluation of Medical, Dental & Related Field Items 1) User Test of Light, Operating, Field, FSN 6530-706-6300	Staff, NMFRL E. R. Babcock Engineer; J. W. Turner HMCM USN	Terminated by NMFRL report "User Test of Field Operating Light" (MERDL Proj. No. 6X62-02-001.128(a)) dtd Sep 1963.
	2) User Test of Bandage-Splint	"	Terminated by NMFRL report "User Test of Bandage-Splint" dtd Jul 1963.
	3) Evaluation of Disposable Emergency Splints	"	Terminated by NMFRL report "Service Test of Splints, Emergency Type" (R&D Proj. No. 6X62-02-001.091(d)) dtd Aug 1963.
	4) User Test of Table, Folding Legs, Laboratory	"	Terminated by NMFRL report "Service Test of Table, Folding Legs, Laboratory, FSN 6530-710-0210" (R&D Proj. No. 6X62-02-001.129(a)) dtd Jul 1963.
	5) Service Test of Refrigerator, Hermetic Type	"	Terminated by NMFRL report "Service Test of Refrigerator, Hermetic Type" (Proj. No. 6X62-02-001.127(a)) dtd Sep 1963.

MR005.12-6001.6 (cont)	6) User Test of Stretcher, Robin- son Orthopedic	E. R. Babcock Engineer; J. W. Turner HMCM USN	Terminated by NMFRRL report "User Test of Stretcher, Robinson Orthopedic" dtd Sep 1963.
	7) User Test of Autoclave for Special Forces	E. R. Babcock Engineer	Evaluation completed and ltr report made to DMMB on 20 Dec 1962. Ter- minated by NMFRRL report "User Test of Autoclave for Special Forces" dtd Sep 1963.
	8) User Test of Blanket, Fairhope Thermal	"	Evaluation completed and ltr report made to DMMB on 20 Dec 1962. Ter- minated by NMFRRL report "User Test of Blanket, Fairhope Thermal" dtd Sep 1963.
	9) User Test of AMBU Resusci- tator	E. R. Babcock Engineer; J. W. Turner HMCM USN	Evaluation discontinued because of action of the Advisory Committee on FMF Allowances reported previously.
	10) Service Test of Gaskets for Medical Field Chest	"	Evaluation continuing.
	11) Service Test of Container, Storage and Preservation, Temperature Controlled	"	Evaluation continuing.

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MR005.12-6001.6 (cont)	12) Service Test of Insert Trays for X-ray Processing Unit, 5 Gallon Capacity	E. R. Babcock Engineer; J. W. Turner HMCM USN	Item received. Evaluation underway.
	13) User Test of Dry Wash Towel	"	Item received. Evaluation underway.
	14) Service Test of Collins Elastic Cord Surgical Traction Device, For Use on Turning Frames and Beds	"	Item received. Service test underway.
	15) Service Test of Collins Elastic Cord Surgical Traction Device, For Use on Litter	"	Item received. Service test underway.
	16) Evaluation of Roll, Splint Set, Telescopic, Splint, Empty	"	Awaiting receipt of test item.
	17) User Test of Table, Portable, Field Operating	"	Awaiting receipt of test item.
	18) User Test of Dental Handpiece Unit, Portable, Turbojet, High Speed, Improved	F. W. Hughes CDR DC USN	Terminated by NMFRL report "User Test of the Bowen Portable Turbojet High-Speed Dental Handpiece Unit, Improved" dtd Jul 1963.

Task & Subtask Identification No.	Title of Subtask	Principal Investigator	Status
MR005.12-6001.6 (cont)	19) User Test of Oralix X-ray (Norelco)	F. W. Hughes CDR DC USN	Test completed. Report being prepared.
	20) User Test of Ampli-Clarus Daylight Processing Unit	"	Test completed. Report being prepared.
MR005.12-7010.1 (Task started: May 1948; continued indefinitely)	Development, Test and Evaluation of Protective and Armored Garments	L. G. Derrick Clothing Des.; J. F. Quinlan Gen. Tech.; H. R. Henn MAJOR USMC	<p>Body armor. A report on the influence of body armor coverage and weight on the performance of the Marine while performing certain simulated combat-type tasks is in preparation. The results of this study revealed that the Marine's performance was decreased as the weight of the body armor was increased, and that there was no significant difference in the performance time when wearing a total torso body armor versus an upper torso body armor as long as the weights were the same.</p> <p>A study using the same body armor utilized in the above test will be conducted in the NMFRLL climatic chamber to determine if differences in design (body surface coverage) can be determined in a controlled environment.</p> <p>Three new designs of body armor have been fabricated using standard body armor materials. These designs will be subjected to study on the firing range to determine if one design is superior to</p>

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the other (including the standard body armor). If a difference is obtained, further field study will be initiated.

Experimental helmet liner. Fifty nylon helmet liners have been received and will be field tested to determine the practicality of their use as headgear in hot environments. Due to the excellent finish on the outside of the liner, no other coating for abrasion resistance is considered necessary.

Work is continuing on the development of a method for measuring the impact energy of non-penetrating projectiles transmitted through helmet suspensions.

Load-carrying system. In-house studies are being made on designing an ammunition pouch for the M-14 magazines. At present one design appears to have promise and a limited number will be tried by the 2d Marine Division during the next quarter.

MR005.12-7020.1 The Patho-
(Task started: Physioloical
Aug 1952; Effects of Severe
continued Burns
indefinitely)

L. H. Coffin, Jr.
LT MC USNR;
A. A. Spector
LT MC USNR;
I. D. Wilson
LT MC USNR

Present studies of myocardial contractility and distensibility following cutaneous thermal trauma have been completed. Final reports are in preparation.
A report on renal function after thermal injury is also in preparation.

The effects of several compounds including thromboplastin, fibrinolysis, dibenzylamine hydrochloride and heparin on
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scald survival are being studied. An apparent difference in scald survival between rats anesthetized with volatile versus parenteral agents is also being investigated.

The clotting mechanism will be fully evaluated in flash-burned animals because of work suggesting that heparin and thromboplastin are of value in treating burns. Intravascular clotting is thought by some to be important in the pathogenesis of hemorrhagic shock. Preliminary work has been done on an epinephrine-norepinephrine assay with the object of studying catechol amine changes in burn shock.

Journal articles published during quarter: (1) "Effect of Postburn Serum on In Vitro Respiration of Normal Myocardium" by A. A. Spector, reprinted from J. Appl. Physiol. 18:821, 1963; and (2) "Early Changes in Serum Enzymes in the Rat Following Burn Trauma" by A. A. Spector and W. A. Pauli, reprinted from J. Appl. Physiol. 18:818, 1963.

MR005.12-7020.2 Evaluation of Con-
(Task started: valescent Burn
Aug 1952; Serum on Renal
continued Function in Dogs
indefinitely)

L. H. Coffin, Jr.
LT MC USNR

Principal investigator has been released from active duty. Subtask held open for final report.