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# WISCONSIN ALUMNI RESEARCH FOUNDATION

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September 26, 1979

Mr. Leroy Randall  
Acting Chief  
Department of Health, Education,  
and Welfare  
Washington, D. C. 20201

Dear Mr. Randall:

Re: Institutional Patent Agreement  
University of Wisconsin - Department of  
Health, Education, and Welfare

This letter and the attachment will comprise the annual report required under the terms and provisions of the above noted agreement for the period from July 1, 1978 through June 30, 1979. Reported are new inventions which have been brought to the Foundation and reported to the Department during the indicated period as well as information regarding inventions for which the Foundation was previously given responsibility under the Institutional Patent Agreement. You will find pertinent information regarding all of these inventions in the attached table.

Very truly yours,

UNIVERSITY OF WISCONSIN

By

Reuben H. Lorenz, Vice President and  
Controller

WISCONSIN ALUMNI RESEARCH FOUNDATION

By

Howard W. Bremer  
Howard W. Bremer, Patent Counsel

RHL:HWB:rw  
Enc.

UNIVERSITY OF WISCONSIN-WARF  
 DHEW INSTITUTIONAL PATENT AGREEMENT INVENTION REPORT  
 July 1, 1978 to June 30, 1979

<u>Invention &amp; Grant No.</u>	<u>Inventors</u>	<u>Invention Reported to DHEW</u>	<u>Serial No. Filing Date</u>	<u>Development and Commercial Use</u>	<u>WARF Expenditures (Approx. Estimate)</u>
Method for Reducing Frost Damage of Plants Grant No. HEW GMO 7215-01	Arny, D. C. Lindow, S. E.	9/2/76	Pat. No. 4045910 issued 9/6/77	Several smaller companies have expressed interest in the technology-licensing terms being discussed. Regulatory agency approval a major consideration.	\$10,500
Method for Reducing Frost Damage of Plants Grant No. HEW GMO 7215-01	Arny, D. C. Lindow, S. E.	9/22/78	846,781 10/31/77 (Reissue of Pat. No. 4045910 - aband. 1/79)		
Method for Reducing Temperature at Which Plants Freeze Grant No. HEW GMO 7215-01	Arny, D. C. Lindow, S. E.	8/14/78	921,800 7/3/78		\$ 4,000

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Method for Preparing a Reagent for PLT Grants Nos. PHS HL06314 NIH A100567 NIH A108439 NIH CA16836	Bach, M. L. Bach, F. H.	6/21/77	Pat. No. 4124701 issued 11/7/78	Licensed to Biotest-Serum-Institut, Germany	\$ 4,157 \$ 7,000 (apportioned expense)
Cytokinin Antagonist to Plant Growth Hormone NIH Grant No. GM 12395	Bock, R. M. Hecht, S. M. Skoog, F. K. Schmitz, R. Y.	11/8/71	604,173 8/13/75  936,225 8/24/78 (continuation of 604,173)	Agreement terminated by Burroughs-Wellcome. No other commercial interest at this time.	\$ 9,450 \$ 6,000 (apportioned expense)
Enzyme Preparation for Assay of Antibiotics NIH Grant No. 10076 NSF Grant No. PCM76-23617	Davies, J. E. Harford, S.	7/2/79	Pat. appln. being drafted	Industry contacts will be initiated after pat. appln. is on file.	\$ 1,000 (apportioned expense)

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24,25-Dihydroxy-cholecalciferol NIH Grant Nos. AM 14881 AM 15512	DeLuca, H. F.	7/6/72	Pat. No. 3715374 issued 2/6/73	Licensed to Upjohn Co., Hoffmann-LaRoche (U. S.), Roussel Uclaf (France), Leo (Denmark), Chugai (Japan).	\$ 1,025 \$ 7,500 (apportioned expense)
25,26-Dihydroxy-cholecalciferol NIH Grant No. AM 05800-08	DeLuca, H. F.	11/16/71	Pat. No. 3739001 issued 6/12/73	Licensed as above.	\$ 835 \$ 6,000 (apportioned expense)
1,24,25-Trihydroxycholecalciferol NIH Grant Nos. AM 14881 AM 15512	DeLuca, H. F.	7/17/73	Pat. No. 3847955 issued 11/12/74	Licensed as above.	\$ 4,500 \$ 5,500 (apportioned expense)
5,6-Trans-25-Hydroxycholecalciferol NIH Grant No. AM 15512	DeLuca, H. F. Holick, M. F. Garabedian, M.	2/11/72	Pat. No. 3743661 issued 7/3/73	Licensed as above.	\$ 1,655 \$ 5,500 (apportioned expense)

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1,25-Dihydroxy-ergocalciferol NIH Grant Nos. 5-PO1-AM-14481 5-PO1-AM-15512	DeLuca, H. F. Jones, G. Schnoes, H. K.	6/13/74	Pat. No. 3880894 issued 4/29/75	Licensed as above.	\$ 4,648 \$ 8,500 (apportioned expense)
Method of Treating Milk Fever in Dairy Cattle with 1 $\alpha$ -Hydroxycholecalciferol NIH Grant Nos. 5-PO1-AM-15512 5-PO1-AM-14881	DeLuca, H. F. Jorgensen, N.	6/13/74	Pat. No. 3879548 issued 4/22/75	Licensed as above.	\$ 1,208 \$ 7,500 (apportioned expense)
Method of Treating Milk Fever in Dairy Cattle with 1,25-Dihydroxycholecalciferol NIH Grant No. AM-14881	DeLuca, H. F. Jorgensen, N.	3/22/78	Pat. No. 4110446 issued 8/29/78	Licensed as above.	\$ 238 \$ 1,500 (apportioned expense)

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Process for Preparing 1 $\alpha$ -Hydroxylated Compounds NIH Grant No. AM-14881	DeLuca, H. F. Schnoes, H. K. Hamer, D. E. Paaren, H. E.	3/22/78	867,161 1/5/78 - aband. 1/30/79  968,738 12/13/78 c-i-p of 867,161)	To be included in licenses noted above - process being evaluated for commercial use.	\$ 596 \$ 3,000 (apportioned expense)
Process for Preparing 1 $\alpha$ -Hydroxylated Compounds NIH Grant No. AM-14881	DeLuca, H. F. Schnoes, H. K. Hamer, D. E. Paaren, H. E.	3/22/78	914,796 6/12/78 (c-i-p of 869,448 now aband.)	To be included in licenses noted above - process being evaluated for commercial use.	\$ 16,205 \$ 7,500 (apportioned expense)
1,25-Dihydroxy-cholecalciferol NIH Grant No. AMO 5800-10	DeLuca, H. F. Schnoes, H. K. Holick, M. F.	4/8/71	Pat. No. 3697559 issued 10/10/72	Licensed to above companies plus Hoffmann LaRoche (Switzerland), Abbott Laboratories, and Amersham/Searle. NDA has been approved in U.S. Product (ROCALTRON) on sale October 3, 1978 for use with renal patients.	\$ 15,108 \$ 18,000 (apportioned expense)

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1 $\alpha$ -Hydroxycholecalciferol NIH Grant No. AM-15512	DeLuca, H. F. Schnoes, H. K. Holick, M. F. Semmler, E.	12/2/71	Pat. No. 3741996 issued 6/26/73	Licensed as indicated under 24,25-dihydroxycholecalciferol, above. Product (1-ALPHA) is being sold in Eire, Great Britain, Holland, Denmark and Sweden.	\$31,697 \$18,000 (apportioned expense)
1 $\alpha$ -Hydroxyergocalciferol NIH Grant No. AM-14881	DeLuca, H. F. Schnoes, H. K. Lam, H. Y.	8/28/74	Pat. No. 3907843 issued 9/23/75	Licensed as above.	\$ 4,672 \$ 7,500 (apportioned expense)
3-Deoxy-1 $\alpha$ -Hydroxycholecalciferol NIH Grant No. AM-14881	DeLuca, H. F. Schnoes, H. K. Lam, H. Y.	8/28/74	Pat. No. 3906014 issued 9/16/75	Licensed as above. Reissue appln. filed. Interference in Reissue appln. settled. Reissue appln. on appeal in PTO.	\$ 8,297 \$11,000 (apportioned expense)

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Fluorovitamin D Compounds and Processes for Their Preparation NIH Grant Nos. 1488 1a DE-07031 GM-00236 BcH	DeLuca, H. F. Schoes, H. K. Napoli, J. L. Onisko, B. L.	6/11/79	928,279	Licensed as above.	\$ 329
			7/26/78		
			064,209		\$ 65
			8/6/79 (Div.)		
			064,210		\$ 105
			8/6/79 (Div.)		
			064,211		\$ 105
8/6/79 (Div.)					
			064,212		\$ 75
			8/6/79 (Div.)		
			064,213		\$ 65
			8/6/79 (Div.)		
			064,208		\$ 65
			8/6/79 (Div.)		\$ 3,000 (apportioned expense)



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Anti-vitamin D Compounds NIH Grant No. AM-14881	DeLuca, H. F. Schnoes, H. K. Onisko, B. L.	3/22/78	907,893 5/19/78 (c-i-p of 781,008, now aband.)	Efforts to license continuing.	\$11,364 \$ 5,000 (apportioned expense)
Rodenticide NIH Grant No. AM-14881	DeLuca, H. F. Schnoes, H. K. Suttie, J. W. Frank, H.	11/10/75	Pat. No. 4035493 issued 7/12/77	Licensed as indicated under 24,25-dihydroxycholecalciferol, above, with commercial interests other than present licensees listed being sought.	\$ 4,381 \$ 2,500 (apportioned expense)
Derivative of T-2 Toxin & Anguidine HEW GRS Grant in Pharmacy #G066	Ellison, R. A. Kotsonis, F. N.	2/6/76	Pat. No. 4129577 issued 12/12/78	Test results indicate invention probably not viable for licensing.	\$ 2,945
Electromagnetic Flowmeters for Blood or Other Conductive Fluids NIH Grant No. HE-97754	Folts, J. D.	9/29/71	Pat. No. 3739640 issued 6/19/73	No commercial interest found. Probably not licensable because of small market and negative technological factors.	\$ 1,700

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The Preparation and Use of Europium and Praseodymium Chelates of 3-Tri-Fluor-acetyl D-Camphor and 3-Perfluoro-n-butyl D-Camphor Predoctoral Fellow FO-1-DM-41571	Goering, H.L. Eikenberry, J. Koermer, G.S.	9/10/71	Pat. No. 3789060 issued 6/19/73	Licensed to Regis Chemical Co. and Aldrich Chemical Co., Inc. (Compounds being marketed.)	\$15,516 \$ 500 (apportioned expense)
Fluorinated Camphor Derivatives and Europium and Praseodymium Chelates Thereof Postdoctoral Fellow FO-1-GM-41571	Goering, H.L. Eikenberry, J. Koermer, G.S.	5/23/74	Pat. No. 3915641 issued 10/28/75 (Div.)		
Isolation of a Ca <sup>++</sup> Specific Ionophore from Mitochondria NIH Grant Nos. 5-PO1-GM-12847-09 5-PO1-GM-12847-10	Green, D.E. Blondin, G.A.	2/13/75	No pat. appln. filed to date.	Invention awaiting better definition before pat. appln. can be filed and commercial interest contacted.	\$ 250

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Phantom Material and Method NIH Grant No. 3-PO1-CA-14520-03	Madsen, E. L. Zagzebski, J. A. Banjavic, R. A. Burlew, M. M.	4/19/79	953,761 10/23/78	License agreement being negotiated.	\$ 1,253
Process for Preparing 1 $\alpha$ ,25-Hydroxy-cholecalciferol (No direct Federal funding - Government given license because of use of material supplied by DeLuca in making invention.)	Matsunaga, I. Ochi, K. Nagano, H. Shindo, M. Ishikawa, M. Kaneko, C. DeLuca, H. F.	2/19/76	Pat. No. 4022768 issued 5/10/77	Licensed with DeLuca et al inventions supra.	\$ 7,636 \$ 3,500 (apportioned expense)

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Compensation of Patient Thickness Variations and Differential X-ray Transmission Imaging NIH Fellowship Nos. 5-TO1-CA-05104-10 5-TO1-CA-05104-11	Mistretta, C. Kelcz, F.	1/15/74	Pat. No. 3854049 issued 12/10/74	Inventors' work has led away from the techniques covered by these patents. As industrial interest firms re. new techniques WARF hopes that secondary products may justify the granting of licenses under these patents also.	\$ 6,000
Differential X-ray Method and Apparatus NIH Grant No. 5-TO1-CA-05104-11	Mistretta, C. Kelcz, F.	5/9/75	Pat. No. 3974386 issued 8/10/76		\$23,728

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Multiplexing of Physiological Sensor Signals with Gamma Ray Camera Data Signals Grant No. PHS HRA 05000196-09	Nickles, R.	7/1/75	Pat. No. 4033335 issued 7/5/77	All U.S. manufacturers of gamma ray cameras have been contacted, with no interest having been expressed.	\$ 6,331
Correction of Data Loss in Gamma Ray Scintillation Cameras Grant No. PHS HRA 05000196-09	Nickles, R.	6/14/76	Pat. No. 4058728 issued 11/15/77		
A Three Dimensional Fast-Coincidence Gamma Imaging System DHEW Grant No. 5-EO3-PE-00196-07	Nickles, R. Meyer, H.	4/3/73	Pat. No. 3978337 issued 8/31/76	More related work with positron emitters, upon which this invention depends, is necessary to establish a favorable climate for this invention.	\$ 6,500

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Antibiotic Production by Mycoplasma Species IIRP NIH Grant No. 5RO1-A1-10505	Perlman, D. Sylvestre, M. Sakai, T.	9/1/75	Pat. No. 4025619 issued 5/24/77	Option agreement with Abbott Laboratories cancelled by Abbott. Inventors have been unable to reproduce the antibiotic factors covered by this patent. No current commercial interest.	\$10,300
Solid Phase Synthesis of Protected Peptides NIH Grant No. 5-RO1-AM-15507-03	Rich, D. H. Gurwara, S.	12/3/74	Pat. No. 4062746 issued 12/13/77	Work of other scientists in the field may create new interest in this invention. No commercial interest to date.	\$ 7,818
Solid Phase Synthesis of Protected Peptides NIH Grant No. 5-RO1-AM-15507-03	Rich, D. H. Gurwara, S.	2/3/77	Pat. No. 4101721 issued 7/18/78 (Div. )		\$ 1,000 (apportioned expense)
Solid Phase Synthesis of Protected Peptides NIH Grant No. 5-RO1-AM-15507-03	Rich, D. H. Gurwara, S.	2/3/77	850,141 11/10/77 (Div. )		

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Immobilization of Macromolecules on Tissue NIH Grant No. 5-SOS-RR-07098(07)	Richardson, T.	1/4/74	Pat. No. 4144131 issued 3/13/79	Additional licensing contacts with U.S. companies have occurred but no interest was expressed.	\$ 4,220
Method for Typing Human Leukocyte Antigens Grant Nos. NIH A1 11576-03 NIH A1 08439 NIH CA 14520 NIH GM 20130 NIH GM 15422-10 NIH CA 16836-01	Sheehy, M.J. Sondel, P.M. Bach, F.H. Bach, M.L.	6/21/77	921,487 7/3/78 (continuation of 697,545 now aband. )	Licensed to Biotest-Serum-Institut, Germany (see Bach et al invention supra).	\$ 1,049 \$ 2,500 (apportioned expense)
Process for Preparing L-dopa (thru microbiological means) NIH Grant Nos. 5-RO1-AM-04874-09 5-TO1-AM-09688-05 5-SO1-FR-05456-07	Sih, C.J.	9/25/69	Pat. No. 3671397 issued 6/20/72	No commercial interest.	\$ 4,000

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Process for Preparing dl-Strigol NIH Grant No. 2-RO1-AM-4874-12	Sih, C.J.	3/11/74	Pat. No. 3887547 issued 6/3/76	No commercial interest.	\$ 2,750
Process for Preparing dl-Strigol NIH Grant No. 2-RO1-AM-4874-12	Sih, C.J.	9/1/75	Pat. No. 3972916 issued 8/3/76 (Div. )		
Process for Preparing dl-Strigol NIH Grant No. 2-RO1-AM-4874-12	Sih, C.J.	9/1/75	Pat. No. 3954806 issued 5/4/76 (Div. )		
Glycosides of 2,6-Bis (Hydroxy)-3,7-Dioxabicyclo (3,3,0) Octane Grant No. NIH 2-RO1-AM-09688-11	Sih, C.J.	5/18/76	Pat. No. 4103006 issued 7/25/78	Potential interest in preliminary screening expressed by one company	\$10,417



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Prostaglandins and Methods for Preparing Same NIH Grant Nos. A955 & B738	Sih, C.J.	1/28/72	Pat. No. 4031129 issued 6/21/77	Licensed to Miles Laboratories.	Gross direct out-of-pocket expenses for Sih inventions \$104,277
Prostaglandins and Methods for Preparing Same NIH Grant Nos. A955 & B738	Sih, C.J.	9/12/77	Pat. No. 4142056 issued 2/27/79 (Div.)	Same as above.	
Prostaglandins and Methods for Preparing Same NIH Grant Nos. A955 & B738	Sih, C.J.	9/12/77	Pat. No. 4088536 issued 5/9/78	Same as above.	
3-Substituted Iodo Alkenyl Compounds NIH Grant No. AMO 4874	Sih, C.J.	9/1/75	Pat. No. 3962351 issued 6/8/76	Same as above.	

Not determinable at present time which inventions will or may be used commercially.

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3-Substituted Iodo Alkenyl Compounds NIH Grant No. AMO 4874	Sih, C.J.	9/1/75	Pat. No. 3962352 issued 6/8/76 (Div.)	Same as above.	Gross direct out-of-pocket expenses for Sih inventions \$104,277
3-Substituted Iodo Alkenyl Compounds NIH Grant No. AMO 4874	Sih, C.J.	9/1/75	Pat. No. 2962353 issued 6/8/76 (Div.)	Same as above.	
Method for Preparing 2-Substituted-4-Hydroxy Cyclopentene-1,3-Diones NIH Grant Nos. AM-9688 AM-4874	Sih, C.J.	9/29/72	Pat. No. 3773622 issued 11/20/73	Same as above.	

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Process for Stereospecifically Preparing Chiral-2-Substituted-4-Hydroxy-2-Cyclopenten-1-One NIH Grant No. AM-4874	Sih, C.J. Heather, J. B.	9/29/72	Pat. No. 3968141 issued 7/6/76	Same as above.	Gross direct out-of-pocket expenses for Sih inventions \$104,277
Process for Stereospecifically Preparing Chiral-2-Substituted-4-Hydroxy-2-Cyclopenten-1-One NIH Grant No. AM-4874	Sih, C.J. Heather, J. B.	9/8/76	Pat. No. 4057851 issued 11/8/77	Same as above.	
Rodenticide NIH Grant No. P-01-AM-14881	Suttie, J. W.	5/28/75	Pat. No. 4021568 issued 5/3/77	No commercial interest.	\$ 5,125

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Oxidative Decar- boxylation of Car- boxylic Acids NIH Grant No. 5-RO1-GM-13598 NSF Grant No. 76-1-MPS-03396	Trost, B. M. Tamaru, Y.	3/18/75	Pat. No. 4007211 issued 2/8/77	Nature of process brought to attention of several companies - no commercial interest to date.	\$ 2,500
Stereocontrol in allylic Alkylation Catalyzed by Palladium NIH Grant No. 5-RO1-GM-13598 NSF Grant No. 76-1-MPS-03396	Trost, B. M. Verhoeven, T.	2/6/76	Pat. No. 4051157 issued 9/27/77	No commercial interest to date.	\$ 2,061

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Method & Apparatus for Dialysis NIH Grant No. GM-16133	Updike, S.J.	3/27/73	Pat. No. 3846236 issued 11/5/74	A license has been granted to a German company, Enka AG, Wuppertal, West Germany. Collaborative work between the German company and Prof. Updike's lab continues.	\$12,967 \$ 3,000 (apportioned expense)
Method & Apparatus for Dialyzing Carbon Dioxide from Blood Plasma NIH Grant No. GM-16133	Updike, S.J.	3/27/73	Pat. No. 3953329 issued 4/27/76		
Catalyst Containing Semi-Permeable Membrane for Respiratory Gas Exchange by Dialysis NIH Grant No. GM-16133	Updike, S.J.	5/15/74	Pat. No. 3996141 issued 12/7/76		

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Device and Method for Sample Application by Water Regain of a Gel NIH Grant Nos. GM-16133 GM-70157	Updike, S. J.	1/4/74	Pat. No. 4138474 issued 2/6/79	Licensed to Nichols Institute, San Pedro, California. A license with a European company is being negotiated.	\$32,226 \$ 4,000 (apportioned expense)
Method for Immunological Determinations NIH Grant Nos. GM-16133 GM-70157	Updike, S. J.	5/15/74	Pat. No. 3970429 issued 7/20/76		
The Preparation of Dry, Porous Gel Particles Having High Water Regain or Liquid Sampling NIH Grant Nos. GM-16133 GM-70157					
Reagent for Immunological Determinations NIH Grants He-09922 GM-16133 K3-HE-18184	Updike, S. J. Goodfriend, T.	4/29/70	Pat. No. 3793445 issued 2/19/74		

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Apparatus for Moni- toring Blood Glucose Levels and Elements NIH Grant No. GM-16133	Updike, S. J. Shults, M. C.	8/7/79	947,949 10/2/78	License being negotiated with small U. S. company.	\$ 1,780

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INVENTIONS ON WHICH DHEW WAIVED RIGHTS TO NATIONAL SCIENCE FOUNDATION

Sensitization of Radio Thermoluminescence in Dosimetry Grade LiF by Simultaneous Annealing and Ultra-violet Illumination NIH Grant No. 5-TO1-CA05105-11 NSF Grant No. 74-52-GH 34585	Mayhugh, M. Fullerton, G.	2/22/74	Pat. No. 3962586 issued 6/8/76	Potential commercial interest exhausted.	\$ 3,600
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INVENTIONS ON WHICH NSF WAIVED RIGHTS TO DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

The Production of Radiation Induced Thermally Activated Current (RITAC) Devices by Selective Purification of Dielectric Solid Material NIH Grant No. 5-TO1-CA-05104 10 & 11 NSF Grant No. GH-34585	Moran, P.R. Podgorsak, E. Fullerton, G. Fuller, G.E.	3/18/74	Pat. No. 3935457 issued 1/27/76	Efforts to license continue - no real commercial interest to date.	\$ 8,923
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