



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

CONTROL DATA
CORPORATION

12 September 1966

Colorado State University
Department of Botany and Plant Pathology
Taxonomy Laboratory
Fort Collins, Colorado 80521

Attention: Mr. David J. Rogers
Professor of Botany

Dear Mr. Rogers:

We have your letter of 22 August 1966, directed to Mr. A. Stern of my department. Your letter concerned the validity of our Invoice No. 500687 in the amount of \$452.30 which covered time on our 1604 Computer.

I have investigated the matter and I agree with you that the amount should not have been billed. The administrative error which resulted in the billing and our subsequent collection effort should not have occurred but it did.

We sincerely apologize for the inconvenience this has caused you.

Very truly yours,

CONTROL DATA CORPORATION



H. W. Kramer
Credit Manager

HWK:ka

cc: William C. Norris

- Taxonomy Laboratory

August 22, 1966

Mr. A. Stern
Control Data Corporation
Corporate Headquarters
8100 34th Avenue South
Minneapolis, Minnesota 55440

Dear Mr. Stern:

Ref.: Your letter August 16

Your records are incorrect and incomplete. I enclose a copy of my letter to your Chicago office, dated April 20, 1966. Inasmuch as I received no reply to my courteous effort to correct the incorrect billing, I assumed that that was your curt method of recognizing your error.

I have no liability to CDC. All just and due bills have been paid. Your letter is, therefore, inappropriate.

My efforts to keep my account with the Great Neck service center straight go back considerably farther than the above mentioned letter. You will find somewhere in the files of CDC a letter dated November 1, 1965, to a salesman then working for the New York office, a Mr. Jack Conifrey. If you find that letter, you will discover that there was already confusion about your billing for work done on our agreement number 324-1341. Again I made an effort to straighten that problem out, but again did not receive the courtesy of a reply.

Furthermore, I spent considerable time and money in personal phone calls in May of this year to a Mr. Donald Geschlecht of your own office attempting to get our accounts straight. I thought that we finally had settled all the various bills, and had hoped that by that time you would have been satisfied. Since this is not the case, I am at a loss to know how to free myself from your continuing errors. Your letter is an insult, and I trust that I have made this clear.

David J. Rogers
Professor of Botany

DJR:ch

Enc.

cc: President, Control Data Corporation

- Taxonomy Laboratory

April 20, 1966

C O P Y

Control Data Corporation
Data Centers Division
P.O. Box 9817
Chicago, Ill. 60690

Gentlemen:

Enclosed is a copy of invoice No. 500687, for \$452.30. We have not paid this in hopes that some clarification would be made by this time. Since it has not been straightened out, let me review the situation.

We have had no computing done, no programming, or other charges to us since December, 1965. At that time, we received, and paid invoice No. B8935D, month of December. The following data from that invoice is as follows: Project D12413, Area 3004, Customer No. 4675, Tax 300. The total bill was \$516.00.

I hope you will be able to review and correct this situation.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

CONTROL DATA
CORPORATION

16 August 1966

Mr. David Rogers
Department of Botany
Colorado State University
Fort Collins, Colorado 80521

Dear Sir:

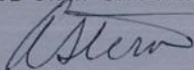
Your account has been turned over to me for collection. Our records indicate that you have failed to remit payment to Control Data covering invoice No. 500687 dated 26 February 1966, in the amount of \$452.30.

I trust it is clear to you that you obligated yourself as an individual when you contracted for our services. If for some reason you feel in all honesty that legitimate circumstances exist absolving you from this liability, then please state them in a letter to us; in the alternative, please remit a draft in the above amount within 10 days.

I presume we can dispose of this matter in an amicable manner.

Very truly yours,

CONTROL DATA CORPORATION



A. Stern
Corporate Credit Specialist

AS:ka

- Taxonomy Laboratory

April 20, 1966

Control Data Corporation
Data Centers Division
P.O. Box 9817
Chicago, Ill. 60690

Gentlemen:

Enclosed is a copy of invoice No. 500687, for \$452.30. We have not paid this in hopes that some clarification would be made by this time. Since it has not been straightened out, let me review the situation.

We have had no computing done, no programming, or other charges to us since December, 1965. At that time, we received, and paid invoice No. B8935D, month of December. The following data from that invoice is as follows: Project D12413, Area 3004, Customer No. 4675, Tax 300. The total bill was \$516.00.


I hope you will be able to review and correct this situation.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

THE NEW YORK BOTANICAL GARDEN
BRONX • NEW YORK 10458  LU 4-8500

May 31, 1966

Dr. David J. Rogers
Dept. of Botany
Colorado State University
Ft. Collins, Colorado

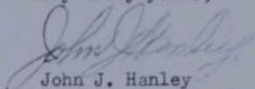
Dear Dave:

I enclose a letter from Control Data Corporation,
requesting payment of \$2,533.58. Have you taken care of
this?

If so please inform Control Data or let me know.

Thanks and best regards.

Very truly yours,



John J. Hanley
Head, Accounting Dept.

JJH:ht
enc:

*Taken care of
already
File*

CONTROL DATA

CORPORATION

8100 34TH AVENUE SOUTH • MINNEAPOLIS, MINNESOTA 55440 • 888-5555

May 26, 1966

New York Botanical Gardens
Moshula Parkway
Bronx, New York

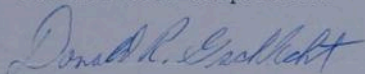
Attention: John J. Hanley
Accounting Department

Dear Sir:

Enclosed are duplicate invoices which are long past due. We have received \$4,883.74 in December as payment on your account. However, the balance is still outstanding.

If, for some reason, the attached invoices should remain unpaid, please let us know; if not, please remit \$2,533.58 at your earliest convenience.

Thank you,
Very truly yours,
Control Data Corporation



Donald R. Gschlecht
Accounting Department
Data Centers Division

CC: B.A. McCarthy

DRG/sjl

NOTE: TO INSURE PROPER CREDIT TO YOUR ACCOUNT, PLEASE IDENTIFY PAYMENT BY RECORDING THE COMPLETE INVOICE NO. (INCLUDING LETTER PREFIX) ON YOUR REMITTANCE OR ATTACH A COPY OF THIS INVOICE.

INVOICE NO. B68499

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P.O. BOX 3770
RINCON ANNEX
SAN FRANCISCO, CALIFORNIA

P.O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

P.O. BOX 9817
CHICAGO, ILLINOIS 60690

SOLD TO .
 . New York Botanical Gardens
 . Moshula Parkway
 . Bronx, New York
 .

SHIP TO .
 .
 .
 .
 .

INVOICE DATE	8/31/65
CUSTOMER ORDER NO.	324-1341
FOR THE MONTH OF	July
DATE SHIPPED	
ATS NUMBER	Terms: Net

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN			
D 59080	3004	4675	300				
PROJECT SUFFIX	STEP CODE	EQUIPMENT / SERVICES		TIME USED	RATE / HOUR	TOTAL PRICE	

Fixed Price Contract

\$5,650.00

CONTROL DATA
CORPORATION

DATA CENTERS DIVISION

NOTE: TO INSURE PROPER CREDIT TO YOUR ACCOUNT, PLEASE IDENTIFY PAYMENT BY RECORDING THE COMPLETE INVOICE NO. (INCLUDING LETTER PREFIX) ON YOUR REMITTANCE OR ATTACH A COPY OF THIS INVOICE.

INVOICE NO. **B68499**

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P. O. BOX 3770
RINCÓN ANNEX
SAN FRANCISCO, CALIFORNIA

P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

SOLD TO

- New York Botanical Gardens
- Moshula Parkway
- Bronx, New York
-

SHIP TO

-
-
-
-

INVOICE DATE

8/31/65

CUSTOMER ORDER NO.

324-1341

FOR THE MONTH OF

July

DATE SHIPPED

ATS NUMBER

Terms: Net

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59080	3004	4675	300					
PROJECT SUFFIX	STEP CODE	EQUIPMENT / SERVICES		TIME USED	RATE / HOUR	TOTAL PRICE		

Fixed Price Contract

\$5,650.00

NOTE: TO INSURE PROPER CREDIT TO YOUR ACCOUNT, PLEASE IDENTIFY PAYMENT BY RECORDING THE COMPLETE INVOICE NO. (INCLUDING LETTER PREFIX) ON YOUR REMITTANCE OR ATTACH A COPY OF THIS INVOICE.

INVOICE NO. B68482

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P. O. BOX 3770
RINCON ANNEX
SAN FRANCISCO, CALIFORNIA

P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

SOLD TO

- New York Botanical Gardens
- Moshula Parkway
- Bronx, New York

SHIP TO

-
-
-
-

INVOICE DATE	8/31/65
CUSTOMER ORDER NO.	324-068
FOR THE MONTH OF	July
DATE SHIPPED	
ATS NUMBER	Terms: Net

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN			
D 59012	3004	4675	300				
PROJECT SUFFIX	STEP CODE	EQUIPMENT / SERVICES		TIME USED	RATE / HOUR	TOTAL PRICE	

160A Plotter	2.26	\$ 25.00	\$ 56.50
Tape to Print	.10	90.00	9.00
Tape to Print	.01	50.00	.50
2 Hour 1604 Usage	2.69	250.00	672.50
24 Hour 1604 Usage	.75	200.00	<u>150.00</u>

\$888.50

Duplicate Invoice

INVOICE NO. B7697-D

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P. O. BOX 3770
RINCÓN ANNEX
SAN FRANCISCO, CALIFORNIA

P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

SOLD TO

- New York Botanical Gardens
- Moshula Parkway
- Bronx, New York
-

SHIP TO

-
-
-
-
-

INVOICE DATE	8/31/65
CUSTOMER ORDER NO.	324-068
FOR THE MONTH OF	August
DATE SHIPPED	
ATS NUMBER	Terms: Net

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59012	3004	4675	300					
PROJECT SUFFIX	STEP CODE	EQUIPMENT / SERVICES		TIME USED	RATE / HOUR		TOTAL PRICE	

1604A	1.07	\$250.00	\$267.50
Tape to Print	.02	90.00	1.80
160A Plotter	.22	25.00	5.50
Reproducer	.20	10.00	2.00
Interpreter	.20	12.00	2.40
Magnetic Tape Rental	2 tapes	5.00	10.00
1000 Cards		1.04/M	<u>1.04</u>
			290.24
New York Sales Tax			<u>.02</u>
			<u>\$290.26</u>

Duplicate Invoice

INVOICE NO. B 58031

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P. O. BOX 3770
RINCON ANNEX
SAN FRANCISCO, CALIFORNIA

P. O. BOX 2897
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

SOLD TO .
 . New York Botanical Gardens
 . Moshula Parkway
 . Bronx, New York
 .

SHIP TO .
 .
 .
 .
 .

INVOICE DATE	2/10/65
CUSTOMER ORDER NO.	Ltr Agree 324-074
FOR THE MONTH OF	January
DATE SHIPPED	
ATS NUMBER	Terms: Net

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59012	3004	4675	300					

PROJECT SUFFIX	STEP CODE	EQUIPMENT / SERVICES	TIME USED	RATE / HOUR	TOTAL PRICE
		1604A Shift 1	.14	\$250.00	\$ 35.00
		1604A " 2	2.03	225.00	456.75
		Tape to Print Shift 2	.70	70.00	49.00
		Reproducer Shift 1 & 2	.42	10.00	4.20
		Keypunch & verify Shift 1 & 2	.34	4.50	1.53
		Tape Storage	5 tapes	5.00	25.00
		Cards	2000	1.04/M	2.08
		1 Ply Paper		15.00/Box	15.00
					<u>\$588.56</u>

Duplicate Invoice



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

Customer

New York Botanical Gardens
Bronx Park,
New York, New York

Proposal/Agreement No. 324-1341
Proposal Date: July 7, 1965
Proposal Expires on: August 31, 1965
Agreement Period: N/A

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as Control Data). This proposal becomes a service agreement when agreed to by the Customer and accepted by Control Data and is so indicated below. The agreement becomes effective on the date this document is accepted by Control Data.

The proposal/agreement consists of the schedules marked with an "X" below; each schedule so marked is hereby attached and included as part of the agreement.

- Schedule A - Statement of Work
 Schedule B - Service Charges
 Schedule C - General Terms and Conditions
 Schedule D - Special Conditions

The following named Customer personnel are authorized to order Data Center services under this agreement:

This agreement may only be modified by a written amendment agreed to by the Customer and accepted by Control Data.

Accepted by:

Agreed to:

CONTROL DATA CORPORATION
8100 - 34th Avenue South
Minneapolis, Minnesota 55440

By *D.B. Kassin*
N.Y. Dist. Dir.
Title
7 July 65
Date

By *David F. Rogers*
Title
9 July 65
Date



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
STATEMENT OF WORK

(Schedule A)

The Customer agrees to purchase, and Control Data by its acceptance, agrees to provide the services listed below:

Pursuant to our agreement #324-104, Control Data agrees to complete a program to determine, for each state of each character, the extent to which the presence of such state reduces the uncertainty with regard to all other characters, and to print the results in matrix form. The scope of work under this contract also includes 5 hours of 1604-A production time at our Great Neck Office.

Proposal/Agreement No. 324-1341

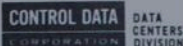
CONTROL DATA DATA
CORPORATION CENTERS
DIVISION

DATA CENTER
SERVICE PROPOSAL/AGREEMENT
SERVICE CHARGES

(Schedule B)

Charges for the services to be provided under Schedule A will be at the rates set forth herein:

The cost of completion of this program including 5 hours of 1604-A
production time is \$5,650.00



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
GENERAL TERMS AND CONDITIONS

(Schedule C)

I. Responsibilities of the Customer:

A. Customer Furnished Data

The Customer agrees to provide the data and supplies required by Control Data to perform its services under this agreement. Unless Schedule A provides otherwise, the data and supplies provided shall be compatible with Control Data's equipment and in good condition for machine processing. It is further agreed that such data and supplies shall be provided in accordance with the schedule and the dates required under Schedule A. If the Customer fails to conform to the responsibilities contained herein or if reruns are required because of Customer error, Control Data's delivery obligations and charges will be appropriately adjusted.

B. Service Charges

Unless Schedule B provides otherwise, Control Data may bill the Customer in intervals of 30 days after the starting date of this agreement. All invoices are due upon receipt. The Customer agrees to pay Control Data the stated charges plus amounts equal to any Federal, State, or Local Excise, Sale or Use Taxes applicable to the services or supplies provided by this agreement no matter how designated, levied or based.

C. Other Charges

Unless Schedule B provides otherwise, the services or supplies required to fulfill this agreement and not specified on Schedule B, shall be charged to the Customer at Control Data's published rates for such services or supplies.

D. Source Data

The Customer agrees to maintain source data consistent with generally accepted data processing procedures.

II. Responsibilities of Control Data:

A. Performance

Control Data agrees to perform the services required under this agreement with good workmanship in the art, skills and trades purchased hereunder consistent with the generally accepted data processing procedures.

B. Confidential Information

Control Data agrees that the data furnished by the Customer, and all programs, tapes and specifications utilized in connection with the processing of such Customer data, shall be treated and maintained by Control Data as confidential information. It is further agreed that this information shall not be disclosed to anyone other than the Customer, unless the Customer has given written consent to such disclosure.

C. Fair Labor Standards Act

Control Data certifies that the results furnished under this agreement will be produced in compliance with the requirements of the Fair Labor Standards Act of 1938, as amended.

D. Limitation of Liability

Control Data shall use due care in processing the Customer's work, but Control Data shall be responsible only to the extent of correcting any errors which are due to Control Data's machines or to faulty operation on the part of any Control Data employee. In any event, Control Data's liability with respect to this agreement, shall be limited to the total charge for services provided under this agreement and shall not include any contingent liability. Control Data makes no representation or warranty, expressed or implied, with respect to the accuracy or freedom from error of its library, utility and systems programs applicable to the Customer's work.

If a periodic restart has been specified under Schedule A, Control Data's liability shall be further limited to reruns not exceeding the machine time necessary to return to the last restart point prior to when an error occurred.

CONTROL DATA

CORPORATION

8100 34TH AVENUE SOUTH • MINNEAPOLIS, MINNESOTA 55440 • 888-5555

May 26, 1966

MAY 30 1966

612

Dr. David Rogers
Department of Botany
Colorado State University
Fort Collins, Colorado 80521

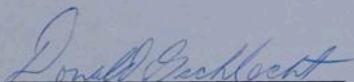
Dear Sir:

A review of the New York Botanical Gardens account indicates the following invoice is overdue for payment:

<u>Invoice No:</u>	<u>Project No.</u>	<u>Date</u>	<u>Amount</u>
500687	12413	2-26-66	\$452.30

We have received word from The New York Botanical Garden that you are no longer connected with them and have refused payment, therefore.

If for some reason, the above invoice should remain unpaid, please let us know; if not, please remit \$452.30 at your earliest convenience. Thank you.



Donald Gschlecht
Accounting Department
Data Centers Division

cc: B. A. McCarthy

Invoice date CDC (read from
Audio tape)
B8935D

Mo of Dec.

D 12413 3004 4675 T 300

Progr 3 hrs 20/ks 60.00

Cards 6.00

2 hrs. 1604 usage
1.08 250/ks 450.00

\$516.00

NOTE: TO INSURE PROPER CREDIT TO YOUR ACCOUNT, PLEASE IDENTIFY PAYMENT BY RECORDING THE COMPLETE INVOICE NO. (INCLUDING LETTER PREFIX) ON YOUR REMITTANCE OR ATTACH A COPY OF THIS INVOICE.

INVOICE NO. **500687**

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P. O. BOX 3770
WINCON ANNEX
SAN FRANCISCO, CALIFORNIA

P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

SOLD TO

- Dr. David Rogers
- Department of Botany
- Colorado State University
- Fort Collins, Colorado 80521

SHIP TO

INVOICE DATE	February 26, 1966
CUSTOMER ORDER NO.	324-068
FOR THE MONTH OF	January, 1966
DATE SHIPPED	
ATS NUMBER	Terms: Net

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
J 12413	3004	4675	300	J Phillips				
PROJECT SUFFIX	STEP CODE	EQUIPMENT / SERVICES		TIME USED	RATE / HOUR	TOTAL PRICE		

Code Program	2.00 hrs	15.00	\$ 30.00
160A Plotter	2.05 hrs	25.00	51.25
Tape to Print	.86 hrs	90.00	77.40
2 Hr. 1604 Usage	1.10 hrs	250.00	275.00
Forms			8.00
Mag. Tape Rental			5.00
Forms			5.00
			\$ 451.65
N.Y. State Tax			.65
			<u>\$ 452.30</u>

December 22, 1965

Prof. Henry S. Fleming
Colorado State University
Fort Collins, Colorado 80521

Dear Henry:

Herewith are the printouts of input data, similarity ratios, and sub-graphs, as requested in your letter of October 26, 1965. I have had some difficulty with the Skyline program, but will send results shortly.

I regret very much the long delay in obtaining these results.

Sincerely,



Henry C. Mabie
CONTROL DATA CORPORATION

HCM:emc

Enclosures

- Taxonomy Laboratory

January 31, 1966

Mr. Henry Mabie
Control Data Corporation
575 Lexington Avenue
New York, New York

Dear Henry:

I'd appreciate it if you would forward to me the port-a-punch cards for the last run on the computer. Also, if you have the S_{ij} 's for that run, I'd like to have them too.

Sincerely,

David J. Rogers
Professor of Botany

DJR/pam

52-2

CONTROL DATA
CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P.O. BOX LISTED BELOW

P.O. BOX 3770 RINCON ANNEX SAN FRANCISCO, CALIFORNIA
P.O. BOX 9817 CHICAGO, ILLINOIS 60690
P.O. BOX 2697 CHURCH STREET STATION NEW YORK, NEW YORK 10008

NOTE: TO INSURE PROPER CREDIT TO YOUR ACCOUNT, PLEASE IDENTIFY PAYMENT IN DETAIL ON YOUR REMITTANCE OR ATTACH A COPY OF THIS INVOICE.

INVOICE NO. **B** 7848 D

DATE 12/1/65

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO.

SOLD TO :

.
N.Y. Botanical Gardens
. Moshula Parkway
. Bronx, New York

SHIPPED TO:

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN			
D-2413	3004	4675	300	J. Conifrey			

ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL	UNIT PRICE	TOTAL PRICE
			Cards, forms		\$ 1.58
			Program Maintenance	12.00 hrs. \$ 20.00/hr.	240.00
			Card-to-tape	0.08 hrs. 90.00/hr.	7.20
			Tape-to-print	0.06 hrs. 90.00/hr.	5.40
			2 hr. 3600 usage	0.05 hrs. 600.00/hr.	30.00
			Key punch	0.10 hrs. 5.75/hr.	.58
			Keyverify	0.60 hrs. 5.75/hr.	3.45
			407 Accounting Machine	0.10 hrs. 20.00/hr.	2.00
			Reproducer	0.20 hrs. 10.00/hr.	2.00

NY Tax (5%) .08

\$ 292.29

*1/20/66
paid from 2678*

- Taxonomy Laboratory

November 22, 1965

Mr. Henry Mebie
Control Data Corporation
575 Lexington Avenue
New York, N.Y.

Dear Henry,

During the course of rewriting SIMILAR George Estabrook and I found a bug which affects certain cases of similarity ratios. It is possible for the same character to have both ordered and unordered states. For example, if $N=3$ (number of ordered states) in a character whose total number of states = 5. In such a case the ordered states are assigned the lowest values (in this example 1, 2 and 3) and the unordered states are assigned the remaining values (in this example 4 and 5). In order to separate these cases, a test must be inserted. Please correct the SIMILAR source deck as follows (or with an equivalent correction):

Change the statement following statement 34 from IF(DE) 36, 35 to IF(DE)136, 35 and follow this with the statement 136 IF (KWORD(M).GT. NY(M).CK.NB(M).GT.NY(M)) 38, 36.

The fact that you haven't heard from me before is, of course, a good sign. I may yet have to bother you with questions, but so far the conversion is going quite well. My best to you and your colleagues at CDC.

Sincerely,

Robert Brill

RB/ec
CC - Dr. Rogers

- Taxonomy Laboratory

Nov. 1, 1965

Mr. John W. Coniffrey
Control Data Corporation
575 Lexington Avenue
New York, N.Y.

Dear Jack,

We have a statement of account sent to us at this address from CDC in Minneapolis. In it we still have the same billing that we have had right along, and want to know if you know anything about this particular bill. Does this summarize your accounting or your record of our expenditures? Or, does it not? This letter was dated October 26th.

One of the items that they have billed us for is dated Feb. 10, 1965. I thought we had certainly cleaned up all the accounts for that period before we left New York.

Please let me hear from you one way or the other about this money very shortly. If it is not taken care of this month, unfortunately, the Control Data Corporation will not get its money. Let me repeat it. Unless this is cleaned up this month, and very quickly, CDC will not be able to get any money because we will have lost it. Please let me hear from you as soon as you get this letter.

Sincerely,

David J. Rogers
Professor of Botany

DJR/ec

CONTROL DATA

CORPORATION

8100 34TH AVENUE SOUTH • MINNEAPOLIS, MINNESOTA 55420 • 888-5555

OCT 28 1965

October 26, 1965

Dr. David J. Rogers
Professor of Botany
Colorado State University
Fort Collins, Colorado 85021

STATEMENT OF ACCOUNT
New York Botanical Gardens
Bronx, New York

Invoice Number	Date	Project Number	Amount
B 58031	2/10/65	59012	\$ 588.56
B 68482	8/31/65	59012	888.50
B 68499	8/31/65	59080	5,650.00
B 7697	9/ 1/65	59012	290.26
			<hr/>
			\$7,417.32
			<hr/> <hr/>

Sept. 16, 1965

Mr. Jack Conifrey
CDC
New York, NY

Dear Jack:

I have just instructed the New York Botanical Garden to pay all of a bill for 888.50 from CDC, and part of a bill which totaled something in the order of 5,600.00, which was for the last program (character analysis) we did there. We will have to pay the remaining amount for the programming from our accounts here, and I would appreciate it if you would determine how much remains on that bill, after the Garden has paid what they can. Then bill me here at the above address for the remainder.

To understand the reasons for this, let me explain. We were working on two separate grants, one from the Office of Naval Research, one from NIH. The grant from ONR was to run only until December of this year, so we decided to leave the remaining funds of that grant at New York, and expend them as though we still worked there. The NIH grant was transferred to Colorado State Univ., so we have funds to pay the bill, but will have to be billed separately for that amount left when the ONR grant funds are exhausted.

If it is not clear what I want, please do not hesitate to let me know.

As I recall, we agreed to five hours production on the 160h. Could you find out how much of that time remains?

We are slowly getting settled here. It's great country, and the University is growing like a weed. You ought to come out to Marlboro country and see for yourself. We'd be glad to have you.

Sincerely,

David J. Rogers
Professor of Botany

INSTRUCTIONS TO DELIVERING EMPLOYEE

Deliver *ONLY* to
addressee

Show address where
delivered

(Additional charges required for these services)

RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE *(must always be filled in)*

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

Linda Nelson

DATE DELIVERED

11-1-65

SHOW WHERE DELIVERED *(only if requested)*

-BK

207E

- Taxonomy Laboratory

October 26, 1965

Mr. John W. Conifrey
Control Data Corporation
575 Lexington Avenue
New York, N.Y.

Dear Jack,

I am sending under separate cover a deck of Port-A-Punch data cards in your name. The accompanying enclosure should contain all the information that Henry needs for his dimension, etc. statements.

We want back:

1. Printout of S_{ij}'s (not ordered)
2. Printout of data feed in.
3. Plot. - skyline.
4. Sub-graph printout.
5. Printout of minimum similarities.

We have been waiting for your telephone call. As I figure it, we have considerable time coming to us. The only piece of data that we have run against it is (1) Opolonia containing only 35 objects which took three minutes and ten seconds. This figure is on the printout sheets. The last piece of data that Henry ran before the contract (character analysis with five hours of 1604A time) was a re-run of Manihot Esculenta. This run was several weeks before the contract.

For CDC's sake, you had better 'get cracking' on this business. If we cannot have the instructions back to New York Botanical Garden and through their red tape by November 15th on the proper forms, etc. the money will revert to some Admiral's slush-fund and CDC will have an exciting time -- it will make the Viet Nam war look like a skirmish -- getting their money.

Are you the father of a boy?

Sincerely,

Henry S. Fleming
Associate
Professor of Botany

*See attachment
③ list of characters (Hurst's list)*

HJK/ec

FOR HENRY

Number of objects = 150

Number of characters = 43

Number of attributes = 101 to 365 in lots of 70(101 - 170, 201 - 270, 301 - 365)
366 - 370 are not used.

Character	Number of attributes	N =
1	5	5
2	4	4
3	4	4
4	4	4
5	5	5
6	4	0
7	5	0
8	2	0
9	5	0
10	2	0
11	5	5
12	4	4
13	3	3
14	3	3
15	3	3
16	4	4
17	3	3
18	6	6
19	4	0
20	4	4
21	4	0
22	4	0
23	6	5
24	6	0
25	7	0
26	4	0
27	6	0
28	8	0
29	7	0
30	2	0
31	8	0
32	6	0
33	8	0
34	3	0
35	6	0
36	5	0
37	4	0
38	4	0
39	4	0
40	6	0
41	7	0
42	5	0
43	6	0

Notice that characters 1, 2, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17, 18, 20 and 23 are ordered characters and with the exception of 23 have the same N as the number of attributes in the character. Character 23 has 6 attributes, but has a N value of 5 or one less than the number of attributes in the character.

FOR HENRY

Number of objects = 150

Number of characters = 43

Number of attributes = 101 to 365 in lots of 70(101 - 170, 201 - 270, 301 - 365)
366 - 370 are not used.

Character	Number of attributes	N =
1	5	5
2	4	4
3	4	4
4	4	4
5	5	5
6	4	0
7	5	0
8	2	0
9	5	0
10	2	0
11	5	5
12	4	4
13	3	3
14	3	3
15	3	3
16	4	4
17	3	3
18	6	6
19	4	0
20	4	4
21	4	0
22	4	0
23	6	5
24	6	0
25	7	0
26	4	0
27	6	0
28	8	0
29	7	0
30	2	0
31	8	0
32	6	0
33	8	0
34	3	0
35	6	0
36	5	0
37	4	0
38	4	0
39	4	0
40	6	0
41	7	0
42	5	0
43	6	0

Notice that characters 1, 2, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17, 18, 20 and 23 are ordered characters and with the exception of 23 have the same N as the number of attributes in the character. Character 23 has 6 attributes, but has a N value of 5 or one less than the number of attributes in the character.

57
Control Data
September 2, 1965

Dr. David Rogers
New York Botanical Gardens
Bronx Park
New York, New York
10458

Dear Dr. Rogers:

During the past three days, in the few minutes I can snatch for reading at breakfast, I have been going through Geoffrey Hellman's article on THE TAIL OF TAXONOMY in an ancient NEW YORKER. This, however, is as close as the press of circumstance has permitted me to come to progress on a SCIENTIFIC AMERICAN article about FINITE MATHEMATICS AND THE NEW TAXONOMY during most of the two months that have elapsed since we all were able to lunch over the subject in the Bronx.


I am greatly bothered by the fact that other aspects of our department's activities continually press ahead of what can be a good bit of public relations for Control Data and the Gardens and you, if ever we can get through it. It has been here, however, as it is with you: other things keep coming first.

In the near future, this department will have another writer or two. I hope that this may mean my being able to devote more time to such arcane and personally stimulating work as your article, though I'm advised that the additional writers will represent for me not only other outlets but also more supervision in connection with our work-load. Still, hope springs eternal in the corporate breast as does Manihot esculenta in the tropic clime. I certainly hope that we will eventually be able to give sufficient priority to economic botany and computerized taxonomy to be able to help you get your article in print.

In the NEW YORKER article you said that there wasn't at that time, when you were working with IBM, a computer with enough core-memory space to hold all the information you had to process. I trust that you're finding enough space now with Control Data, and I gather that you've heard from Jack Confrey that there's more to come in the next few weeks with the completion of our installing a 3600 system in our Manhattan Data Center. I certainly hope that computers are eventually going to be of help to botanists not only in classification but simply in the filing of data you all are accumulating. Hellman's article suggests that otherwise, you're going to be engulfed in your own herbaria.

I'll write again when and if our situation changes. Meanwhile, I have wanted to let you know that our interest in your work and in publicizing it did not die as soon as I was uprooted from your Gardens. I remain

Most cordially yours,



Angus W. Clarke, Jr.
AWC:kr

7/21/65

Jack W. Conifrey

Angus Clarke

Botanical Gardens Job

cc: R. J. Werdan
R. R. Mau
D. J. Rogers

Hold !!!

Your note, Jack, was very kind and most welcome, but don't thank me yet. I've done nothing but sweat out (literally) getting the initial facts on the Botanical Gardens job. The hard work, the figurative sweating, lies ahead. I'll get to it and, hopefully, on with it, as the course of events here permits.

Meanwhile, it was a pleasure meeting you, Dr. Rogers and George and Mr. Fleming, and learning about the relationship of our computers to a real advance, so far as I can see, in the whole science of botanical taxonomy, not to mention such related fields as medical diagnosis. If I'm able to write it all up with reasonable accuracy and clarity, I shall be delighted.

In any case, it was both pleasant and interesting for me, and I will send a copy of this memo to Dr. Rogers to thank him and his fellow mathematico-botanists for their cordial expenditure of time in attempting to enlighten.

Yours sincerely,


Angus
AWC/kr

Sept. 20, 1965

Mr. Jack Conifrey
Control Data Corp.
Great Neck, Long Island

Dear Jack:

I enclose CDC invoice number BD 7697, Aug. 31, 1965. Will you please check to see whether this does not fall under our agreement for five hours production time? I think it must, for we've been going on the assumption that you would include it under the cost of the programming of the character analysis.

Let me know if this is true, and if so, let me know whether you need any back-up from us.

Sincerely,

David J. Rogers
Professor of Botany

Encl.--1

REGISTERED NO. 8043 OCT 28 1965



Value \$ M.V. Spec. del'y fee \$
Fee \$ 60 Ret. receipt fee \$ 10
Surcharge \$ _____ Ret. del'y fee \$ _____
Postage \$ 230 Airmail

Postmaster, By [Signature]
From D. J. Rogers
C-50

To John W. Conifrey
575 Lexington Ave.
N.Y. N.Y.

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008NOTE: TO INSURE PROPER CREDIT TO
YOUR ACCOUNT, PLEASE IDENTIFY PAY-
MENT IN DETAIL ON YOUR REMITTANCE OR
ATTACH A COPY OF THIS INVOICE.INVOICE NO. **B 66500**DATE **7/16/65**

SOLD TO :

New York Botanical Gardens
Moshula Parkway
Bronx, New York

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. **324-068**
59012 NYB

SHIPPED TO :

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59012	3004	4675	300					
ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL				UNIT PRICE	TOTAL PRICE

COMPUTING CENTER CHARGES FOR THE MONTH OF JUNE 1965

<u>Equipment</u>	<u>Time Used</u>	<u>Rate/Hour</u>	
Magnetic Tape Rental			\$ 30.00
160A Plotter	.16	25.00	4.00
1604A Usage	1.77	250.00	442.50

			<u>\$ 476.50</u>

OK from 4396
8/2/65

**CONTROL DATA
CORPORATION**

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

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Magnetic Tape Rental			\$ 30.00
160A Plotter	.16	25.00	4.00
1604A Usage	1.77	250.00	442.50

			\$ <u>476.50</u>



PURCHASE ORDER

THE NEW YORK BOTANICAL GARDEN

BRONX PARK • NEW YORK 58, N. Y.

No. 36342-4396

THIS NUMBER MUST APPEAR
ON ALL PACKING SLIPS,
PACKAGES AND INVOICES.

TO

Control Data Corporation
295 Northern Boulevard
Great Neck, New York 11020

DR

DATE	DELIVER AT	EAST OF 200TH STREET AND WEBSTER AVENUE	DEPT. OR PROJECT NAME	4396 NO. 4396
QUANTITY	DESCRIPTION			PRICE
11/16/64	Computing and programming of classification procedures			\$8,500.00

INVOICE IN DUPLICATE

WHEN YOU RECEIVE THE ITEM/S
LISTED HEREON, PLEASE SIGN AND
RETURN TO ACCOUNTING DEPT.

DATE REC'D _____

EXPENSE ACCT NO. _____

SIGNATURE _____

THE NEW YORK BOTANICAL GARDEN

Robert L. Standley
PURCHASING AGENT

RECEIVING DEPT. COPY

7N



PURCHASE ORDER

THE NEW YORK BOTANICAL GARDEN

BRONX PARK • NEW YORK 58, N. Y.

No. 36342-4396

THIS NUMBER MUST APPEAR ON ALL PACKING SLIPS, PACKAGES AND INVOICES.

TO .
.
.

Control Data Corporation
295 Northern Boulevard
Great Neck, New York 11020

DR

DATE	DELIVER AT	EAST OF 200TH STREET AND WEBSTER AVENUE	DEPT. OR PROJECT NAME	4396
QUANTITY	DESCRIPTION			PRICE
11/16/64			Rogers	4396
	Computing and programming of classification procedures			\$8,500.00

INVOICE IN DUPLICATE

THE NEW YORK BOTANICAL GARDEN

John V. Stanley

PURCHASING AGENT

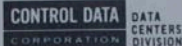
7N

REQUISITIONER'S COPY

Cost of punching Cards,

4.50
per hr.

8000 key strokes per hr.
100 Cards per hr.



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

Customer

New York Botanical Gardens
Bronx Park
Bronx, New York

Proposal/Agreement No.: 324-104
Proposal Date: 27 May 1965
Proposal Expires on: N/A
Agreement Period: N/A

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as Control Data). This proposal becomes a service agreement when agreed to by the Customer and accepted by Control Data and is so indicated below. The agreement becomes effective on the date this document is accepted by Control Data.

The proposal/agreement consists of the schedules marked with an "X" below; each schedule so marked is hereby attached and included as part of the agreement.

- Schedule A - Statement of Work
 Schedule B - Service Charges
 Schedule C - General Terms and Conditions
 Schedule D - Special Conditions

The following named Customer personnel are authorized to order Data Center services under this agreement:
Any representative

This agreement may only be modified by a written amendment agreed to by the Customer and accepted by Control Data.

Accepted by:

Agreed to:

CONTROL DATA CORPORATION
8100 - 34th Avenue South
Minneapolis, Minnesota 55440

NEW YORK BOTANICAL GARDENS
Bronx Park
Bronx, New York

By

B. Hansen

By

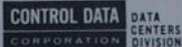
David J. Rogers

Title

27 May 65
Date

Title

Date



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
STATEMENT OF WORK

(Schedule A)

The Customer agrees to purchase, and Control Data by its acceptance, agrees to provide the services listed below:

CDC will initiate the analysis and coding of a program to determine, for each state of each character, the extent to which the presence of such state reduces the uncertainty with regard to all other characters, and to print the results in matrix form.

Proposal/Agreement No: 324-104

CONTROL DATA DATA
CORPORATION CENTERS
DIVISION

DATA CENTER
SERVICE PROPOSAL/AGREEMENT
SERVICE CHARGES

(Schedule B)

Charges for the services to be provided under Schedule A will be at the rates set forth herein:

Work on this program will be stopped when Control
Data has reached the charge of \$3500.00, at which time
Control Data will submit to New York Botanical
Gardens the cost to complete the program.



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

*paid in May
5/24/65*

Customer
New York Botanical Gardens
Bronx Park
Bronx, New York

Proposal/Agreement No.: #324-101
Proposal Date: 29 April 1965
Proposal Expires on: 29 May 1965
Agreement Period: N/A

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as Control Data). This proposal becomes a service agreement when agreed to by the Customer and accepted by Control Data and is so indicated below. The agreement becomes effective on the date this document is accepted by Control Data.

The proposal/agreement consists of the schedules marked with an "X" below; each schedule so marked is hereby attached and included as part of the agreement.

- Schedule A - Statement of Work
- Schedule B - Service Charges
- Schedule C - General Terms and Conditions
- Schedule D - Special Conditions

The following named Customer personnel are authorized to order Data Center services under this agreement:
Any Representative.

This agreement may only be modified by a written amendment agreed to by the Customer and accepted by Control Data.

Accepted by:

CONTROL DATA CORPORATION
8100 - 34th Avenue South
Minneapolis, Minnesota 55440

By: L.B. Hansen
Branch Manager
Title
29 April - 65
Date

Agreed to:

NEW YORK BOTANICAL GARDENS
Bronx Park
Bronx, New York

By: David J. Rogers
Title
Date



DATA
CENTERS
DIVISION

DATA CENTER
SERVICE PROPOSAL/AGREEMENT
STATEMENT OF WORK

(Schedule A)

The Customer agrees to purchase, and Control Data by its acceptance, agrees to provide the services listed below:

A. Program Development

1. Preparation of a new program to compare objects having insufficient data with other objects, and list for each such object the ten (10) objects most similar to it, provided that in the list at least three (3) objects with sufficient data for clustering must be included.
2. Modification of the existing clustering program to print, at each level, all internal connections that will occur before the next level is reached.
3. Modification of the existing similarity ratio program to permit certain characters to be compared in accordance with matrices which will be provided on special parameter cards.
4. Modification of the existing similarity ratio program to provide for a greater number of objects by packing eight (8) characters in a word.

B. Report Processing

1. Report processing shall commence at completion of the services under Section A above and reports will be prepared upon demand of the customer.



DATA CENTER
SERVICE PROPOSAL/AGREEMENT
SERVICE CHARGES

(Schedule B)

Charges for the services to be provided under Schedule A will be at the rates set forth herein:

1. The one time charge for the services under Schedule A, Section A will be \$3500.00.
2. The charges for report processing under Schedule A, Section B will be on a time and material basis.
3. Supplies (cards, paper tape, magnetic tape, etc.) will be furnished at Control Data's cost.

SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

Customer:

New York Botanical GardensProposal/Agreement: 324-092Bronx ParkProposal Date: 31 March 1965Bronx, New YorkProposal Expires on: 31 May 1965

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as CDC). This proposal becomes a service agreement when agreed to by the Customer and accepted by CDC and is so indicated below. The agreement becomes effective on the date this document is accepted by CDC.

CDC will modify the similarity program as follows:

1. Eliminate printing of the ordered similarity coefficients.
2. Truncate the similarity coefficients after the fifth digit and perform the calculations on the truncated numbers.
3. With each similarity coefficient print the denominator of the fraction form which it was formed.

CDC will also modify the skyline program as follows:

1. List objects on both sides of the plot, instead of on one side as at present.
2. Count and print out the maximum number of identical similarity ratios in the part of the ordered similarity ratio array.

The charge for the services described above will be a fixed price of \$2,000.

The program will be made available to N.Y.B.G. as soon as possible.

ACCEPTED BY:

AB Hansen

Title

Date

AGREED TO:

David J. Rogerson
Curator of Quantitative Taxonomy
The New York Botanical Garden
TitleApril 5, 1965

Date

March 24, 1965

Dr. Rogers
New York Botanical Gardens
Bronx Park
Bronx, New York

Dear Dr. Rogers:

Enclosed is the new Control Data Corporation - Data Center Division price index. The new price index is another step in our steady effort to upgrade customer services and, at the same time, offer additional economies through a more liberal rate structure.

We look forward to continuing our Data Center services with New York Botanical Gardens. If you have any questions, please feel free to call me at any time.

Very truly yours,

CONTROL DATA CORPORATION

B. T. von Schmidt-Pauli
B. T. von Schmidt-Pauli
Sales Manager

ENC.
BTvSP:bas

P R I C E I N D E X

March 1, 1965

	CATEGORY OF GUARANTEED SERVICE*		
	A (24-hour)	B (6-hour)	C (2-hour)
3600 with 65K Memory (including twelve magnetic tape handlers, four bi-directional I/O channels and on-line peripheral gear)	\$425/hr.	\$525/hr.	\$600/hr.
1604A with 32K Memory (including eight magnetic tape handlers and on-line peripheral gear)	\$200/hr.	\$225/hr.	\$250/hr.
160A with 8K Memory (including four magnetic tape handlers and on-line peripheral equipment below. 1200 CFM Card Reader & 523 Punch 1000 LPM Printer	\$50/hr.	\$75/hr.	\$90/hr.
<u>Other Services</u>			
12" or 30" Calcomp Plotter with 160A		\$25/hr.	
Data Phone plus 160A with tapes		\$65/hr.	
<u>Programming</u>		<u>Data Prep</u>	
Senior Analyst	\$20.00/hr.	026 Key Punch	\$ 4.50/hr.
Senior Programmer Analyst	\$17.50/hr.	056 Verifier	\$ 4.50/hr.
Programmer Analyst	\$15.00/hr.	Flexowriter	\$ 4.50/hr.
Programmer	\$12.50/hr.	082 Sorter	\$10.00/hr.
		519 Reproducer	\$10.00/hr.
		557 Interpreter	\$12.00/hr.
Clerical	\$4.00/hr.		

Expenses incurred by Control Data Corporation at the client's request are to be paid for at cost by the client.

Federal, state and local taxes not included.

All prices subject to change without notice.

* Definition of Guaranteed Service Categories

Normally the contracted services will be completed in less time than stipulated but the guarantee is as follows:

- A. 24-hour Service - the guarantee is for 24-hour service plus processing time.
- B. 6-hour Service - the guarantee is for 6-hour service plus processing time.
- C. 2-hour Service - the guarantee is for 2-hour service plus processing time.

SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

Customer:

New York Botanical GardensProposal/Agreement: #324-068Bronx ParkProposal Date: 12 February 1965Bronx, New YorkProposal Expires on: 12 April 1965

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as CDC). This proposal becomes a service agreement when agreed to by the Customer and accepted by CDC and is so indicated below. The agreement becomes effective on the date this document is accepted by CDC.

Statement of Work:

CDC will prepare a program to produce in graphical form on the CALCOMP plotter a diagram by which the various levels of clustering of objects by similarity ratios can be observed at a glance.

CDC will also produce a modified version of the existing clustering program, eliminating all output which will not be required as input for the plotting program, and adding a routine to re-arrange the sequence of objects so as to provide the greatest possible clarity in the resulting plot. Among the routines eliminated will be most of the time-consuming tape searching activities.

Charges:

The price of producing this program is \$1850.00.

This agreement may only be modified by an agreement amendment agreed to by the Customer and accepted by CDC.

ACCEPTED BY:

AGREED TO:

CONTROL DATA CORPORATION
Data Centers Division
8100 34 Avenue, South
Minneapolis, Minnesota 55440

NEW YORK BOTANICAL GARDENS
Bronx Park
Bronx, New York

By *Edward J. Rogers* *EJR*By *David J. Rogers*

Title

Title

Date *2/12/65*

Date

SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

Customer:

New York Botanical GardensProposal/Agreement #: 324-053Bronx ParkProposal Date: 30 December 1964Bronx, New YorkProposal Expires on: 30 February 1965

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as CDC). This proposal becomes a service agreement when agreed to by the Customer and accepted by CDC and is so indicated below. The agreement becomes effective on the date this document is accepted by CDC.

Statement of Work:

CDC agrees to replace the present clustering routine in your taxonomy program with a new routine. This routine will modify the existing procedure for calculating the similarity ratios to permit fractional values of similarities between individual characteristics.

Charges:

The price of producing this program is \$2400.00.

This agreement may only be modified by an agreement amendment agreed to by the Customer and accepted by CDC.

ACCEPTED BY:

CONTROL DATA CORPORATION
Data Centers Division
8100 34 Avenue, South
Minneapolis, Minnesota 55440

By *R. K. Romani*

Title

Date

AGREED TO:

NEW YORK BOTANICAL GARDENS
Bronx Park
Bronx, New York

By *Paul J. Rogers*

Title

Date

SERVICE PROPOSAL/AGREEMENT
Declaration Schedule

Customer:

New York Botanical GardensProposal/Agreement: 324-044Bronx ParkProposal Date: November 20, 1964Bronx, New YorkProposal Expires on: January 20, 1965

This document is a proposal to enter into an agreement with the Customer named above and Control Data Corporation (hereinafter referred to as CDC). This proposal becomes a service agreement when agreed to by the Customer and accepted by CDC and is so indicated below. The agreement becomes effective on the date this document is accepted by CDC.

Statement of Work:

CDC agrees to replace the present clustering routine in your taxonomy program with a new routine, in which clusters will be formed by adding to each partially formed cluster the object that is nearest to any one object already in the cluster, instead of the object nearest to all of the objects already in the cluster, as at present. When the object thus added is already a part of another cluster, the two clusters will be combined into one.

Included in the price of programing are five hours of production on this program.

Charges:

The price of producing this program is \$3000.00.

This agreement may only be modified by an agreement amendment agreed to by the Customer and accepted by CDC.

ACCEPTED BY:

AGREED TO:

CONTROL DATA CORPORATION
Data Centers Division
8100 34 Avenue, South
Minneapolis, Minnesota 55440

By

R. H. Serran
Director
Title

11/23/64
Date

By

David F. Rogers
Title

Nov. 23, 1964
Date

July 28, 1964

Dr. David Rogers
New York Botanical Gardens
Bronx Park
Bronx, New York

Dear Dave:

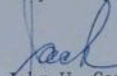
This will serve as a summary of your account through the month of July, However, it will not include production runs during the week of July 27.

Programming

Taxonomy Simra	\$ 1,750
Porto Punch Card Conversion	500
Triangulation of Matrix	1,000
Attribute Analysis	1,700
Change in Nodal Distance Array	1,310
Sub-Total Programming	6,360
Production - 2.16 hours 1604A @ 225	486
Total	\$ 6,746
Paid on Account	5,615.50
Balance Due	\$ 1,130.50

Early in August you will receive a bill in the amount of \$1,130.50. If there are any further questions that you might have on this we will discuss them at our next meeting.

Very truly yours,


John W. Conifrey
Sales Representative

jg

CONTROL DATA CORPORATION
 AGREEMENT FOR DATA PROCESSING SERVICE

Customer: New York Botanical Gardens Agreement No: 324-024 Page 2
bronx Park Date: 13 July 1964
Bronx, New York

Control Data Corporation by its acceptance hereof at 8100 34th Avenue South, Minneapolis 20, Minnesota, agrees to provide the following services upon the terms and conditions set forth herein:

1. <u>Services:</u>	<u>Rates</u>		
	BLOCK TIME	PRIME	NON PRIME
	Usage Per	Monday-Friday	Monday-Friday
	Month	From: 8:30 a.m.	From: 6:00 p.m.
		To: 6:00 p.m.	To: 8:30 p.m.
			Weekends & Holidays

Data Prep Rates:

026 Key Punch-----	4.50/hr.
056 Verifier-----	4.50/hr.
Flexowriter-----	4.50/hr.
082 Sorter-----	10.00/hr.
519 Reproducer-----	10.00/hr.
557 Interpreter-----	12.00/hr.

Programming Rates:

Senior Analyst-----	20.00/hr.
Senior Programmer/Analyst-----	15.00/hr.
Programmer/Analyst-----	12.50/hr.
Programmer-----	10.00/hr.

The above rates are in effect until further notice. As additional equipment is added to our Data Center, hourly prices will be released for that equipment.

All travel expenses, long distance telephone calls, or other expenses incurred by Control Data Corporation at the client's request are to be paid for at cost by the client.

Federal, state and local taxes not included. All prices subject to change without notice.

2. Charges: Charges for the services will be at the rates set forth herein. Control Data may bill the customer in intervals of 30 days after the starting date of this Agreement. All invoices are due upon receipt and the customer agrees to pay Control Data the stated charges plus amounts equal to any applicable State, Federal or Local Excise, Sale or Use Taxes however designated, levied or based on this Agreement or on the charges set forth herein, or on any magnetic tapes, paper tapes, punched cards or supplies furnished or used by Control Data in connection with the Services specified herein, or any taxes or amounts in lieu thereof paid or payable by Control Data in respect to the foregoing.

3. Customer-furnished Data:

(a) Any magnetic tape, punched paper tape, punched cards or other data furnished by the customer in order that Control Data may provide the services herein must be compatible with Control Data's equipment and must be in good condition for machine processing.

(b) If the data submitted by the customer is incorrect, incomplete or not in the form specified herein, the customer agrees upon so being notified to pay to Control Data the standard rates in effect for the additional work performed by Control Data to correct or complete such data or otherwise prepare it for processing.

(c) Any data furnished by the customer in connection with this agreement may be retained by Control Data until the Services are completed or until this agreement is terminated. Control Data may dispose of such data unless the customer furnishes written instructions for disposition of the data within 60 days from the date of completion or termination of this agreement.

(d) If the customer fails to furnish data to Control Data in the form specified herein or in accordance with the schedule established herein, Control Data will use its best efforts to reschedule and process the Customer's work as promptly as possible, but the Customer agrees that the delivery schedule may be extended.

4. Damages:

(a) Control Data shall use due care in processing the Customer's work, but Control Data shall be responsible only to the extent of correcting any errors which are due to Control Data's machines, operators or programmers. In any event Control Data's liability with respect to this Agreement shall be limited to the total charge for the services provided under this Agreement and shall not include any contingent liability.

(b) Control Data shall not be liable for failure to provide the services set forth in this Agreement if such failure is due to causes or conditions beyond its reasonable control.

5. General Provisions:

(a) The Customer or Control Data may terminate this Agreement at any time for failure of the other party to comply with the terms and conditions of this Agreement by giving written notice of termination.

(b) All programs, tapes and specifications utilized or developed by Control Data in connection with this Agreement (except for those furnished by the Customer) are and remain the sole property of Control Data unless otherwise specifically provided herein. No representation or statement not expressly contained in this Agreement or incorporated herein by reference shall be binding upon Control Data as a warranty or otherwise.

(c) This Agreement shall be governed by the laws of the State of Minnesota and constitutes the entire Agreement between the Customer and Control Data. The foregoing terms and conditions shall prevail notwithstanding any variance with the terms and conditions of any order submitted by the Customer in respect of such services.

Accepted by:

CONTROL DATA CORPORATION
8100 34th Avenue South
Minneapolis 20, Minnesota

By R. L. Loran
Director
Title

July 16 1964
Date

Agreed to:

By David J. Rogers
Title

July 16, 1964
Date

CONTROL DATA CORPORATION
 AGREEMENT FOR DATA PROCESSING SERVICE

Customer: New York Botanical Gardens Agreement No. 324-024
Bronx Park Date: 13 July 1964
Bronx, New York

Control Data Corporation by its acceptance hereof at 8100 34th Avenue South, Minneapolis 20, Minnesota, agrees to provide the following services upon the terms and conditions set forth herein:

1. Services: Rates

We agree to provide you the following services as required at mutually agreed upon schedules at the rates stated herein:

	BLOCK TIME Usage Per Month	PRIME Monday-Friday From: 8:30 a.m. To: 6:00 p.m.	NON PRIME Monday-Friday From: 6:00 p.m. To: 8:30 p.m. Weekends & Holidays
1604-A 32K Memory (with 4-603 Magnetic Tapes)	0-9.99 hrs. 10.0-19.99 hrs. 20-40 hrs. Over 40 hrs.	250/hr. 235/hr. 220/hr. 210/hr.	225/hr. 215/hr. 205/hr. 195/hr.
160-A 8K Memory (with 4-603 Magnetic Tapes)		55/hr.	50/hr.
160-A Computer		35/hr.	30/hr.
405 Card Reader and 523 Punch		25/hr.	20/hr.
1612 Printer		25/hr.	20/hr.
Peripheral Operations:			
Card to Tape	1200 cards/min.	80/hr.	65/hr.
Tape to Printer	1000 lines/min.	70/hr.	55/hr.
Card to Printer	1200 cards/min.	85/hr.	70/hr.
Tape to Card	100 cards/min.	70/hr.	55/hr.
Paper Tape to Mag Tape		55/hr.	50/hr.
Paper Tape to Punch Cards		60/hr.	50/hr.

CONTROL DATA CORPORATION
AGREEMENT FOR DATA PROCESSING SERVICE

Customer: N.Y. Botanical Gardens Agreement No: 324-020
Bronx Park Date: 1 July 1964
Bronx, New York

Control Data Corporation by its acceptance hereof at 8100 34th Avenue South, Minneapolis 20, Minnesota, agrees to provide the following services upon the terms and conditions set forth herein:

1. Services:

Rates

We agree to perform the following services:

Write a subroutine to compare attributes in the same manner that objects are compared under the SIMRA subroutine of your taxonomy program. This service will include making any changes required in the main program and subroutines to accommodate the new subroutine and will include a test on your manihot data.

Our charges for performing these services will be at a fixed fee of \$1700.00.

2. Charges: Charges for the services will be at the rates set forth herein. Control Data may bill the customer in intervals of 30 days after the starting date of this Agreement. All invoices are due upon receipt and the customer agrees to pay Control Data the stated charges plus amounts equal to any applicable State, Federal or Local Excise, Sale or Use Taxes however designated, levied or based on this Agreement or on the charges set forth herein, or on any magnetic tapes, paper tapes, punched cards or supplies furnished or used by Control Data in connection with the Services specified herein, or any taxes or amounts in lieu thereof paid or payable by Control Data in respect to the foregoing.

3. Customer-furnished Data:

(a) Any magnetic tape, punched paper tape, punched cards or other data furnished by the customer in order that Control Data may provide the services herein must be compatible with Control Data's equipment and must be in good condition for machine processing.

(b) If the data submitted by the customer is incorrect, incomplete or not in the form specified herein, the customer agrees upon so being notified to pay to Control Data the standard rates in effect for the additional work performed by Control Data to correct or complete such data or otherwise prepare it for processing.

(c) Any data furnished by the customer in connection with this agreement may be retained by Control Data until the Services are completed or until this agreement is terminated. Control Data may dispose of such data unless the customer furnishes written instructions for disposition of the data within 60 days from the date of completion or termination of this agreement.

(d) If the customer fails to furnish data to Control Data in the form specified herein or in accordance with the schedule established herein, Control Data will use its best efforts to reschedule and process the Customer's work as promptly as possible, but the Customer agrees that the delivery schedule may be extended.

4. Damages:

(a) Control Data shall use due care in processing the Customer's work, but Control Data shall be responsible only to the extent of correcting any errors which are due to Control Data's machines, operators or programmers. In any event Control Data's liability with respect to this Agreement shall be limited to the total charge for the services provided under this Agreement and shall not include any contingent liability.

(b) Control Data shall not be liable for failure to provide the services set forth in this Agreement if such failure is due to causes or conditions beyond its reasonable control.

5. General Provisions:

(a) The Customer or Control Data may terminate this Agreement at any time for failure of the other party to comply with the terms and conditions of this Agreement by giving written notice of termination.

(b) All programs, tapes and specifications utilized or developed by Control Data in connection with this Agreement (except for those furnished by the Customer) are and remain the sole property of Control Data unless otherwise specifically provided herein. No representation or statement not expressly contained in this Agreement or incorporated herein by reference shall be binding upon Control Data as a warranty or otherwise.

(c) This Agreement shall be governed by the laws of the State of Minnesota and constitutes the entire Agreement between the Customer and Control Data. The foregoing terms and conditions shall prevail notwithstanding any variance with the terms and conditions of any order submitted by the Customer in respect of such services.

Accepted by:

CONTROL DATA CORPORATION
8100 34th Avenue South
Minneapolis 29, Minnesota

By R. P. Ferrari
Director
Title

July 1, 1964
Date

Agreed to:

By Daniel Rogers
etc
Title

_____ Date

April 27, 1964

New York Botanical Gardens
Bronx Park
Bronx, New York

Gentlemen:

Upon your endorsement of this letter by signature, the contents of this letter will become a part of our agreement 324-003 dated April 16, 1964.

All programming done under this agreement will be documented to include:

- A. Complete flow charts
- B. Timing of computer runs on 1604A in the form of a scale dependent on the number of attributes and specimens to be handled
- C. Map of core storage for the 1604 and the 3200 (3200 map will be based on best information on 3200 software available upon completion of 1604A programming.

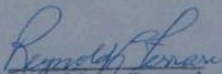
We agree to prefix paragraph 1 as follows "Rewrite subroutine SIMRA and modify the part of the main program which calls the subroutine in order to reduce the number of words . . ."

We further agree to add to the agreement that Control Data will write a program to read your portopunched cards and write them in a tape format that is prescribed by the Taximetrics program as modified by Control Data.

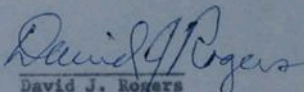
New York Botanical Gardens

April 27, 1964

The upper limit on this program will be \$500. Costs will be accrued at our standard rates. If the program is not completed by the time \$500 is accrued we will stop the programming and estimate the time to complete. If programming is completed before \$500 is reached we will bill you the accrued costs to complete the program.



Reynold L. Ferrari, Director
New York Data Center
Control Data Corporation



David J. Rogers
Curator of Quantitative
Taxonomy
New York Botanical Gardens

CONTROL DATA CORPORATION
AGREEMENT FOR DATA PROCESSING SERVICE

Customer: New York Botanical Gardens Agreement No: 324-003
Mosulu Parkway Date: 16 April 1964
Bronx, New York

Control Data Corporation by its acceptance hereof at 8100 34th Avenue South, Minneapolis 20, Minnesota, agrees to provide the following services upon the terms and conditions set forth herein:

1. Services:

Rates

We proposed to modify your Taximetrics program by the following steps, completely debugging each step before proceeding to the next:

1. Reduce the number of words necessary for the storage of attributes by packing the data for several characteristics in a single word. For the least favorable case, which is that in which each characteristic has only two (2) attributes, 23 characteristics, or 46 attributes can be contained in one word. In the case in which each characteristic has 14 attributes, 11 characteristics, or 154 attributes, can be contained on one word. More characteristics per attribute are allowable, and characteristics having different numbers of attributes may be mixed in the same word without restriction. Both storage capacity and operating speed will be increased by a factor of approximately 100.
 2. Further increase the number of specimens that can be handled by eliminating duplication of information in the storage of symmetrical arrays, and by making maximum use of the storage capacity of the machine.
 3. Provide for still further increase in capacity by partitioning large arrays and using tape storage.
- * \$1750.00 has been established as the upper limit on Step (1) and \$1000.00 on Step (2).

Charges will be accrued at our standard rates listed below. If work is not completed before reaching the upper limit, work will be stopped at which time costs to complete the step will be re-estimated. If work is completed before the upper limit is reached, accrued charges to complete will be billed to you.

CONTROL DATA CORPORATION
AGREEMENT FOR DATA PROCESSING SERVICE

Customer: New York Botanical Gardens
Moslulu Parkway
Bronx, New York

Agreement No: 324-003 (Page 2)
 Date: 16 April 1964

Control Data Corporation by its acceptance hereof at 8100 34th Avenue South, Minneapolis 20, Minnesota, agrees to provide the following services upon the terms and conditions set forth herein:

1. Services:

Rates

	<u>Monthly Usage</u> <u>Hours</u> <u>(Retroactive)</u>	<u>First Shift</u> <u>Monday-Friday</u> <u>From: 8:30 a.m.</u> <u>To: 6:00 p.m.</u>	<u>Second Shift</u> <u>Monday-Friday</u> <u>From: 6:00 p.m.</u> <u>To: 8:30 a.m.</u>
1604A with 32K Memory (including eight magnetic tape handlers and on-line peripheral gear)	0 - 9.99 hrs.	\$250/hr.	\$225/hr.
	10.0-19.99 hrs.	\$235/hr.	\$215/hr.
	20.0-39.99 hrs.	\$220/hr.	\$205/hr.
	Over 40 hrs.	\$210/hr.	\$195/hr.
160A Computer (with magnetic tapes)		\$ 55/hr.	\$ 50/hr.
160A Computer		\$ 35/hr.	\$ 30/hr.
1200 CFM Card Reader and 523 Punch		\$ 25/hr.	\$20/hr.
1000 LPM Printer		\$ 25/hr.	\$ 20/hr.
Group A (when available)			
165 Plotter		\$ 10/hr.	\$ 10/hr.
166 Printer		\$ 10/hr.	\$ 10/hr.
167 Card Reader (250 CFM)		\$ 10/hr.	\$ 10/hr.
A & D Converter		\$ 10/hr.	\$ 10/hr.
Data Phone		\$ 10/hr.	\$ 10/hr.
Peripheral Operations:			
Card to Tape	1200 cards/min.	80/hr. 65/hr.	
Tape to Printer	1000 lines/min.	70/hr. 55/hr.	
Card to Printer	1200 cards/min.	85/hr. 70/hr.	
Tape to Card	100 cards/min.	70/hr. 55/hr.	
Senior Analyst	\$20.00/hr.		
Senior Programmer Analyst	\$15.00/hr.		
Programmer Analyst	\$12.50/hr.		
Programmer	\$10.00/hr.		

Data Prep Rates:

<u>Equipment</u>	<u>Price</u>	<u>Equipment</u>	<u>Price</u>
026 Key Punch	4.50 per hour	082 Sorter	10.00 per hour
056 Verifier	4.50 per hour	519 Reproducer	10.00 per hour
Flexewriter	4.50 per hour	557 Interpreter	12.00 per hour

Form No. 538

Expenses incurred by Control Data Corporation at the client's request are to be paid for at cost by the client. Federal, state and local taxes not included. All prices subject to change without notice.

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(c) This Agreement shall be governed by the laws of the State of Minnesota and constitutes the entire Agreement between the Customer and Control Data. The foregoing terms and conditions shall prevail notwithstanding any variance with the terms and conditions of any order submitted by the Customer in respect of such services.

Accepted by:

Agreed to:

CONTROL DATA CORPORATION
8100 34th Avenue South
Minneapolis 20, Minnesota

By *R. J. Lovari*
Director
Title

By _____
Title

April 20, 1965
Date

_____ Date

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008NOTE: TO INSURE PROPER CREDIT TO
YOUR ACCOUNT, PLEASE IDENTIFY PAY-
MENT IN DETAIL ON YOUR REMITTANCE OR
ATTACH A COPY OF THIS INVOICE.INVOICE NO. **B 65244**DATE **6/30/65**

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. **Agree.**

SOLD TO :

New York Botanical Gardens
Moslulu Parkway
Bronx Park
Bronx, New York

SHIPPED TO:

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59080	3004	4675	300					
ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL			UNIT PRICE	TOTAL PRICE	

COMPUTING CENTER CHARGES FOR THE MONTH OF MAY 1965:

Fixed Price Contract

\$3,500.00

 *ok'd from 4309
7/7/65*

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008NOTE: TO INSURE PROPER CREDIT TO
YOUR ACCOUNT, PLEASE IDENTIFY PAY-
MENT IN DETAIL ON YOUR REMITTANCE OR
ATTACH A COPY OF THIS INVOICE.INVOICE NO. **B 65352**DATE **6/29/65**

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. **324-068**

SOLD TO :

New York Botanical Gardens
Moshula Parkway
Bronx, New York

DATE SHIPPED:

ATS NUMBER:

SHIPPED TO:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59012	3004	4675	300					
ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL			UNIT PRICE	TOTAL PRICE	

COMPUTING CENTER CHARGES FOR THE MONTH OF MAY 1965

<u>Equipment</u>	<u>Time Used</u>	<u>Rate/Hour</u>		
Magnetic Tape Rental			\$	35.00
Key Verify	.25	4.50		1.13
160A Plotter	1.53	25.00		38.25
Tape to Print	.03	90.00		2.70
Card to Print	.02	90.00		1.80
Tape to Print	.48	50.00		24.00
1604A Usage	2.19	250.00		547.50
1604A Usage	1.56	200.00		312.00
Key Punch	.34	4.50		1.53

			\$	<u>963.91</u>

ok from 4309

7/7/65

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008NOTE: TO INSURE PROPER CREDIT TO
YOUR ACCOUNT, PLEASE IDENTIFY PAY-
MENT IN DETAIL ON YOUR REMITTANCE OR
ATTACH A COPY OF THIS INVOICE.INVOICE NO. **B** 62581

DATE 5/13/65

SOLD TO :

- New York Botanical Gardens
- Mosbula Parkway
- Bronx Park
- Bronx, New York

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. 324-068

SHIPPED TO:

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59012	3004	4675	300					
ITEM NO.	QUANTITY	COC PART NUMBER	DESCRIPTION OF MATERIAL			UNIT PRICE	TOTAL PRICE	

COMPUTING CENTER CHARGES FOR THE MONTH OF APRIL 1965

<u>Equipment</u>	<u>Time Used</u>	<u>Rate/Hour</u>	
Key Punch	.75	4.50	\$ 3.38
Key Verify	.33	4.50	1.49
Sorter	1.00	10.00	10.00
Card to Tape	.08	90.00	7.20
Tape to Print	.06	90.00	5.40
1604A	.78	250.00	195.00
1604A	.13	200.00	26.00

			\$ 248.47
			=====

OK 4309
5/24/65

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008NOTE: TO INSURE PROPER CREDIT TO
YOUR ACCOUNT, PLEASE IDENTIFY PAY-
MENT IN DETAIL ON YOUR REMITTANCE OR
ATTACH A COPY OF THIS INVOICE.INVOICE NO. **B** 58031

DATE 2/10/65

SOLD TO :

- . New York Botanical Gardens
- . Moshulu Parkway
- . Bronx, New York

Attn: Dr. David Rogers

SHIPPED TO:

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. ltr.agr. 324-074

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
59012	3004	4675	300					

ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL	UNIT PRICE	TOTAL PRICE

Computing Center Charges for the Month of January

<u>Equipment</u>	<u>Shift</u>	<u>Rate/Hour</u>	<u>Time Used</u>	
1604A	1	250.00	.14	35.00
1604A	2	225.00	2.03	456.75
Tape to Printer	2	70.00	.70	49.00
Reproducer	1 & 2	10.00	.42	4.20
Key Punch & Verify	1 & 2	4.50	.34	1.53
Tape Storage	1 @ 5.00			25.00
Cards	2,000 @ 1.04/m			2.08
	1 Ply Paper 15.00/box		1	15.00
				<u>588.56</u>

*Incorrect
Rebilled in March*

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 7817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008NOTE: TO INSURE PROPER CREDIT TO
YOUR ACCOUNT, PLEASE IDENTIFY PAY-
MENT IN DETAIL ON YOUR REMITTANCE OR
ATTACH A COPY OF THIS INVOICE.INVOICE NO. **B 58031**

DATE 2/10/65

SOLD TO :

- . New York Botanical Gardens
- . Moshulu Parkway
- . Bronx, New York

Attn: Dr. David Rogers

SHIPPED TO:

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. **itr.agr. 324-074**

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
59012	3004	4675	300					

ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL	UNIT PRICE	TOTAL PRICE

Computing Center Charges for the Month of January

<u>Equipment</u>	<u>Shift</u>	<u>Rate/Hour</u>	<u>Time Used</u>	
1604A	1	250.00	.14	35.00
1604A	2	225.00	2.03	456.75
Tape to Printer	2	70.00	.70	49.00
Reproducer	1 & 2	10.00	.42	4.20
Key Punch & Verify	1 & 2	4.50	.34	1.53
Tape Storage	1 @ 5.00		5	25.00
Cards	2,000 @ 1.04/m			2.08
	1 Ply Paper 15.00/box		1	15.00
				<u>588.56</u>

CONTROL DATA
CORPORATION
COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690

P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008

INVOICE NO. **B 54482**

DATE **11/9/64**

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO.

Ltr. Agree. 324-024

SOLD TO :

New York Botanical Gardens
Moshulu Parkway
Bronx, New York

SHIPPED TO: Attention: Dr. David Rogers

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN				
D 59012	3004	4675	300					
ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL				UNIT PRICE	TOTAL PRICE

COMPUTING CENTER CHARGES FOR THE MONTH OF OCTOBER 1964:

EQUIPMENT	TIME USED	SHIFT	RATE/HOUR	
1604A Computer	2.04	1	250.00	\$510.00
1604A "	.47	2	225.00	105.75
Key punch	.34	1 & 2	4.50	1.52
Verifier	.25	1 & 2	4.50	1.12
Reproducer	.92	1 & 2	10.00	9.20
Senior Prog. Analyst	25.00	1 & 2	17.50	437.50
Interpreter	.92	1 & 2	12.00	11.04
Sorter	.08	1 & 2	10.00	.80
3,000 Card Stock @ 1.04/M				3.12
				<u>\$1,080.05</u>

Extra Copied

DUPLICATE INVOICE

CONTROL DATA

CORPORATION

COMPUTER GROUP
MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW

P. O. BOX 9817
CHICAGO, ILLINOIS 60690P. O. BOX 2697
CHURCH STREET STATION
NEW YORK, NEW YORK 10008INVOICE NO. **B 52170**

DATE 9/11/64

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO.

SOLD TO :

New York Botanical Gardens

Moshulu Parkway

Bronx, New York

*Bronx Park
Bronx 10458 NY.*

SHIPPED TO: Attention: Dr. David Roger

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN			
D 59012	3004	4675	300				
ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL			UNIT PRICE	TOTAL PRICE

COMPUTING CENTER CHARGES FOR THE MONTH OF AUGUST 1964:

<u>EQUIPMENT</u>	<u>SHIFT</u>	<u>RATE/HOUR</u>	<u>TIME USED</u>	
1604A Computer	1	250.00	.92	\$230.00
1604A "	2	225.00	.68	153.00
Tape to Print	1	70.00	.28	19.60
" " "	2	55.00	.50	27.50
Keypunch	1 & 2	4.50	.50	2.25
Reproducer	1 & 2	10.00	.16	1.60
Senior Prog. Analyst	1 & 2	15.00	2.00	30.00

				\$463.95

*ahid 9/16/64
4396*

CONTROL DATA
CORPORATION
 COMPUTER GROUP
 MINNEAPOLIS, MINNESOTA

REMIT TO THE NEAREST P. O. BOX LISTED BELOW
 P. O. BOX 9817
 CHICAGO, ILLINOIS 60690
 P. O. BOX 2697
 CHURCH STREET STATION
 NEW YORK, NEW YORK 10008

INVOICE NO. **B 51087**

DATE **8/12/64**

TERMS: NET CASH - 10 DAYS

CUSTOMER ORDER NO. **324-024**

SOLD TO :

New York Botanical Gardens
 Bronx Park
 Bronx, New York

SHIPPED TO :

Attention: David Rogers

DATE SHIPPED:

ATS NUMBER:

PROJECT	AREA	CUSTOMER NO.	TAX	SALESMAN			
D 59012	3004	4675	300				

ITEM NO.	QUANTITY	CDC PART NUMBER	DESCRIPTION OF MATERIAL	UNIT PRICE	TOTAL PRICE

COMPUTING CENTER CHARGES FOR THE MONTH OF JULY 1964

EQUIPMENT	SHIFT	PRICE	TIME USED	
1604A Computer	2	225.00	2.78	\$ 625.00
Keypunch	1 & 2	4.50	1.16	5.22
Verifier	1 & 2	4.50	.84	3.78
Reproducer	1 & 2	10.00	.75	7.50
Senior Programmer	1 & 2	15.00	43 hr.s	645.00
Interpreter	1 & 2	12.00	.16	1.92

				\$1,288.42

OK'd 8/21/64
4309

SUMMARY OF CHARGES

Programming

Taxonomy Simra	\$1,750.00
Porto Punch Card Conversion	500.00
Triangulation of Matrix	1,000.00
Attribute Analysis	1,700.00
Change in Nodal Distance Array	1,310.00
Sub-Total Programming	6,260.00
Production - 2.16 hours	
1604-A @225	486.00
Week of July 27 - .62 hours	
@ 225	139.50
Data Preparation	18.42
Total	6,904.04
Paid on Account	5,615.50
Balance Due	1,288.54

NIF 4309

SUMMARY OF CHARGES

Programming

Taxonomy Simra	\$1,750.00
Porto Punch Card Conversion	500.00
Triangulation of Matrix	1,000.00
Attribute Analysis	1,700.00
Change in Nodal Distance Array	1,310.00
Sub-Total Programming	6,260.00
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@ 225	139.50
Data Preparation	18.42
Total	6,904.04
Paid on Account	5,615.50
Balance Due	1,288.54

17 July 1964

Dr. David Rogers
New York Botanical Gardens
Bronx Park
Bronx, New York

Dear Dr. Rogers:

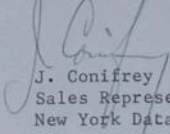
We propose to make the following changes to your taxonomy program:

1. Eliminate the feature of the program that arranges the objects in the cluster analysis in increasing order, and, in case two (2) or more objects are equidistant from the central object, to arrange them in increasing order of their distance from all of the objects already placed in the sphere.
2. Replace this feature with one (1) which arranges all objects in increasing order of their distance from all of the objects already in the sphere.
3. Insert a test to detect cases in which two (2) or more objects are equidistant from all of the objects already in the sphere, and add all such objects to the sphere simultaneously.
4. Revise the procedure for finding the distance from an object to all of the objects already in the sphere by saving the sums already formed and adding one (1) quantity to each, instead of starting from the beginning each time.

Charges on this work will be billed to you at our standard hourly rates under our contract number 324-024. When we have reached a limit of \$1,000.00 to our standard hourly rate, we will stop any further work and reevaluate the effort required to complete the job.

Yours truly,

CONTROL DATA CORPORATION


J. Conifrey
Sales Representative
New York Data Center

JC/as

August 24, 1964

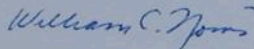
Dr. David J. Rogers
Curator of Quantitative Taxonomy
The New York Botanical Garden
Bronx Park
New York 58, New York

Dear Dr. Rogers:

Thank you for sending me a summary of the seminar on mathematics and biology which was held June 2, 1964. The material is most interesting and informative.

I also greatly appreciate your kind remarks about some of our Control Data people. Naturally, I am very happy to know that our people appear to be satisfying your needs.

Sincerely yours,



William C. Norris
President

August 14, 1964

Mr. William Norris
Control Data Corporation
8100-34th Avenue South
Minneapolis, Minnesota

Dear Mr. Norris:

We are sorry indeed that you were not able to participate in the seminar held at The New York Botanical Garden on the 2nd of June. For your information we are enclosing a summary of the seminar to give you the sense of the meeting and some of the reactions of the people who came. We found it a valuable experience and trust that we will be able to continue on an annual basis to have such an interchange.

I am happy to report that our endeavors with the Control Data Corporation's Service Bureau on Long Island, under the direction of Mr. Ferrari, have been most satisfactory. We feel that we have achieved a considerable advance in our program since starting this contractual arrangement. We also feel that there has been a considerable increment in the knowledge of the intricacies of biological data by the staff of the Control Data Corporation's Service Bureau. The nature of the program (which was explained in some detail in the mimeographed report sent to you earlier this year) is such that it is a pioneer takeoff point for biologists from the standpoint of both the mathematical and the biological logic.

We specifically appreciate the endeavors of Mr. Jack Conifrey as an intermediary between us and operations within the Service Bureau and also are quite pleased with the speed with which Mr. Henry Mabié has been able to comprehend the logic and programming techniques. Mr. Mabié's endeavors have improved our program in very measurable ways, and the whole endeavor is very pleasing to us.

Sincerely yours

David J. Rogers
Curator of Quantitative Taxonomy

DJR:MDF

Blind carbons to Conifrey, Mabié, and Ferrari

April 8, 1964.

Dr. David Rogers,
New York Botanical Gardens,
Bronx Park,
Bronx 58,
New York.

Dear Dr. Rogers,

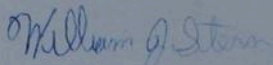
I would like to outline some of the pertinent considerations in giving a programming contract to any service bureau. These considerations are based on the fact that you will eventually get your own computer and will want to make the conversion as simply as possible.

All programs should be written in Fortran. There should be provided with every program a ¹logic-flow chart, which is a broad outline of the logic steps the computer uses to solve a problem, and a ²detailed flowchart which, in essence, will correlate to the instructions of the program itself. There should be a description of the relation of the various elements in your application to the program itself. By this I mean, you will want a ³memory map showing how much core is used by certain elements, such as objects.

You will want accurate ⁴accounts of running time to do certain jobs. You should also know the role that the various factors in the program play with regard to computer time and core requirements. For instance, what will increasing the number of objects do to computer time? What will it do to core storage requirements? Is there any logic break-even point? For instance, it would be possible that 50 objects would not appreciably change running time and core requirements, but 100 objects will. In other words, it would be necessary to know the role the various input items play with regard to the computer itself. You would want this carefully defined to you as part of the general documentation.

I think that a service bureau should be able to meet this kind of standard in doing any programming. Once you have this kind of information, it would be much easier to not only advance your own requests to the Government for funds to purchase a computer, but make a conversion to your own computer much simpler.

Very truly yours,
CONTROL DATA CORPORATION



William J. Stern
Sales Representative

WJS/hm