BULLETIN

ASSOCIATION OF CANADIAN MAP LIBRARIES AND ARCHIVES/
ASSOCIATION DES CARTOTHEQUES ET ARCHIVES CARTOGRAPHIQUES DU CANADA

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ON THE COVER...

NOVA FRANCIA ET CANADA 1597, by Cornelius Wytfliet. This map appears as plate 18 in Wytfliet's Descriptionis Ptemaicae Augmentum.. This map,the original of which is in the Visual and Sound Archives Division, National Archives of Canada has been reproduced as ACMLA Facsimile Map Series, Map No. 40
(ISSN 0827-8024).

NOVA FRANCIA ET CANADA 1597, par Cornelius Wytfliet. Planche 18 de la Descriptionis Ptolemaicae Augmentum de Wytfliet. Cette carte, dans la Division des archives cartographiques et audio-visuelles, Archives nationales du Canada, a été reproduite dans la Série de cartes facsimilés de l'ACC, carte No. 40
(ISSN 0827-8024).

PRESIDENT'S MESSAGE

May 27, 1996

Good News: We have a new editor for our Bulletin! You will notice that Rosaline Milks has courageously volunteered to take on this very important task. This is her first issue, and we are looking forward to many more. As in any association venture, cooperation of other members is essential to its success. Rose will welcome your contributions.

On February 9th, the Board held a telephone conference call to discuss GISIG (Geographic Information Systems Interest Group/Groupe d'Interet sur les systemes d'information geographique) and the 1996 Conference GIS workshops. The discussions led to the decision to have a session on the basics of GIS to acquaint people with the concepts and also practical experience with GIS using census data as that data is the most readily available. Other topics on the agenda included the Bulletin Editor, for which we have been fortunate to find Rose,and the status of receipt of the Geological Survey "A" series maps, for which I have contacted people in other associations to initiate actions to bring to Halifax. We would like to have these maps included in the Depository Library Program.

Another business item for our Annual General Meeting that I forgot last time I wrote is that in our "Rules of Procedure" we need to change section 2.1.4. The wording "age of Board" presents confusion. The Board of Directors approved changing it to "or the member with the longest service to the Board in that order," and I will bring it to the Annual General Meeting for confirmation in accordance with 4.4 of the "Rules of Procedure".

Betty Kidd pointed out to me that The New Zealand Map Society has a notice on their journal that it "maintains contact with fellow organisations in Australia, Europe and the United States of America." In mid-March, I wrote to Phil Barton, their secretary, suggesting that we would also like to have contact with them. Betty thought that there had been ties with them in the past, but they obviously have been lost. I heard back from him at mid-April. He is interested in setting up an exchange of journals with us, and that has been organized. It is useful to hear what is going on in other countries in terms of the care of cartographic materials.

Events are well underway for our conference in June. The pre-conference workshops to help us with the intricacies of ArcView and census data have been arranged. James Boxall and Geoff Brown have prepared an EXCELLENT program. I hope that most of you will have attended by the time that you read this.

Our membership numbers are very slightly up at this point over last year. We have a total of 228 members compared to 222. There have been six new members, four full and two institutional. However, there are still those who have not yet paid their 1996 dues. Please pay them! We need you and your contributions, both monetary and professional.

We have been awarded a SSHRC (Social Sciences and Humanities Research Council) grant for the period from April 1, 1996 to March 31, 1998. We are very appreciative of this assistance by the SSHRC of our activities. For each of the fiscal years, we have a travel grant of $2,225 while the administration grant is $1,967 the first year and $984 in the second year. However, we have received the entire grant at once for "reasons of administrative efficiency" on their part. It will also make it easier for us to plan on its use for next year.

On the GIS in Canadian Libraries Initiative, Yves Tessier feels that some of the work with GISIG is complete now. Continuing efforts have been transferred to a smaller committee consisting of Grace Welch representing ACMLA (with James Boxall as her alternate), Sharon Neary representing CAPDU (Canadian Association of Public Data Users), William Birdsall representing CARL (Canadian Association of Research Libraries) Library Directors, and Tim Mark, CARL Executive Director.

The CARL office has accepted responsibility for the general direction and monitoring of the project in Canada. GISIG will continue as a consultative group. The new group prepared a proposal (a memorandum of development) for submission to the CARL Board for its mid-May meeting. This MOD covered how we plan to proceed with efforts to prepare a memorandum of understanding with government agencies and private companies to provide Canadian spatial data and access to it.

At the meeting, the CARL directors approved this proposal in principle, with the request for a "business plan" (how much is it going to cost?) and more details on the usefulness of the project. They also questioned what training CARL was expected to provide or support.

With Andrew Hubbertz, we have set the dates of the 1997 ACMLA Conference for Sunday, May 25, to Friday, May 30, in Saskatoon. This is to avoid conflicts with meetings of CAPDU, Canadian Libraries Association, and Special Libraries Association. He is allowing time for a day of workshops, 2 1/2 days of other programs, the AGM, banquet, and a geographical excursion. More details will follow later as they are arranged. Mark your calendar!

On behalf of the association, I sent letters of support for the British Columbia Archives and Records Service to various government officials. BCARS is facing splitting of government and non-government records, with non-government ones going to the British Columbia Museum. In addition, it is proposed to merge BCARS with the B.C. Information and Privacy Office.

Also on behalf of the association, I sent a letter to Dr. Marc Denis Everell of NRCan about the problems that we have been experiencing in dealing with Canada Map Office in regard to the depository map program. This resulted in a call from Patrice Furlong. She is primarily concerned with Product and Client Services in the NTS map area. Ms. Furlong was most sympathetic and agreed to have two NRCan staff members speak at the Halifax meeting on the changes in NRCan structure and key contacts in Canada Map Office and other areas. She indicated an interest in using CARTA for communications of changes.

All for this time. Next report will include comments on the wonderful time that we all had in Halifax. Hope that you were able to attend!

MESSAGE DE LA PRÉSIDENTE

Mai 1996

Bonnes nouvelles : Nous avons une nouvelle éditrice pour notre bulletin. Veuillez noter que Rosaline Milks a courageusement proposé ses services pour cette tâche très importante. Ceci sera son premier bulletin, et nous attendons les nombreux autres numéros. Comme dans tous les projets des associations, la coopération de tous les membres est essentielle au succès des projets entrepris. Rose accueillera avec joie votre contribution aux différents projets.

Le 9 février, le bureau de direction (BD) tenait une conférence téléphonique afin de discuter du Groupe d'intérêt sur les systèmes d'information géographique (SIG) et les ateliers de la conférence de 1996. Les discussions portaient sur la décision d'avoir une session sur la base du SIG afin de permettre aux personnes de se familiariser avec les concepts de base tout en leur permettant d'acquérir de l'expérience avec le SIG en utilisant les données du recensement car ces données sont facilement accessibles. D'autres sujets à l'ordre du jour portaient sur l'éditeur du bulletin, pour lequel nous avons pu retenir les services de Rose, ainsi que le statut des séries de cartes «A» du «sondage géologique», pour lequel j'ai communiqué avec des personnes dans les autres associations afin d'apporter ce sujet à Halifax. Nous aimerions que ces cartes soient incluss dans le programme de dépôt légal de la bibliothèque.

Un autre sujet pour notre Assemblée générale annuelle (AGA), que j'ai oublié d'inscrire la dernière fois est que dans nos Règles de procédures, nous devons changer la section 2.1.4. La formulation «âge du bureau» est une source de confusion. Le bureau de direction a approuvé le changement sous la formulation suivante : «ou le membre ayant siégé le plus longtemps au BD dans cet ordre», et je l'apporterai à l'AGA pour confirmation selon la section 4.4 des Règles et procédures.

Betty Kidd m'a mentionné que la Société de cartographie de la Nouvelle Zélande a un avis dans son journal à l'effet qu'elle garde le contact avec des organismes semblables en Australie, en Europe et aux États-Unis. À la mi-mars, j'ai écrit à Phil Barton, leur secrétaire en indiquant que nous aimerions aussi avoir des contacts avec eux. Betty croyait que nous avions eu des liens avec eux dans le passé, mais ceux-ci ont été perdus. J'ai reçu de ses nouvelles à la mi-avril. Il aimerait que nous échangions nos bulletins respectifs et ceci a été mis en oeuvre. Il est utile de savoir ce qui se passe dans d'autres pays en termes de soins apportés au matériel cartographique.

Les préparatifs pour la conférence de juin vont bon train. Les ateliers pour la pré-conférence afin de nous aider avec la complexité de «Arcview» et des données du recensement ont été organisés. James Boxall et Geoff Brown ont préparé un excellent programme. J'espère que la majorité d'entre vous y aura participé au moment ou vous lirez ceci.

Le nombre de nos membres est légèrement supérieur cette année à ce qu'il était l'an dernier à pareille date. Nous avons un total de 228 membres en comparaison de 222. Il y a 6 nouveaux membres, 4 membres réguliers et 2 institutionnels. Cependant, il y a encore des membres qui n'ont pas payé leur cotisation pour 1996. S'il vous plaît faites-le ! Votre contribution financière et professionnelle est importante pour nous.

Nous avons reçu une subvention du Conseil de recherches en sciences humaines du Canada (CRSHC) pour la période du 1er avril 1996 au 31 mars 1998. Nous apprécions grandement cette aide du CRSHC pour nous appuyer dans nos activités. Pour chacune des années financières mentionnées, nous recevons une allocation pour les déplacements de 2 225$, alors que la subvention pour les

activités administratives est de 1 967$ pour la première année et 984$ la deuxième année. Cependant, nous avons reçu toute la subvention en une seule tranche en «raison de l'efficience administrative» du bailleur de fonds. Il sera aussi beaucoup plus facile pour nous de planifier l'utilisation des fonds pour la prochaine année.

En ce qui a trait au SIG dans l'initiative des bibliothèques canadiennes, Yves Tessier croit qu'une partie du travail avec le groupe d'intérêt sur les SIG est maintenant complété. Des efforts constants ont permis de transférer une partie du travail en petit comité composé de : Grace Welch représentant l'ACCAC (avec James Boxall comme substitut), Sharon Heary représente «l'Association canadienne des utilisateurs de données publiques» (ACUDP), William Birdsall représentant «l'Association canadienne des bibliothèques de recherche» (ACBR) et Tim Mark, directeur exécutif de l'«ACBR». L'«ACBR» a d'ailleurs accepté la responsabilité pour la direction générale et la surveillance du projet au Canada. Le groupe SIG poursuivra ses activités comme groupe consultatif. Le nouveau groupe a préparé une proposition (une note de service pour développement) afin de la soumettre au bureau de direction de l'ACBR pour sa réunion de la mi-mai.

Cette note de service détaillait comment nous voulons procéder dans nos efforts pour préparer une lettre d'entente avec les agences gouvernementales et les compagnies privées pour offrir des données spatiales canadiennes et en permettre l'accès. À la réunion, les directeurs de l'ACBR ont approuvé cette proposition en principe, tout en demandant un «plan d'affaires» (les coûts liés à ce projet) et plus de détails sur l'utilité de ce projet. Ils ont aussi poser des questions sur la formation exigée ou le soutien à apporter au projet.

Avec Andrew Hubbertz, nous avons déterminé les dates pour la conférence de l'ACCAC en 1997 soit : du dimanche 25 mai au vendredi 30 mai, à Saskatoon. Ceci a pour objectif d'éviter les conflits d'horaire pour les rencontres de l'ACUDP, l'Association des bibliothèques canadiennes, et l'«Association des bibliothèques spéciales». Il a alloué du temps pour une journée d'ateliers, 2,5 jours d'autres activités, le banquet de l'AGM et une excursion géographique. Nous pourrons vous donner plus de détails lorsque ceux-ci seront disponibles. Inscrivez cela dans votre agenda.

Au nom de l'Association, j'ai envoyé des lettres de soutien pour les archives de la Colombie-Britannique et les services de gestion des documents aux différents fonctionnaires en place. Cet organisme risque de voir ses dossiers gouvernementaux et non gouvernementaux séparés, ces derniers seraient envoyés au Musée de Colombie-Britannique. De plus, il a été suggéré d'amalgamer les archives de la Colombie-Britannique avec le bureau des renseignements sur la vie privée et l'accès à l'information. De plus, j'ai envoyé une lettre au Dr Marc Denis Everell de Ressources Naturelles Canada (RNCan) au sujet des problèmes que nous avons eus en ce qui a trait au Bureau des cartes du Canada pour le programme de dépôt des cartes, cela au nom de l'Association.

J'ai fait cela à la suite de l'appel de Patrice Furlong, qui est préoccupée par les services pour les produits et les clients dans le secteur des Cartes du système national de référence cartographique du Canada. Mme Furlong était très réceptive et a accepté que deux employés du RNCan prennent la parole à la conférence d'Halifax en ce qui a trait à la structure du RNCan et les personnes clefs au Bureau des cartes du Canada et dans d'autres secteurs. Elle a démontré un intérêt dans l'utilisation de «CARTA» pour les changements dans la communication.

Ceci conclut cet entretien. Dans le prochain rapport, il y aura des commentaires sur les bons moments passés à Halifax. J'espère que vous aurez eu l'occasion d'y assister.

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MAPS PRINTED ON TYVEK:
A CONSERVATOR'S ANALYSIS

Michael Thompson
Conservation Treatment Division
National Archives of Canada

BACKGROUND:

The Canadian map curator community has recently expressed concerns regarding maps being printed on Tyvek rather than on paper. (Tyvek is the trademarked name for the Du Pont company's group of spunbonded olefin, i.e., high-density polyethylene, sheets.) In response to these concerns the Conservation Treatment Division of the National Archives of Canada made some enquiries and produced a report titled "Tyvek: A Preliminary Investigation into its Properties and Suitability as a Substrate for Archival Quality Maps." This report, disseminated via the Canadian electronic discussion list CARTA, generated interest into conducting further investigation and testing of maps on Tyvek in such areas as conservation treatment techniques, effects of light exposure on the inks, and the effects of abrasion and continuous folding and unfolding of such maps on the durability of the inks.

PURPOSE:

It is becoming apparent that paper may gradually be giving way to Tyvek as the medium of choice as more and more graphic artists, designers and printers are being attracted by the unique properties and "printability" of Tyvek. As a result, documents on Tyvek are finding their way into more and more archival and library collections. Although Tyvek as a product has been around for many years, its use as a substrate for documents (including maps) is relatively recent. Consequently, very little is known about the effects of traditional conservation materials and techniques on documents produced on Tyvek. In addition, the effects of normal wear and tear of documents on Tyvek in archival and library institutions is not known.

The purpose of the tests was two-fold;

(i) - to determine the reaction of maps printed on Tyvek to traditional conservation techniques and to develop the most suitable methods and techniques for conserving such maps when they are damaged.

(ii) - to establish the longevity of maps printed on Tyvek.

PROPOSAL:

It was proposed that the Conservation Treatment Division of the National Archives of Canada carry out the following tests of conservation techniques on maps printed by Natural Resources Canada on Tyvek to determine the most suitable materials and techniques for conserving them.

1 - stability of inks in water during washing
2 - stain removal
3 - flattening
4 - adhesive compatibility
5 - mending cuts and tears
6 - infilling areas of loss
7 - mounting

METHODOLOGY:

One of two identical topographic maps printed on Tyvek Type 1056D was cut into two equally sized pieces. One piece was cut into strips each measuring 20 cm. x 5 cm. The other piece was cut into equally sized pieces measuring 20 cm. x 20 cm. These strips and pieces were used to perform the above-mentioned conservation tests. The uncut map was used as the control. The procedures used for each test are described below.

RESULTS OF TESTS:
1 - Stability of inks in water during washing

Eight strips of a map printed on Tyvek were immersed in tap water at a temperature of 40°C. One strip was

with blotters. After testing, all strips were compared to the control.

Observation: No noticeable difference was observed between the control and all eight strips of tested Tyvek.

2 - Stain removal

Strips of a map printed on Tyvek were each stained with rust, water, coffee and tea. One strip of each stain was then cleaned with the following: tap water, reverse osmosis (RO) purified water, and sodium hypochlorite bleach. Each cleaned strip was compared to the control.

Observations: The rust stains could not be removed or diminished by immersion in tap water at a temperature of 40°C, RO purified water at room temperature, or a 5% solution of sodium hypochlorite bleach at a temperature of 40°C.

Water stains as well as coffee and tea stains were easily removed by immersion in tap water for 20 minutes at a temperature of 40°C; therefore RO purified water and sodium hypochlorite were not tried.

After drying, all strips were compared with the control. No visible loss of ink or damage to the Tyvek fibres was detected.

3 - Flattening

Three pieces of a map printed on Tyvek, measuring 20 cm. x 20 cm., were folded in both the machine and cross machine directions. One piece was humidified by spraying with a Dahlia mister on both sides, then pressed between blotters and weights until dry; the second piece was flattened in a hot platen laminating machine; and the third piece was ironed using a Sealector II tacking iron with the thermostatic control set to maximum.

Observations: Humidification and pressing be-

tween weighted blotters does not appear to remove creases.
The creases were removed using a hot platen laminating machine; the creases could not be felt and were visible only under raking light.

Ironing with a Sealector II tacking iron did reduce the creases somewhat but they were still visible and could be felt.

4 - Adhesive compatibility

Strips of a map printed on Tyvek were adhered to Tyvek of the same type, style and thickness as the map, and to "Archive Text" acid-free paper using carboxy methyl cellulose, Lascaux, and rice starch adhesives. In addition, the heat set adhesive Paraloid B50 was tested. The strength of the adhesion was compared to paper strips cut from a new topographical map printed on paper which had been adhered to Archive Text acid-free paper.

Carboxy methyl cellulose;

Tyvek to Tyvek bonding was poor. The corners would lift and the two layers could be pulled apart with ease.

Tyvek to Archive Text paper bonding was fair. The corners could be lifted with a fingernail and the two layers could be pulled apart causing some separation of both the Tyvek and the Archive Text fibres. Severe curling of the samples was observed.

Rice starch;

Tyvek to Tyvek bonding was good. The corners could not be lifted without separation of fibres. Similarly the two layers could not be pulled apart without causing substantial separation of the Tyvek fibres.

Tyvek to Archive Text paper bonding was good. The corners could not be lifted without

separation of the Tyvek and Archive Text fibres. Similarly the two layers could not be pulled apart without causing substantial separation of the Tyvek and Archive Text fibres. Severe curling of the samples was observed.

Lascaux;

Tyvek to Tyvek bonding was poor. The corners would lift and the two layers could be pulled apart with ease.

Tyvek to Archive Text paper bonding was good. The corners could not be lifted with out separation of the Tyvek and Archive Text fibres. Similarly the two layers could not be pulled apart without causing substantial separation of the Tyvek and Archive Text fibres.

Paraloid B50 heat set adhesive;

Tyvek to Tyvek bonding was poor. The corners would lift and the two layers could be pulled apart with ease.

Tyvek to Archive Text paper bonding was poor. The corners would lift and the two layers could be pulled apart with ease. There was a tendency for the samples to curl.

Observations: In all of the above tests, the Tyvek to Tyvek bonds and the Tyvek to Archive Text paper bonds were weaker than the bonds obtained when adhering strips of Archive Text paper to strips cut from a topographical map printed on paper.

(NOTE: When adhering Archive Text paper to Tyvek with each of the above adhesives, substantial curling of the Tyvek occurred. This was primarily due to expansion of the paper fibres during wetting while using carboxy methyl cellulose and rice starch. The subsequent shrinkage of the paper fibres as they dried resulted in the curling.

The curling when using Lascaux and Paraloid B50

heat set adhesive was probably due to the Tyvek fibres expanding during heating to activate the adhesive; the subsequent shrinkage of the fibres as they cooled most likely caused the curling.)

5 - Mending cuts and tears

One piece of a map printed on Tyvek measuring 20 cm. x 20 cm. had 5 cm. cuts and tears made around the edges. These cuts and tears were mended by adhering one piece of Tengujo Japanese tissue to each side of the Tyvek sample using the adhesives in the adhesive compatibility tests above. The strength of the repaired cuts and tears were compared to similar repaired cuts and tears made to a new topographical map printed on paper.

Carboxy methyl cellulose;

The corners of the tissue could be lifted with a fingernail but could not be pulled off the Tyvek sample without the tissue tearing.

Rice starch;

The corners of the tissue could not be lifted or pulled off the Tyvek sample without the tissue tearing.

Lascaux;

The corners of the tissue could not be lifted or pulled off the Tyvek sample without the tissue tearing.

Paraloid B50 heat set adhesive;

The corners of the tissue could easily be lifted and the entire piece of tissue pulled off the Tyvek sample.

Observations: The repaired cuts and tears on the Tyvek sample were not as strong as the repaired tears made to the paper sample using carboxy methyl cellulose and Paraloid B50 adhesives. However, when using rice starch and Lascaux adhesives, the repairs to the Tyvek sample were equally as strong as the repairs to the paper sample.

6 - Infilling areas of loss

One piece of a map printed on Tyvek, measuring 20 cm. x 20 cm., had irregular-shaped holes measuring approximately 3 cm. x 3 cm. cut from it. These holes were infilled with Archive Text acid-free paper using the adhesives in the adhesive compatibility tests above. The strength of the infilled areas was compared to similar infilled areas made with paper to a topographical map printed on paper. Because paper is easier to shape than Tyvek, paper was chosen over Tyvek to infill the holes.

Carboxy methyl cellulose;

The paper infill could be lifted with a fingernail and pulled off. However, if Tengujo Japanese tissue was adhered to each side of the infill its strength was significantly increased.

Rice starch paste;

The paper infill was strongly attached and could not be lifted until the Tyvek sample had been folded several times across the infill. With Tengujo Japanese tissue adhered to each side of the infill, it was strong and durable.

Lascaux;

The paper infill was strongly attached and could not be lifted until the Tyvek sample had been folded several times across the infill. With Tengujo Japanese tissue adhered to each side of the infill,   it was strong and durable.

Paraloid B50;

The paper infill could easily be lifted and pulled off. Even when reinforced with Tengujo Japanese tissue adhered to each side of the infill with Paraloid 50 the entire repair of tissue and the infill could easily be peeled off the sample.

7 - Mounting

One piece of Tyvek measuring 40 cm. x 40 cm. (the same style and thickness as that used to produce topo-graphical maps) was mounted onto another piece of Tyvek of the same type, style and thickness, and to Archive Text acid-free paper using the adhesives in the adhesive compatibility test above. The strength of the bonds of each adhesive on Tyvek to Tyvek and Tyvek to Archive Text paper was compared to that of a 40 cm. x 40 cm. section of a topographical map printed on paper mounted onto Archive Text acid-free paper.

Carboxy methyl cellulose;

Tyvek to Tyvek bonding was poor. The corners would lift and the two layers could be pulled apart with ease.

Tyvek to Archive Text paper bonding was fair. The corners could be lifted with a fingernail and the two layers could be pulled apart causing some separation of both the Tyvek and the Archive Text fibres. Severe curling of the sample was observed.

Rice starch;

Tyvek to Tyvek bonding was good. The corners could not be lifted with out separation of fibres. Similarly the two layers could not be pulled apart with out causing substantial separation of the Tyvek fibres.

Tyvek to Archive Text paper bonding was good. The corners could not be lifted with out separation of Tyvek and Archive Text fibres. Similarly the two layers could not be pulled apart without causing substantial separation of the Tyvek and Archive Text fibres. Severe curling of the sample was observed.

Lascaux;

Tyvek to Tyvek bonding was poor. The corners would lift and the two layers could be pulled apart with ease. Tyvek to Archive Text paper bonding was good. The corners could not be lifted without separation of Tyvek and Archive Text fibres.

Similarly the two layers could not be pulled apart without causing substantial separation of the Tyvek and Archive Text fibres. Severe curling of the sample was observed.

Paraloid B50 heat set adhesive;

Tyvek to Tyvek bonding was poor. The corners would lift and the two layers could be pulled apart with ease.

Tyvek to Archive Text paper bonding was poor. The corners would lift and the two layers could be pulled apart with ease. There was a tendency for the sample to curl.

Observations: As expected, the observations of the mounting tests were identical to the adhesive compatibility tests. Neither the Tyvek to Tyvek bonds or the Tyvek to Archive Text paper bonds were as strong as the bonds obtained when adhering samples of a topographical map printed on paper to Archive Text paper using the adhesives above. As occurred with the adhesive compatibility tests, adhering Archive Text paper to Tyvek with each of the above adhesives caused substantial curling of the samples. This was again due primarily to expansion of the paper fibres during wetting while using carboxymethyl cellulose and rice starch; the subsequent shrinkage of the paper fibres as they dried resulted in the curling. The curling when using Lascaux and Paraloid B50 heat set adhesive was again probably due to the Tyvek fibres expanding during heating to activate the adhesive; the subsequent shrinkage of the fibres as they cooled most likely caused the curling.

CONCLUSIONS BASED ON THE TESTS:

Tyvek appears to be much stronger and more resilient to physical stresses than paper. This inherent strength of Tyvek will probably result in a longer useful life before the intervention of conservation treatments is required.

The test results indicate that from a conservation point of view, Tyvek can be readily treated when damaged but it does not react the same way paper does during treatment. For example, Tyvek does not absorb water and therefore does not expand the way paper does. These differences should be taken into account before conservation treatments are undertaken.

Washing posed no problems. Tyvek could be immersed in aqueous solutions without risk of it breaking up or of the printed inks dissolving.

Drying Tyvek takes considerably less time than drying paper. It is easily accomplished by placing the Tyvek between blotters, boards and a few weights.

Repairing and mounting using starch adhesives gave the strongest bond. Due to the very different expansion rates of paper and Tyvek, significant curling may occur when a large area of paper or tissue is applied to one side of a map printed on Tyvek. For this reason it is advisable, when paper or Japanese tissue is used to mount or strengthen a map on Tyvek, that thin tissue be applied to the opposite side (generally the face side) using the same adhesives throughout. This should reduce the amount of curl encountered.

Infilling areas of loss was most easily accomplished by using paper as the infill. Tyvek cannot be torn to shape as paper can and has to be cut with scissors. If the infill has to be reinforced with tissue it is advisable to do so on both sides so as to reduce the tendency for the map to curl.

Additional information

Sarah Walker, "Investigation of the properties of Tyvek, pertaining to its use as a storage material for artifacts." IIC-CG Newsletter, Vol. XII, No. 1 (September 1986), pp. 21-25.

Two undated Du Pont handbooks titled Techniques for Tyvek Spunbonded Olefin, one called "Printing Handbook," the other "Converting Handbook". (Du Pont TYVEK, P.O. Box 80, 705 Wilmington, DE 19880-0705, U.S.A. Telephone: 1-800-44-TYVEK)

DATA OWNERSHIP AND LICENSING:
THE EDUCATION SECTOR PERSPECTIVE

Cathy Moulder
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Speech prepared for delivery at the Urban and Regional Information Systems Association, Ontario Chapter workshop on "Perspectives on Data Ownership, Licensing and Sharing", Mississauga Civic Centre, Friday March 29, 1996

Thank you for inviting me. It's a pretty tall order to represent the Whole Educational Sector. However as a librarian I do serve the information interests of the whole University, rather than any one specific group of data users.

Let me start by making what may seem like a pretty obvious statement, and that is...the Library's role is to provide access to information of all kinds, to the whole University community. And the reason I mention such an obvious mandate is that georeferenced data presents us with some unique challenges. "The whole University community" is a pretty un-homogenous entity.

The University community at McMaster is comprised of approximately 16,000 undergraduates, 2,200 grad students, and 1,200 faculty and teaching assistants. The level of GIS literacy in the group is uneven, to say the least. We have perhaps 30 students in a post-graduate GIS certificate program or using GIS technology at the graduate level. We probably have 60 students per year in a fourth year GIS course and another 60 in a third year GIS course, maybe a maximum of 150 in our system in any one year. There are two active GIS work stations on campus, one in the teaching lab and the other operated by an individual researcher. Which is a pretty small percentage of the whole that could be described as "GIS literate".

Then we have the vast remainder who may (and frequently do) require access to spatial data. We have quite a few faculty and students, in many different disciplines, who have heard of GIS technology and are curious about its application to their own studies. And then, despite stringent admission standards, we have a vast number who have never heard of it, and maybe have never even used a paper map. Shocking but true! They have come into the Library, asked some kind of a question that has the word "where" in it and been referred to the Map Collection. Spatial data may be necessary to the research or study of every one of these different individuals.

Basically the University Library must try to meet spatial data needs on two levels. We have (at this point) a very small GIS literate component who require a variety of data types for teaching exercises, and who require detailed and specific data sets for analysis and research, for thesis preparation and for publication. Then we have a vast body of students and faculty who also require access to georeferenced information, probably without knowing anything at all about its format. They need access to geographical information in some form, and only coincidentally is much of this now available as digital data.

In the world of paper-based geographical information, the Library was able to serve everyone quite well by building a good general collection of maps and airphotos, fairly general for the whole world,

and in greater detail where teaching and research needs dictate. Degree of cartographic literacy was not so critical. Some users just simply were able to get more information from a map than others were, but basically the access to information provided by the Library was consistent and reliable for all levels of need.

Digital spatial data are basically the same kinds of information as we have always been providing, but in a very different format. The Library is still expected to provide equitable access for the whole University community, disparate as their needs might be. We are expected to meet the teaching and research needs of our faculty. But unfortunately for us, this new format of information requires hardware, software, technical support staff and use training which libraries are only slowly acquiring. Government map producing agencies have announced their ambition of making digital spatial data more widely available, and downsizing or eliminating the published paper mapping programs. This was further complicated by the adoption of cost recovery philosophies. University budgets went into decline at about the same time. The buying power of library acquisitions budgets dropped like a rock.

None of these economic laments are news to you. But what might be news is the bottom line end result. Canadian universities are now using U.S. government spatial data quite extensively in our teaching programs. U.S. data is available free or at very low cost, and is public domain data, meaning that it can be used in the teaching labs in any sort of way without official permission. At McMaster, we are turning out GIS course graduates who have had one single exposure, only one actual sighting and use of Ontario Base Map data. And no exposure whatsoever to federal topographic data or to things like Statistics Canada boundary files. All Canadian universities are in the same position. For almost entirely economic reasons, our libraries are unable to provide Canadian spatial data. This is a very disturbing state of affairs, when Canada has been a world leader in the development of GIS and when the qual-

ity of our spatial data is second to none.

Now that was the bad news -- the fact that Canadian educational institutions have considerable and varied needs for high quality Canadian spatial data for our students and researchers which we are largely unable to meet at this time. The good news is that the limited amount of data which we have been able to provide up to this point has come, not from our declining acquisitions budgets, but through some innovative and highly cooperative projects. And that the future bodes even better for the continued development of this type of cooperative data sharing arrangements.

So where are academic libraries getting spatial data at this point? One of the most interesting initiatives in which we have been involved has been the Association of Research Libraries GIS Literacy Project. ARL is the North American organization of libraries at major universities with post-graduate degree programs. The American university libraries have been deluged by U.S. government spatial data in the last few years, and devised this project in 1992 to provide effective access to that data, especially census data.

ESRI has been the major partner and supporter of the project from its initiation. Phases 1 and 2 included 70 American university libraries. Phase 3 extended the project to 26 Canadian libraries, and the training sessions ran in Montreal in June of last year for the eastern half and in Edmonton in September. Every participating library has received a copy of ArcView 2, plus two days of hands-on training in its use, as well as some ancillary ARC products and a data sampler. In return, the libraries have made a significant commitment to provide hardware and staff support to make this information available and to disseminate this knowledge into our surrounding communities.

The ARL GIS Literacy Project has been a great success in terms of international academic and commercial cooperation, and in terms of bringing librarians and library administrators up to speed on the

concepts of spatial data delivery. Unfortunately for the Canadian libraries, all the data that has been supplied through the project has been American. The project organizers were unable to negotiate any cooperative data sharing agreements with Canadian government map producers in time for the project to go ahead last year. So what we got and used for training purposes was ArcWorld and ArcUSA, the Digital Chart of the World, and if we wanted it, the boundary files for the U.S. census. These things are useful as a general background collection, for small scale general data needs. I don't want to sound disappointed at all about the ARL GIS Literacy Project, because ARL and ESRI have offered us an admirable model of academic/commercial cooperation for mutual benefit. But the products supplied with it are almost entirely American and obviously not much help where our teaching and research need is highest, which is for Canadian data.

You may remember that I said McMaster GIS students get one exposure to Ontario Base Map data, and that comes about through an initiative of the Ministry of Natural Resources. In the early 1990s, MNR allowed ten free OBM tiles to each Ontario university, for the purpose of encouraging the development of GIS teaching and use. I'm not sure how formal this arrangement was--I don't know that it was ever written down as an official policy. And unfortunately, at some universities, the tiles were claimed by undergraduates or individual researchers. But at McMaster our ten tiles of downtown Hamilton were obtained by the Library, so they are now available to the whole university community. This initiative has now been discontinued, but it did allow us to obtain a very valuable little bit of real Canadian data for use in the GIS lab.

Another way in which university libraries come to have data now is through cooperative projects with our own researchers. In this case, I can describe one project in which McMaster's Library has been involved. This type of data sharing will be quite different depending on the strengths and individuals at each institution--some may have done a lot more,

and some universities may not have any such opportunities. But at McMaster, we have a large multidisciplinary research project underway to study Hamilton Harbour and its watershed. This project involves natural resources inventories, hydrology, and biological species research as well as demographics, economics, urban impact, and recreational use studies of the same area. The research group, which is unofficially called Ecowise, received significant 3-year funding from Environment Canada. Two of their goals are particularly relevant for the Library's involvement. Goal 3 requires the research project to develop and use new methodologies of study, and among these have been the use of GIS and the development of multimedia presentations of their end results. Goal 5 requires them to communicate their findings to the public as well as to the policy makers. As a result, the research group approached the Library to provide a public venue for their end products. The Library has agreed to mount the Ecowise GIS databases for public access which will be really useful for a large number of different students studying the local area. In exchange, Ecowise had donated their own databases, and has also paid the purchase price and licence fees for the fifty OBM tiles in the watershed research area and donated those tiles to the Library for the use of the whole University community. The Library administers the license agreement, and provides access to the OBM tiles as well as to the Ecowise databases. We have been really delighted to work with the Ecowise project coordinators on this project because they have a very altruistic approach to providing access to their information and a refreshingly informed view of the Library's role in providing equitable access to the whole University community. It is projects like this one that will help us to avoid a future of spatial data have's and have nots in the academic community, and we are quite proud of it as a model of internal cooperation.

The future looks even brighter for the educational sector in terms of further development of data sharing partnerships. The Ontario Council of University Libraries Map Group has held discussions with

the Ministry of Natural Resources [MNR] on the subject of data sharing and licensing. We are quite optimistic that we will be able to agree on a partnership or consortium arrangement that will allow university researchers access to more Ontario spatial data. We are already seeing a more lenient approach to licensing which will now permit more flexible use of OBM data in the teaching labs. MNR is discontinuing use of their original Multi-User Licence for non-profit partners, and is encouraging data exchanges rather than cash purchases, which is a definite possibility for many universities to consider.

And finally, there is a very significant cooperative project underway between Canadian universities and Statistics Canada, called the Data Liberation Initiative. Mr. Roy is going to back me up on this subject, because I have not been involved in these negotiations myself. DLI is a data consortium arrangement, by which Canadian universities will pay an annual subscription fee. And in return, they will receive FTP or CD ROM access to a very large body of Statistics Canada digital products, including the cartographic and geographic boundary files, and many other research databases. For our part, the universities have agreed to ensure that license agreements are respected and that the data is used for academic, non-commercial purposes only, to provide user access, education and reference assistance, and to monitor data use. The Data Liberation Initiative could be the critical turning point in providing access to significant bodies of spatial data to our university communities. The next five years, while this project is in its pilot stage, promise to be a very exciting and challenging time.

So that is a very quick overview of just a few of the data sharing projects in which the educational sector, or at least McMaster, has been involved recently. The other issue in which our perspective may be somewhat different from the previous speakers' is in the administration of copyright and data licensing. Respect for intellectual property is a very important basic tenet in academia, and it is part of the education that we provide to our students. The Library is very proactive in informing individuals about copyright in general, and in answering questions about specific uses of all different types of information. For digital data, when the license agreements which the University has signed stipulate non-commercial use only like for example OBM or census data, McMaster has the end user sign a subagreement form. This form requires the user to acknowledge that they are affiliated with McMaster and that the data supplied will be used for academic purposes only. I have copies of our subagreement forms with me if anyone is interested in seeing the specific wording we use. We find this has been quite effective in administering these types of data so far, in that it reenforces the intellectual responsibilities entailed in the data use and puts the onus for compliance on the user. Some other universities which are developing more automated delivery systems are working on providing intermediate educational or registration screens in the FTP sites to again oblige their users to be aware of copyright and licence implications of digital data use. Basically we deal with hundreds of different kinds of intellectual properties every day, and we take our responsibility to educate our students (and faculty) about their use very seriously. I would like to hope that this is one of the reasons why MNR is negotiating through the Map Librarians group to develop further data partnerships with the Ontario universities.

In closing, let me reemphasize the importance of data availability for the educational sector.

Canadian government data is of the very highest quality in the world.

Until this data is made available to all kinds of researchers, to combine and manipulate and juxtapose with other kinds of information and ideas, we are not getting the full value from GIS technology nor from the tax-funded information itself.

Until this data is made available to all kinds of students, we are not getting it into the hands and minds of our future policy and decision makers and just plain better informed citizens.

This must be a goal for all of us.

SPATIAL DATA IN DIGITAL FORM: AN OVERVIEW

Continuation of article appearing in ACMLA Bulletin Number 95, Winter Issue

By

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Presented at ACMLA July 1993 Annual Conference
(Minor Updates, July 1995)

Sources are given below, or following definition: Digital Equipment Corporation. 1990. [various brochures]

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Glossary of Terms
access time: amount of time required for a software command to be effected by hardware

ADAR: Airborne Data Acquisition and Registration

ADRG: Arc Digitized Raster Graphics (CD-ROM products of U.S. Defense Mapping Agency)

algorithm: numerical method to make a procedure occur in computer software

AM/FM: automated mapping/facilities management; applications are used primarily to manage geographically distributed facilities (e.g., waters, pipelines) that deliver service to customers

analog: the representation of continuous numerical quantities (e.g., voltage, current, brightness, etc.) as opposed to discrete or "digital" units; usually refers to items in hard copy (e.g., paper, microform); in contradistinction to digital signals, which have only two states of existence, (e.g., on and off), analog signals may have any value, ranging from the largest to the smallest

application: a computer program written for a specific purpose, such as work processing or page layout

Archie: program developed at McGill University; index to all anonymous ftp sites that have advertised their existence to McGill; archie program is a client program querying one of many sites hosting this ftp index

ARC/INFO: GIS (sold by Environmental Systems Research Institute, ESRI), designed for resource and record management, land use, and land planning that integrates maps and tabular information in a common spatial database

array processor: a specialized computing device (used with a general-purpose computer), which performs mathematical operations on rectangular arrays of data very quickly; frequently used for image processing

ASCII: American National Standard Code for Information Interchange; a generic code representing alphanumeric characters that permits the exchange of text between different operating systems

attributes: all thematic information that defines "what" a map feature is: attributes are termed non-spatial because they do not themselves represent locational information; attributes may be stored as: proprietary file structures; non-relational dbs; relational dbs; object-oriented dbs

automated geographic information system: a GIS based on digital computers

band: a range of wavelengths of electromagnetic radiation; also called channel

band interleaved by line (BIL): band data values are stored in sequence for each line of a raster before the set of values for the next line; a method of data storage for multivariate raster datasets

band interleaved by pixel (BIP): all band data values for one pixel are stored before moving on to the values for the next pixel; a method of data storage for multivariate raster datasets

band sequential (BSQ): the complete array of data for each separate variable or band is stored independently of all other variables; a methods of data storage for multivariate raster datasets

baseline: an imaginary line on which the letters in a line of type sit

baud: a unit of data transmission speed measured in bits per second; modems are rated according to baud, such as 1200, 2400, 9600

Bernoulli box: brand name IOmega Corporation uses for internal and external high-density drives and media; special floppy disks (5.25" or 8") encased in hard plastic, each disk holding five 44MB floppies each

BIL: Band Interleaved by L

BIP: Band Interleaved by Pixel

bit: basic unit of information in a computer. Each number and letter that goes into a computer is translated into a unique series of electronic impulses. Each impulse, actually a level of voltage coursing through the computer's circuitry, is usually represented on paper by a 1 or a 0 (zero), and is called a bit.

bitmap: a matrix of dots, all of the same density, that forms an image

BITnet: Because It's Time Network; started at City University of New York; provides such services as electronic mail

bit string: a string of data bits that represents a "yes" or a "no" for a particular attribute for a record (e.g., whether the title in a bibliographic record is in English). Bit strings are employed to make certain searches in online systems such as MELVYL faster.

bits per inch (BPI): number of bits of information per inch on magnetic tape or other magnetic storage bits per second (BPS): number of bits of information transmitted or communicated

BMP: Microsoft Windows bitmapped image format

BPI: Bits Per Inch

BPS: Bits Per Second

bridge: processes connecting protocols to enable them to communicate with each other as if they were compatible

BSQ: Band Sequential

buffer: temporary storage space in computer memory

B/W: black and white

byte: composed of eight bits (with 2 to the 8th, or 256, unique values - often given as a whole number between 0 and 255); this combination of bits representing a number or a letter; unit of measurement used to rate storage capacity of disks; 1,000 bytes is a kilobyte; 1,000,000 (actually 1,048,576) bytes is a megabyte. Bytes range in value from 0 (00000000) to 256 (11111111); each stores one ASCII character

CAC: Compressed Aeronautical Chart (U.S. government)

CAD: computer-assisted design; does not have descriptive data assigned to information (NOTE: also used to mean computer-aided drafting)

cathode ray tube (CRT): electronic data-display device; the display surface is covered by a material which will emit light when struck by an electron beam

CCITT: International Telegraph and Telephone Consultative Committee; standards group that recommends specifications for such matters as telefacsimile

CCT: Computer Compatible Tape

CDR: CorelDraw format

CGM: Computer Graphic Metafile format

channel: see Band

character: any ASCII code that displays a symbol

chips: building blocks of a computer

CIR: Color Infrared

client: unit within client-server architecture system that issues a request for services or information to a server; normally, it is the interface for a human user

client-server architecture: software system that divides functions into client (requestor) and server (provider) subsystems

clock speed: speed at which CPU operates in executing instructions

CNI: Coalition for Networked Information; deals with national policy, planning, and standards issues re-information resources on a national telecommunications network; co-sponsored by ARL, CAUSE, and EDUCOM; universities, publishers, and other information providers are institutional members

COLD: Computer Output to Laser (optical) Disc

COGO: coordinate geometry

computer compatible tape: magnetic tape containing data in computer-readable form; most common is 9-track (9 parallel data-recording tracks); densities are most often 1,600 or 6,250 BPI

computer system: computer and its attached peripherals (e.g., disk drives, monitor, keyboard, printer, etc.)

computer virus: program designed to spread, without anyone knowing it exists; they may be destructive or just a nuisance; may be spread from an infected executable file, by infecting the boot sector (first sector on a disk); may be disguised as other programs (TIC TALK, January 6, 1992, p. 16)

concurrency: accessing of same data by many users

contrast enhancement: procedure which artificially

increases the contrast in an image, so that certain features may be more easily seen

CPU (central processing unit): the "Brain" of the computer, which interprets computer instructions

CRT: Cathode Ray Tube

CZCS: Coastal Zone Color Scanner

D/A: Digital to Analog converter

data: in the computer context, the information produced by a computer

database: collection of related information

data base management: enables computer to store large amounts of information and then sort it

dataset: a collection of like-formatted records with like information; may be from more than one data source

dataset granule: a segment of a dataset; smallest element of information useful to viewer

DBDB: Ditial Bathymetry Data Base (U.S. government)

DBMS: database management system

DCW: Digital Chart of the World (U.S. DMA)

DEC: Digital Equipment Corporation

DEM: Digital Elevation Model (USGS)

desktop publishing: use of personal computers and software applications to produce publication-quality documents

DFAD: Digital Feature Analysis Data (U.S. government)

DIF: Data Interchange Format

Digital Elevation Model (DEM): raster array of elevation values; available from USGS for 1:250,000-scale series of U.S. and for selected 1:24,000-scale sheets

Digital Line Graph (DLG): a vector data set; available from USGS for same series as DEMs; non-elevation data from these series

digital number: in remote sensing, the numerical value of a specific pixel

digital orthophoto: airphoto that has been scanned and digitally rectified to remove distortions

digital terrain model (DTM): producing models of surface or subsurface that appear to be three-dimensional

digital to analog converter: a device that converts digital computer values to analog voltages, e.g., when digital values are converted to analog signals for a video display

digitizer: device used to convert analog information into digital form; a digitizer for flat graphic material is either flatbed or scanning; the image is converted into rasters or vectors that can be read, stored and manipulated by the computer.

digitizing, heads-up: raster-scanned image is displayed magnified on a monitor; map features are digitized directly on top of the raster image (Geo Info Systems, February 1995, p. 29)

DIME: Dual Independent Map Encoding (U.S. Bureau of the Census)

DIP switch: Dual Inline Package; set of switches in a computer used to configure hardware

disc: circular device (plate-like) for holding optical media

disk: magnetically coated object that stores programs and data files; the two main types are hard disks and floppy disks

disk drive: used to store information; looks like a small record player and turns a circular piece of plastic, called a disk. As the drive spins the disk, it can either take information from the disk (reading) or put information on to it (writing). The drive either creates magnetic patterns on the disk's surface as it writes data on the disk, or it reads patterns already there. Some drives put information on both sides of a disk - these are called double-sided drives; single-sided drives record only on one side of the disk. Drives with double-density capacity store more data than do single-density drives. Density refers to the number of tracks of information encoded on a disk. The tracks are arranged in concentric circles.

dithering: process that generates additional colors and shades from an existing palette

DLG: Digital Line Graph (USGS)

DMA: U.S. Defense Mapping Agency

DN: Digital Number

DOS: operating system for IBM PCs

dot-matrix printer: forms letters by striking the paper with small pins, forming each letter with a pattern of dots.

dots per inch: a measure of a peripheral's resolution. For example, a laser printer's resolution is 300 dpi; some monitors are about 72 dpi.

download: the act of transferring files from one computer to another, or of loading fonts from a computer to a printer

downsizing: moving from a few large time-shared computers to network-based computing with clients and servers; intent is to improve quality of operations while drastically lowering costs

DPI: Dots Per Inch

DQDB: Distributed-Queue Dual Buses; first-come, first-serve queue

DTED: Digital Terrain Elevation Data (U.S. government)

DTM: Digital Terrain Model

Dual Independent Map Encoding (DIME): vector data structure used by the U.S. Bureau of the Census for the 1980 Census

dumb terminal: consists of monitor and keyboard; does little more than send and receive data

DXF: Drawing Interchange File; commonly used in CAD/CAM (e.g., AutoCAD) systems to exchange data between systems

EBCDIC: Extended Binary Coded Decimal Interchange Code; file format usually used by IBM mainframes; PCs use ASCII

EDUCOM: a nonprofit consortium of colleges, universities, and other institutions, founded in 1964; object is to facilitate the introduction, use, and management of information technology in higher education

EGA: Enhanced Graphics Adapter; high-resolution color graphics adapter for DOS PCs

eight-bit machine: microcomputer having CPU that works with information 8 bits at a time

electronic atlas: "information systems set up for the interactive consultation of digital geographic databases concerning a certain area or theme and containing data which are comparable in terms of the level of generalization and the resolution at which the data were collected" (Ormeling, Ferjan. 1995. New forms, concepts, and structures for European national atlases. Cartographic perspectives #20:12)

electronic mail: messages exchanged among computer users on a network

emulator: hardware or software designed to take the place of some other type of device

end of file (EOF): a computer code that indicates the end of a dataset

EOF: End Of File

EPS: Encapsulated PostScript format

EROS: Earth Resources Observation Satellite; refers to data collected by the various Landsat satellites

ESA: European Space Agency

ESRI: Environmental Systems Research Institute; one well-known product is ARC/INFO

Ethernet: LAN technology; uses IEEE 802.3 as standard; standard Ethernet uses copper-based cable as physical medium and is therefore vulnerable to interference from equipment nearby; 10MB/second; maximum length of 2.8 km (Goodloe, Tony. 1990. Fast, flexibe FDDI. Workstation news, July, p. 18)

exabyte: 1,000,000,000,000,000,000

extension: 3-letter suffix after the period in a file name; e.g., .DXF

false color composite: image formed by assigning colors arbitrarily to two or more b/w images of a single scene, with the object of pinpointing differences and similarities; often made from data derived from different wavelength bands of a multispectral sensor such as Landsat

FDDI: Fiber Digital Data Interface; 100M/second communications (LAN) standard; uses glass-fiber cabling, which is difficult medium upon which to eavesdrop; stations may be as far as 2km apart; token-ring (Goodloe, Tony. Fast, flexibe FDDI. Workstation news, July, p. 18)

file format: way in which information is recorded on a disk/c

file server: processor with large disks, attached to network; allows data in network to be centrally organized and managed; other devices (e.g., terminals; workstations) on network can transparently access data from the file server

firmware: certain kinds of information that is recorded on computer chips in hardware, rather than being transmitted in software

floppy disk: thin, flexible, plastic disk

FLOPS: Floating Point Operations Per Second

frame grabber: computer expansion board that can digitize a single video or TV image for digital photography

FTP: File Transfer Protocol; computer program for transferring files across a network

full-duplex circuit: communication over telephone lines where data is transmitted in both directories simultaneously

gateway: protocol converter which communicates with connecting protocols using their own languages

GB: gigabyte (about one billion characters)

GBIS: Geo-Based Information System

GEM: Digital Research graphical environment manager format

geocoding: conversion of spatial information into computer-readable form

geographic information system (GIS): "the complete sequence of components for acquiring, processing, storing, and managing spatial data" (Star & Estes, p. 267). Applications tend to be analysis of natural resources and demographics to support decision

making; generally includes a database of multiple information layers that may be manipulated by computer software to evaluate or model relationships among elements in the different layers. Spatial objects in a GIS include points, line segments, strings, arcs, G-rings (sequence of nonintersecting strings or arcs, with closure), interior areas, G-polygons, pixels, and grid cells.

geo-information: information about the Earth, derived from spatial data, principally acquired by satellites and aircraft (National Remote Sensing Centre Limited. 1994. Company profile, National Remote Sensing Centre Limited. Farnborough, Hampshire, UK; p. 2)

geomatics: art, science and technologies used in managing geographically referenced information (includes acquisition, storage, analysis, dissemination) (Canada. Industry, Science and Technology Canada. 1993. Geomatics industry review. Ottawa. p. 16)

GIF: CompuServe Graphic Image Format; graphics compression and storage format

gigabyte: one million kilobytes (1,024,000,000 characters)

GIS: Geographic Information System

Gopher: menu-based information system on the Internet; developed by University of Minnesota; client-server application

GPS: global positioning system; satellites in this system are used to determine positions of points on the surface of the Earth

graphics: these may be character graphers (non-alphabetic characters used for drawing, e.g., boxes), color graphics (color card needed to drive a color monitor, or a monochrome monitor capable of gray-scale display), digitized images (images that have been scanned or digitized from hard-copy items), and full-motion video

gray-scale monitor: a monochrome monitor that can display 256 levels of gray on a single channel, using 8 bits of gray-level information per pixel

GUI: Graphical User Interface

half-duplex circuit: communications over telephone lines where data is transmitted in only one direction at a time; channel is reversed for transmitting data in other direction

halftone: created by photographing a continuous-tone image (e.g., a photograph) through a screen, which is a fine-lined grid pattern that breaks the image being photographed into a dot pattern; screens usually have rulings from 55 to 150 lines per inch (lpi). A computer digitizes data one dot at a time; digital halftone dots are composed of smaller printer dots arranged in grids called cells.

hard-disk drives: rapidly spin hard, metal disks that store much greater amounts of information than do floppy disks

hardware: physical parts of a computer, including CPU, memory, tape drives, etc.

HDDT: High-Density Digital Tape

high-density digital tape (HDDT): analog system for storing data; not directly compatible with general-purpose computer systems

HPGL: Hewlett-Packard Graphics Language format

Hz: Hertz, or cycles per second

icon: small image that graphically represents an object, concept, function, or message on the computer screen

IDE: Imbedded Drive Electronics; type of hard drive of PCs only; another is SCSI

IFF: Commodore Amiga interchange format file

IGES: Initial Graphics Exchange Specification

IGIS: Integrated Geographic Information System

image: (a two-dimensional data representation) (Star & Estes, p. 268)

image classification: analysis of digital image values into categories of information

IMG: Digital Research GEM Image format

integrated geographic information system (IGIS): a GIS that works with remote-sensing data

Internet: an informal national network, interconnecting local area, regional, and national backbone networks. Networks in the Internet use the same telecommunications protocol (TCP/IP) and provide mail, remote log-in, and file transfer functions;

Internet address: a unique number assigned to each host computer in the Internet

inter-record gap (IRG): empty distance between records on magnetic tape

I/O: input/output

IP: Internet protocol; as used in "IP address" (e.g., 128.111.96.75 is IP address for the server Atlas of the Map and Imagery Laboratory, University of California, Santa Barbara)

IRG: Inter-Record Gap

ISO: International Standards Organization

IVHS Intelligent Vehicle Highway Systems: uses real-time traffic information to manage traffic patterns

JPEG: Joint Photographic Experts Group (joint committee of the International Standards Organization and the CCITT); created a standard for compression and decompression of continuous-tone images (such as photographs) which is called JPEG

KB: abbreviation of kilobytes (actually 1,024 bytes, but usually rounded off to 1,000)

KHz: kiloHertz, or thousands of cycles per second

knowbots: network programs that have the capability of searching the Internet/WWW to find material for which user is searching.

LAN: Local Area Network; collections of independent computers that communicate with each other over a medium; confined to small geographic area, such as a single building; technologies used to connect the computers include Ethernet, Token Ring, and FDDI; media used to connect the computers are ThickWire, thin coax, unshielded twisted pair, and fiber optics (Lantronix.1995. Ethernet tutorial & product guide, summer, 1995.Irvine CA. p. 20)

languages: machine language is lowest level (1's and 0's of binary code); next is assembly language (machine language represented in letters and numbers); high-level languages use easily understood letters, words, and numbers, and turn these into machine language for the computer's use (e.g., BASIC, COBOL, FORTRAN, C)

laser printer: high-speed printer that produces letter-quality hardcopy of computer data using laser technology

line following: operator places screen cursor on line feature to be digitized that is on scanned image, and software automatically follows the line feature

LIS: Land Information System; comprehensive system centered on spatially oriented information; examples: single-user workstations running GIS software; or entire organization networked to several computers running numerous types of software. The U.S. Bureau of Land Management is working on a large LIS which is intended to interrelate identity, use and attributes of land parcels, maps, and paper

records, integrated with a geodetic reference framework which forms a unifying foundation by linking component layers of cartographic data.

listserver: computer program that, in simplest form, automatically mail messages to an electronically maintained mailing list; for example, one may send an electronic mail message to the listserver and subscribe to a particular list, send a message to the list and have it resent to all subscribers

local area network: a way of linking computers to that they may share information and peripheral equipment such as printers; usually within a given area (e.g., a department in a building)

lossy, lossless: compression scheme (e.g., PKZIP) that reproduces files that decompress to the exact same file as the original is lossless; maximum compression ratio of about 2:1. Lossy compression schemes (used on, e.g., video and still bit-mapped images) decompress into a facsimile of the original; ratios can be in excess of 200:1; blockiness and artefacts are visible at high ratios, subtle changes such as those in shades at lower rates (SIGCAT Discourse: professional journal of the Special Interest Group on CD-ROM Applications & Technology 8(4):9, May-June 1994)

lpi: lines per inch

magnetic-optical (MO) discs: made of aluminum + alloy and encased in plastic; 3.5" (single-sided) discs hold about 130MB; slower than hard drives, but improving main-frame computers: the biggest computers made, in terms of memory and storage capacity

MB: megabyte

MC&G: Mapping, Charting, & Geodesy (U.S. Department of Defense)

megabyte: one million characters

metadata: data that describes data (e.g., cataloging records)

MHz: megahertz; millions of cycles per second

microprocessor: thousands of microscopic electronic circuits in very small space; made microcomputer possible

MIME: MultiPurpose Internet Mail Extension; allows binary files to be sent

minicomputer: between microcomputer and mainframe in size and abilities

MIPS: Million Instructions Per Second; used to characterize CPU performance

modem: device that converts electronic signals from the computer into sounds that can be carried over a telephone line, and also converts the sounds back into electronic signals. The term is a combination of "modulator" and "demodulator." An acoustic coupler is a modem into which a telephone can be placed.

motherboard: board inside a PC containing microprocessor, math coprocessor, card slots, and other chips essential to having the PC operate correctly

mouse: small, handheld device which one moves around on a flat surface in order to position the cursor on a video display

MS: MicroSoft

MSP: Microsoft Paint format

MSS: Multispectral Scanner

multiuser server: minicomputer attached to a LAN; allows users to log in on the LAN

NAD: North American Datum (geodetic)

NADCON: North American Datum Conversion

NASA: U.S. National Aeronautics and Space Administration

NCGIA: National Center for Geographic Information and Analysis (headquartered at UC Santa Barbara; other offices at U. Maine, Orono, and at SUNY Buffalo)

NFS: Network File System; a communications protocol based on IP for file sharing by dissimilar computers on a LAN; originally developed by Sun

NGS: U.S. National Geodetic Survey

Nibble: half of a byte

NOAA: U.S. National Oceanic and Atmospheric Administration

NOS: U.S. National Ocean Survey

NSF: U.S. National Science Foundation

OCR: Optical Character Recognition

operating system: software procedures that tell a computer how to operate programs; may also be called a disk operating system. MS-DOS (IBM), VMS (DEC), and UNIX (developed by Bell Labs, written in C; intended to be a universal OS) are examples.

optical: any product carrying data that is written on or read by a light-based process

optical character recognition: a method of scanning typewritten, reprinted, or handwritten documents and translating the data into editable text

OS: Operating System

OS/2: multitasking operating system developed by IBM for its PC-class computers

OSI: Open Systems Interconnect model; ISO's seven-layer (physical; data link; network; transport; session; presentation; application) protocol model

page description language (PDL): computer code that tells a printer where to put a page

PCX: PC Paintbrush export format

PDL: Page Description Language

PDR: Preliminary Design Review (U.S. government)

Peripherals: accessories and attachments to a computer (e.g., printers)

PIC: Lotus 1-2-3 picture format

PICT: standard format used for object-oriented graphics (graphic made up of distinct objects that can be individually manipulated) on the Mackintosh

picture element: see Pixel

pixel: smallest discrete unit in an image; a contraction of "picture element"; number of bits assigned to each pixel determines the number of shades and colors that may be represented

plotter: device that records information on paper or film

ports: channels through which computers send and receive data. They are either serial or parallel; that is, they send or receive data one bit at a time (serially) or several bits at a time (parallel).

POSIX: Portable Operating System Interface for Computer Environments; not an operating system but rather an interface between an OS and an application, intended to provide applications portability at the source-code level

POSIX: Portable Operation System Interface for Computer Environments; standard that defines the functional interface between an operating-system environment and applications

PostScript: page-description programming language developed by Adobe Systems specifically designed to handle placement of text and graphics on a page

preprocessing: manipulation of digital data in preparation for analysis

printer: there are two basic kinds of printers for microcomputers - dot matrix and letter quality (laser printers); the latter are generally slower than the former

protocol: name given to software functions that manage information transfer in a data communications network

PS: PostScript

RAID: Redundant Array of Inexpensive Disks; multiple disks working in parallel

RAM: Random Access Memory

random access memory: internal computer memory for programs and data that may be altered; information in RAM will be lost if it is not saved before the computer is turned off

raster: information collected as cells rather than as lines (compare with vector)

RBMS: Relational Database Management System

read-only memory: parts of computer's memory used to store permanently programs whose contents can be read but not altered

refresh rate: how fast screen of a monitor is updated; apparently a minimum refresh rate of 72 Hz is acceptable

repeaters: devices connecting multiple Ethernet segments

RGB: short for the additive colors Red, Green, and Blue; monitors produce onscreen color by combining the light from red, green, and blue phosphorus; each of these three colors is subdivided into 256 shades, resulting in a total 16.7 million colors; CMYK is the acronym for Cyan, Magenta, Yellow and Black color model (process colors used for printing; subtractive - as the percentages of the colors increase, the image becomes darker) (A glossary of color prepress terms. 1990. Publish, November, 1990)

RISC: Reduced Instruction Set Computer (in contrast to CISC, Complex etc.)

RLE: run-length encoded

ROM: Read Only Memory

routers: part of LAN equipment; filter network traffic

RTF: Rich Text Format; an early version of text markup language

SAR: Synthetic Aperture Radar

scanning: converting hard-copy map or other document into digital raster form

SCSI (small computer system interface): industry standard for connecting peripheral devices to personal computers (both DOS and Mac OS)

SDTS: Spatial Data Transfer Standards; indevelopment since 1983; NIST (National Institute of Standards and Technology) has given USGS's NMD (National Mapping Division) responsibility for developing

server: in client-server architecture, the unit that receives and fills requests, from one or more clients, for information or services

SGI: Silicon Graphics workstation

shareware: software that is freely distributed for evaluation, but requires a small fee from those who decide to keep it

SIF: Standard Interchange Format (for graphics files)

signal-to-noise ratio (S/N or SNR): ratio of signal to noise for a measured value; the more noise, the lower the quality of the informtaion

signature: set of characteristics - most often spectral - for a spatial area that identify a type of information or feature in remote-sensing data

sixteen-bit machine: microcomputer whose CPU works with information 16 bits at a time; faster than an 8-bit machine

SLIP: Serial Line Internet Protocol; as in "SLIP connection" of a computer to a network

smart terminal: a computer terminal that can do more than send data to a computer and display data from it

SMTP: Simple Mail Transfer Protocol; to send and receive ASCII mail

SNR or S/N: Signal to Noise Ratio

software: instructions by which a computer operates, also known as programs

SPOT: Systeme Probatoire d'Observation de la Terre (French satellite)

spread sheet: a program that sets up an electronic spread sheet in which lines and columns are automatically calculated according to formulas chosen by the user; when one number is changed, the program automatically will change all the sums and multiples that are affected

SQL: Structured Query Language; used to extract and process information stored in a database; a family of languages, with different features for each each vendor; a sample SQL query for all customers living in California might be:

```
SELECT name, address, city, state, ZIP
FROM customers
WHERE state "CA"
```

style sheet: a collection of specifications used for formatting text (e.g., typeface, type size, paragraph indents, spacing)

S-VGA: Super Video Graphics Array (640 x 480 pixels); highest resolution video-display for DOS PCs

tag: any one discrete field in a database

tape drive: reads magnetic tapes

TARGA: True Vision Advanced Raster Graphics Adapter; graphics expansion board for use with digital photography

TCP/IP: telecommunications suite, used to tie computers and data-communications equipment into computer networks; Transmission Control Protocol/ Internet Protocol

telecommunications: electronic communications from one computer to another, via telephone lines

TELNET: the part of the TCP/IP suite of protocols that handles remote log-in to other computer systems on the Internet

terabyte: one trillion characters

TGA: graphic-image format used with TrueVision and TARGA video boards; color applications for DOS PCs

throughput: amount of information being transported per unit of time

TIFF (Tagged Image File Format): standard graphics format, developed by Aldus, for storage of high-resolution (greater than 72 dpi) scanned images that can be imported into a page-layout program

TIGER: Topologically Integrated Geographic Encoding and Referencing (U.S. Bureau of the Census; spatial-data files for the 1990 Census)

TIN: Triangulated Irregular Network; data structure for representing digitally a continuous surface of the Earth; apparently may be generated from DTMs

TM: Thematic Mapper (on later Landsat satellites)

topology: interrelationships between features and spatial constructs

TRN file: an INFO (i.e., ARC/INFO) data file; stores node number, from-arc number, and to-arc number for every possible turn in the network coverage

UNIX: computer operating system developed originally by AT&T, modified extensively by the University of California, Berkeley

URL: Universal Resource Locator (Internet "address")

user interface: system by which information is exchanged between user and computer

UTM: Universal Transverse Mercator projection

UV: Ultraviolet

VAX: minicomputer series manufactured by DEC

Vector: "generally, a quantity possessing both numerical value and direction. In terms of GIS, typically representing a boundary between spatial objects" (Star & Estes, p. 277). A line, in contrast to raster data, which is collected as a cell.

Veronica: Very Easy Rodent-Oriented Net-wide Index to Computerized Archives; index to Gopher sites

VGA: Video Graphics Array; high-resolution video-display standard for DOS PCs

VICAR: Video Information Communication and Retrieval; image processing and GIS system; raster; developed by Jet Propulsion Lab

VMS: operating system for DEC equipment WDBII: World Data Bank II

WAIS: Wide-Area Information Server; client-server system providing indexing of files based on all words in each file

WAN: wide-are network; collection of computers of LANs operating on collection of unique addresses for each participating computer; distinction between LAN and WAN is type and speed of communications line

WMF: Windows Metafile format

workstation: from the outside, a workstation looks like a PC, and in fact may be used like high-performance PCs - and in fact a high-performance workstation and an IBM PS/2 Model 80 are similar in their hardware capabilities. The difference is the operating system; PCs run MS-DOS (or perhaps OS/2), while workstations run UNIX (except for DEC VAX stations, which run VMS). Workstations are designed to run both in a network and as stand-alone systems, while PCs were designed as stand-alone systems and therefore have limited networking capabilities. Workstations use the X Windows standard for screen display; no such standard exists for PCs.

WPG: WordPerfect Graphic format

WVS: World Vector Shoreline (DMA)

WWW: World Wide Web; developed by CERN consortium, Switzerland; distributed hypermedia server for retrieval of electronic documents all over the world; uses HTML to create documents; it does not provide search capabilities, but rather a linkage between files on the Internet, using hypertext

WYSIWYG (what you see is what you get): an accurate screen representation of final output

X Windows: windowing software package developed by Massachusetts Institution of Technology

Z39.50: designation for the standard that is a set of communication packets or messages for client and server application units carrying bibliographic information; heavily used in the library world

.....from the Editor

This is my first official issue of the ACMLA Bulletin and I wish to thank all my colleagues who forwarded congratulatory greetings to me for accepting this position. I am proud to serve the association in capacity of Editor as I am representing a group of high energy, talented and innovative professionals. One of my goals is to motivate my colleagues to submit more articles to the journal. Feature articles do not appear by some magical formula but are brought about by members and readers who are willing to document their new initiatives and projects and use the Bulletin as a forum.

The feature article in this issue on the use of Tyvek for printed maps comes to the Bulletin after some initial discussion had already taken place on the electronic discussion list CARTA. When this matter was first raised on CARTA in November 1994, Ed Dahl, had forwarded the messages to the Conservation Treatment Division at the National Archives of Canada, where Mr. Thompson undertook some preliminary research. Ed had posted that report on CARTA AND MAPS-L in January 1995. In this issue, we are publishing Mr. Thompson's more complete analysis of this subject which Ed has edited for publication.

The next issue of the Bulletin will contain coverage of the ACMLA Annual Conference in Halifax, Nova Scotia.

I owe a debt of gratitude to Ed Dahl, Early Cartographic Specialist, of the National Archives for providing me with the feature article and for his editorial comments and advice. I also wish to thank Alan Smith for his assistance in the layout and design of this first publication.

Have a safe and happy summer!

Rosaline

NEWS FROM THE CANADIAN NATIONAL COMMITTEE FOR CARTOGRAPHY

June 1996

I last reported to you after our meeting in Montreal in November of 1995. The Canadian National Committee planned to meet again in conjunction with the annual meeting of the CCA in Toronto in June 1996. Only two members of the committee attended so the meeting was postponed. l shall plan a meeting for this fall. In the meantime, a couple of news items.

ICA 97 Meeting

The 1997 meeting of the ICA will be in Stockholm June 22-28, 1997.
The tentative programme looks as follows:

Monday June 23

Opening ceremonies
Plenary Sessions
Ice breaker party

Tuesday, June 24

Plenary sessions
Plenary sessions
Archipelago boat trip

Wednesday, June 25

Plenary sessions
Plenary sessions
Study tours
Study tours

Thursday, June 26

Plenary sessions
Plenary sessions
Buffet reception

Friday, June 27

Plenary session
Closing ceremony
Post conference tours

Procedure for submission of abstracts and papers:

An announcement for "Call for Papers" will be submitted for publication to all cartographic newsletters in Canada. Briefly summarized, abstracts (300-500 words) must be received by the Conference Secretariat by October 1, 1996. Decisions of acceptance will be announced December 1, 1996. Full papers are due (max 8 pages) May 15, 1997. Canadian delegates can submit abstract and papers directly to the Stockholm Conference Secretariat. However, your chair of the Canadian National Committee (C. Peter Keller, Geography, UVic, BC, Canada) would appreciate a copy of your submission to help coordinate Canada's participation in the Stockholm meeting. Thank you for your cooperation.

The Secretariat's Address:

International Cartographic Conference
Swedish Cartographic Society
S-80182 Gaevle - Sweden fax: +46 26 653160
tel: + 46 26 633425
http://www.lm.se/icc97/icc97.html

ICA 97 Map Exhibit

Claire Gosson kindly has agreed to chair the Canadian Cartographic Display Committee for the 1997 Stockholm meeting. Please get in touch with Claire concerning submission of maps etc.

Her address is:

National Atlas Information Services
Geomatics Canada
Natural Resources Canada
615 Booth Street Ottawa, Ont.
K1A 0E9
Tel: + 1 613 992 4134
Claire.Gosson@geocan.emr.ca

ICA Children's Map Competition

Jacqueline Anderson did a great job coordinating Canada's submission to the ICA's Children's Map Competition for the 1995 meeting in Barcelona. She has informed me that there will be another Children's Map Competition for the '97 Stockholm meeting. She also wishes to pass on the responsibility for coordinating Canada's entries for Stockholm. Shelley Laskin has agreed to take over the job. A note of thanks to Jackie on behalf of Canada's cartographic community. Thank you, Jackie, for your time, your effort and a job well done. Let's all help Shelley to make the Stockholm submission an equal success. It would appear that many of the competition details are to remain the same as for Barcelona - but Shelley will circulate more detail as the story unfolds. Please encourage educators and parents to submit entries.

ICA 99 Meeting

Planning is progressing for Canada's hosting of the ICA meeting in Ottawa in 1999. The Planning Committee met in May in Ottawa and Dave Carney came up to the CCA meeting in Toronto to introduce Canada's bid and the emerging conference organizational structure.

Plans are to run a conference of Canadian organizations with an interest in cartography in parallel with the ICA meeting. Tony O'Connor, co-director of ICA'99, has taken the lead on this initiative.

As some of you already know, I have been asked to chair the Technical and Scientific Programme Committee for ICA'99. Some of you have already approached me and volunteered your help on this committee. Thank you - we will need your help. At the moment we are in the process of working out all the necessary budget and administrative logistics to put a committee in place. You will hear from me later this summer with details.

Please do not hesitate to let Dave Carney, Tony

O'Connor or myself know your ideas or suggestions to make the 1999 meeting a success, or if you want to volunteer your services.

ICA Commission and Technical Working Groups (1995-1999)

As chair of the Canadian National Committee for Cartography it is one of my responsibilities to coordinate and advise on Canadian membership in ICA commissions and working groups. This is proving to be a challenge given that most of the commissions and working groups operate on their own without direct consultation with national committees. In order to facilitate sharing of information I would like to get a complete list of Canadian participation in these commissions and working groups for 1995-1999 to make sure that we are represented as widely as possible.

Following are the ICA Commissions and Working Groups and Canadian participants where confirmed since the ICA meeting in Barcelona.

Standing Commissions/Working Group
Canadian Representation

Map Production History of Cartography

Ed Dahl

Transfer of Spatial Data

Mark Sondheim

Spatial Data Quality

Theoretical Fields in Cartography
Grant Head and Hansgeorg Schlichtmann

Visualization   Fraser Taylor

Map Use

Education and Training   Peter Keller

Mapping from Satellite Imagery

National and Regional Atlases
Eva Siekierska and Iain Taylor

Maps and Graphics for Blind and Visually Impaired People
Michael Coulson

Gender and Cartography
Eva Siekierska (Chair)

Cartography and Children
Jacqueline Anderson (Chair)

Map Generalization

Marine Cartography

Please let me know if you are a Canadian delegate to any of the above Commissions or working Groups.

Thanks for your cooperation.

For the Ottawa ICA'99 meeting we are planning to offer each ICA Commission and Working Group an opportunity to organize their own session. Keep this in mind next time you interact with your group.

ICA Achievements 1991-95

I have received a copy of a booklet entitled Achievements of the ICA 1991-95 published by the ICA. This 24 page booklet makes for impressive reading. I don't quite know how to distribute the information in the booklet to you. Perhaps we can put it on the forthcoming CCA website.

Happy Summer

Peter Keller
Chair, CNC ICA

NEW BOOKS AND ATLASES
BRUCE ROBIN

Agroclimatic Atlas of Ireland. James F. Collins, Thomas Cummins, eds. Dublin: AGMET, 1996. 190 p.

Atlas de la zone franc en Afrique subsaharienne : monnaie, iconomie, sociiti. Roland Pourtier; rialisation cartographique Equateur Imagco, CNRS. Paris: la Documentation francaise, 1995. 112 p. ISBN 2110034424.

Alaska forest insect and disease surveys, 1994. Roger Burnside, et al. Anchorage, AK : Alaska Division of Forestry, Resources Section and USDA Forest Service, 1995. 73 p.

Atlas de la Russie et des pays proches. Roger Brunet, Denis Eckert, Vladimir Kolossov. Montpellier: GIP Reclus ; Paris: La Documentation Francaise, 1995. 208 p. ISBN 2110034289.

Atlas of Public Transportation in Rural America. Community Transportation Association of America. Washington, D.C.: National Transit Resource Center, 1995. 149 p.

The Atlas of Shipwrecks & Treasure: the History, Location, and Treasures of Ships Lost at Sea. Nigel Pickford. 1st American ed. London ; New York: Dorling Kindersley, c1994. 200 p.

Atlas of the Central Rockies Ecosystem: Towards an Ecologically Sustainable Landscape: A Status Report to the Central Rockies Ecosystem Interagency Liaison Group (CREILG). Cliff White [et al.]. Calgary: Komex International Ltd., 1995. ISBN 0969895429.

Atlas rigional Sud-Cameroun. Coordinateurs : Christian Santoir et Athanase Bopda. Paris: Editions de l ORSTOM, 1995. 53 p. ISBN 2709912716.

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L'Europe centrale et balkanique: atlas d'histoire politique. Lemarchand, Philippe. Bruxelles: Editions Complexe, c1995. 287 p. ISBN 2870275560.

From Cape Cod to the Bay of Fundy: An Environmental Atlas of the Gulf of Maine. Philip W. Conkling, ed. Cambridge, Mass.: MIT Press, c1995. 258 p. ISBN 0262032279.

Geographic Information from Space: Processing and Applications of Geocoded Satellite Images. Williams, Jonathan. Chichester: John Wiley & Sons. 1995. 210 p. (Wiley-Praxis series in remote sensing).

The Global Positioning System: A Shared National Asset: Recommendations for Technical Improvements and Enhancements. Committee on the Future of the Global Positioning System. Washington, DC: National Academy Press. 1995. 264 p. (Includes maps).

Gousha Interstate Road Atlas: United States, Canada, Mexico. 29th ed. Comfort, TX : H.M. Gousha Co., 1996. 96 p.

The Great Lakes: An Environmental Atlas and Resource Book. Jointly produced by Government of Canada and United States Environmental Protection Agency, Great Lakes National Program Office ; [principal editors, Kent Fuller, Harvey Shear, Jennifer Wittig]. 3rd ed. Chicago, Ill.: Great Lakes National Program Office, U.S. Environmental Protection Agency, Toronto: Government of Canada, 1995. 46 p. ISBN 0-662-23441-3 Order from: Regional Science Advisors' Office, Environment Canada-Ontario Region, 867 Lakeshore Rd., P.O. 5050, Burlington, ON L7R 4A6 $19.95 plus GST, plus $3.50 shipping & handling.

Great Lakes Industry Atlas/Directory. Volume 2. Indiana & Michigan. 1st ed. Houston: CIS MAP, c1995. 164 p. ISBN 1887486046.

Ground Water Atlas of the United States. Segment 10: Illinois, Indiana, Kentucky, Ohio, Tennessee. Orville B. Lloyd, Jr. and William L. Lyke ; carto-graphic design and production by Gary D. Latzke, Bruce R. Droster, and Wendy J. Danchuk. Reston, Va.: US Geological Survey, 1995. 59 p. (Hydrologic Investigations Atlas ;730-K).

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Latitudes & Attitudes: An Atlas of American Tastes, Trends, Politics, and Passions. Michael J. Weiss. 1st ed. Boston : Little, Brown and Co., c1994. 224 p.

Legendary Islands of the Ocean Sea. Robert H. Fuson. Sarasota, Fla.: Pineapple Press, 1995. 229 p. ISBN 1-56164-078-6 US $24.95. (Includes maps).

MacMillan Atlas of War & Peace: Bosnia, Herzegovina, with special reports by correspondents of The New York Times. New York: MacMillan, c1996. 48p. ISBN 0-02-861265-5 US $17.95.

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Phantom Islands of the Atlantic. Donald S Johnson. Fredericton, N.B.: Goose Lane Editions, 1994; 232 p., 48 illus. & maps; pbk. ISBN 0-86492- 149-7 $19.95.

The Pilgrim's Guide to Santiago de Compostela : A Gazetteer. Annie Shaver-Crandell and Paula Gerson ; with the assistance of Alison Stones. London: Harvey Miller Publishers, c1995. 421 p.

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Satellite Remote Sensing Forest Atlas of Europe. Lothar Beckel. Gotha, Germany: Justus Perthes, c1995. ISBN 3623000353.

The Self-Made Map: Cartographic Writing in Early Modern France. Tom Conley. Minneapolis: University of Minnesota Press, 1997. ISBN 0816627002.

Social Cartography: Mapping Ways of Seeing Social and Educational Change. Rolland G. Paulston, ed. New York: Garland Publications, 1996.(Garland Reference Library of Social Science; v1024)
ISBN 0815319940.

The Women's Atlas of the United States. Timothy H. Fast & Cathy Carroll Fast. Rev. ed. New York: Facts on File, 1995. 246 p.
ISBN 0816029709.

Guideline for the AMCLA Honors Award

1. The Honours Award shall consist of a framed certificate issued by ACMLA.
2. This award is to be made during the Annual Conference.
3. The Award will not necessarily be issued every year.
4. A call for nominations shall be made in two issues of the ACMLA Bulletin during each year.
5. Nominations may be made by any individual member, including members of the Awards committee itself.
6. The recipient shall be an individual who has made an outstanding contribution in the field of map librarianship or curatorship or archiveship.
7. The recipient's contribution may be either for a specific activity or for general services and contributions such as continued membership in the Association with active participation either as an executive officer, committee chairperson, or committee member.
8. While membership in ACMLA shall normally be a prerequisite, that shall not preclude consideration of outstanding non-members.
9. An award shall preferably be awarded to a person while still active in the field, rather than at an early stage or post-retirement.
10. Probably attendance at the Annual Conference should be considered, but should not be the deciding factor.
11. To facilitate and encourage the recipient's attendance at the conference, he/she should be informed of the pending award.
12. The Awards Committee, having considered all nominations for an award, shall come to a unanimous agreement on the choice of a recipient.
13. The Awards Committee shall forward their decision to the Executive of the ACMLA for their approval one month prior to the Annual Conference.

GUIDELINES FOR THE ACMLA
PAPERS AWARD

1. The Papers Award will consist of a monetary award of $200.00.
2. This award is to be made during the Annual Conference.
3. The award will usually, though not necessarily, be given on an annual basis.
4. Nominations for this award, while primarily the responsibility of the Awards Committee members, may be made by an individual member.
5. The papers which will be considered for this award will consist of papers which have appeared in any issue of the ACMLA Bulletin for the calendar year preceding the conference.
6. Papers appearing in the Bulletin will be eligible for consideration if they are three pages or more in length.
7. Only papers of sufficient length, appearing in the Bulletin, which are not regular features, but are instead feature articles will be considered for this award. Continued articles, and co-authored articles, shall be given full consideration.
8. Articles which are eligible by the above clauses shall be further screened by subject matter. Only articles which made a solid contribution to map librarianship, curatorship or archiveship, including cartobibliographies, shall be considered for this award.
9. The Awards Committee and its appointees, shall weigh the degree of originality, uniqueness of subject matter and the depth of research involved in the papers under consideration. The complexity of subject matter, the presentation of such by the author, and technical qualities such as grammatical construction should all be considered.
10. Papers nominated for this award, which fit the above criteria to the satisfaction of the Awards Committee, shall then be subject to evaluation by a person or persons who are not normally members of the committee.
11. The Awards Committee shall contact a person or persons of its choice and request a written evaluation of the quality exhibited by a nominated paper.
12. Upon receipt of such evaluation, the Awards Committee shall come to a unanimous decision on the choice of a recipient.
13. A report shall be made to the Executive on all papers nominated and the results of consideration by the Awards Committee one month prior to the Annual Conference.
14. To facilitate and encourage the recipient's attendance at the Annual Conference, he/she should be informed of the impending award.

NEW MAPS
Amy Chan

Africa. Scale 1:67,000,000 ; Azimuthal equal-area proj. [Washington, D.C.: Central Intelligence Agency, 1995]. "802380 (R00475) 5-95".

Antarctic region. Scale 1:73,000,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "802388 (R01866) 5-95".

Arctic region. Scale 1:43,000,000. [Washington, D.C. : Central Intelligence Agency, 1995] "802387 (R01842) 5-95".

Asia. Scale 1:50,000,000 ; Azimuthal equal-area proj. [Washington, D.C. : Central Intelligence Agency, 1995]. "802382 (R01813) 5-95".

Botswana: political. Scale [ca.1:6,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "802422 (A04503) 12-95".

Botswana: relief. Scale [ca. 1:6,000,000].[Washington, D.C.: Central Intelligence Agency, 1995] "802423 (A04503) 12-95".

Central America and the Caribbean.
Scale 12,500,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "802375 (545527) 5-95".

Commonwealth of Independent States: European **States.** Scale. 1:18,000,000.[Washington, D.C. : Central Intelligence Agency,] 1995. "802383 (R00029) 5-95".

Comparative ethnic groups in the Former Soviet Union, 1989. Scale not given. [Washington, D.C. : Central Intelligence Agency, 1995]. "737771 (R02027) 11-95".

Drift thickness of Alberta. Scale 1:2,000,000. Edmonton: Alberta Geological Survey, 1995.

East Asia. Scale 1:46,000,000. Azimuthal equal-area proj. [Washington, D.C. : Central Intelligence Agency, 1995]. "802408 (R00732) 5-95".

Ethnic groups in Eastern Europe.
Scale 1:8,900,000 ; Lambert conformal conic proj., standard parallels 40° N and 56° N. [Washington, D.C.: Central Intelligence Agency, 1995] "Base 802378 (R01084) 5-95".

Europe. Scale 1:19,500,000 ; Lambert conformal conic proj., standard parallels 40° N and 56° N. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802377 (R01083) 5-95".

Ghana: political. Scale [ca. 1:375,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "802424 (A00953) 12-95".

Ghana: relief. Scale [ca. 1:375,000]. [Washington, D.C. : Central Intelligence Agency,] 1995. "802425 (A00953) 12-95".

Indonesia. Scale 1:7,080,000. Washington D.C. : National Geographic Society, 1996. (Supplement to National Geographic, February, 1996).

Mapa de carreteras estatales de Puerto Rico. Scale [ca. 1:200,000]. [San Juan] : Asociado de Puerto Rico, Departamento de Transportación y Obras Públicas, 1995.

Mauritania: political. Scale [ca. 1:8,000,000]. [Washington, D.C.:Central Intelligence Agency, 1995]. "Base 802414 (A00110) 10-95".

Mauritania: relief. Scale [ca. 1:8,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802415 (A00110) 10-95".

Middle East. Scale [1:22,000,000] ; Lambert conformal conic proj., standard parallels 12° N and 38° N. [Washington, D.C. : Central Intelligence Agency, 1995]. "802379 (R01077) 5-95".

Mozambique: political. Scale [ca. 1:10,000,000] ; Lambert conformal conic proj. [Washington, D.C.: Central Intelligence Agency, 1995]. "Base 802418 (A05253) 12-95".

Mozambique: relief. Scale [ca. 1:10,000,000] ; Lambert conformal conic proj. [Washington, D.C.: Central Intelligence Agency, 1995]. "Base 802419 (A05253) 12-95".

North America. Scale [1:38,700,000]; Lambert conformal conic proj., standard parallels 37° N and 65° N [Washington, D.C. : Central Intelligence Agency, 1995]. "802374 (B01267) 5-95".

Northern Africa and the Middle East. Scale 1:42,300,000. [Washington, D.C. : Central Intelligence Agency,]1995]. "802409 (546325) 9-95".

Norway: political. Scale [ca. 1:8,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802430 (A04936) 2-96".

Norway: relief. Scale [ca. 1:8,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802431 (A04936) 2-96".

Oceania. Scale 1:36,000,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "802386 (R01845) 5-95".

Oman. Scale [ca. 1:6,000,000]. [Washington, D.C.: Central Intelligence Agency, 1995]. "802428 (R00277) 1-96".

Ontario airports = Aéroports de l'Ontario. [Toronto ?] : Ministry of Transportation, 1995.

The Pacific area. Scale 1:21,000,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "802413 (546492) 9-95".

Political map of the world. Scale 1:75,000,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "802373 (R00350) 4-95".

Reference map to North America / by Geomatics Canada. Ottawa : Geomatics Canada, 1996. $7.95 (folded), $9.95 (flat).

Republic of South Africa. Scale [ca. 1:10,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "802381 (R01345) 4-95".

Qatar. Scale [ca. 1:1,100,000] ; Lambert conformal conic proj., standard parallels 25° 20' N and 30° 40'N. [Washington, D.C. : Central Intelligence Agency, 1995]. "801898 (E00442) 12-95".

Saint Vincent and the Grenadines. Scale [ca. 1:500,000]. [Washington, D.C. : Central Intelligence Agency, 1996]. "Base 802429 (546180) 1-96".

South America. Scale 1:35,000,000 ; Azimuthal equal-area proj. [Washington, D.C. : Central Intelligence Agency, 1995]. "802376 (545528) 5-95".

South China Sea. Scale 1:2,900,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "737328 (R01788) 12-95".

South Korea. Scale [ca. 1:3,500,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802405 (R00674) 9-95".

Southeast Asia. Scale 1:36,000,000. [Washington, D.C. : Central Intelligence Agency, 1995]. "802385 (R01843) 5-95.

Surficial materials of Canada matériaux *superficiels du Canada* / compiler: R.J. Fulton. Scale 1:5,000,000 ; Lambert conformal conic proj. Ottawa: Geological Survey of Canada, 1995.(1880A).

Tajikistan: political. Scale [ca. 1:5,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802370 (R00627) 8-95".

Tajikistan: relief. Scale [ca. 1:5,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802371 (R00627) 8-95".

Uganda: political. Scale [ca. 1:6,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802426 (A05372) 12-95".

Uganda: relief. Scale [ca. 1:6,000,000]. [Washington, D.C. : Central Intelligence Agency, 1995]. "Base 802427 (A05372) 12-95".

IN THE NEXT ISSUE . . . .
BOOK REVIEWS

Jim Coombs from the SMSU Maps Library will be reviewing
Mapping for Stonewall

Alberta Wood will be reviewing
Portolans procedents de col leccions espanyoles

Alice Hudson from the Map Division, New York Public Library will be reviewing *Maps and Civilization - Cartography in Culture and Society*

Lynn E. Noel will be reviewing
La Cartographie au Quebec: 1760-1840

John Anderson will be reviewing
Editing Early and Historical Atlases

P. Andrew Ray will be reviewing the updated version of
How to Lie With Maps

David Cobb from Harvard will reviewing
Mercators World

REGIONAL NEWS
Melissa Leitch

NEWFOUNDLAND

Memorial University of Newfoundland
Map Library (Alberta Auringer Wood)

On January 15th, the Map Library was merged with the Library Audio-visual Resources Centre to become the Maps, Data and Media Division with two sections, Map Library and Media and Data Centre. Alberta Auringer Wood became head of it all with the title Maps, Data and Media Librarian. However, co-location is not possible at this point, so we are on the fifth and first levels of the Queen Elizabeth II Library building. No increases of staff have come as a result of it yet.

Our library is participating in the Data Liberation Initiative, and I'm serving as the contact person. Shortly, Alberta will be spending at least half time in the Media and Data Centre when a computer is set up for her use. Joanne Costello, Library Assistant VI in the Map Library, is expecting to be on maternity leave sometime in May. We hope that we will have a temporary replacement for her. Along with other duties, Alberta Auringer Wood also became the Information Manager for the MUN Campus Wide Information System. Check out her personal home page (if you can find it!).

During the spring and summer, we hope to be able to hire a number of students to continue work on special and ongoing projects. The MUN Library's Centre for Newfoundland Studies will be sponsoring publication of the Ruger view of St. John's in 1879 as part of the new ACMLA facsimile series.

ONTARIO

Brock University Map Library (Colleen Beard)

The exciting news is that the Brock Map Library has recently completed a fairly extensive home page, engineered by Jim Chernishenko. We have taken a very graphic approach, to say the least, in an effort to describe our collection and resources. Our main objective is to illustrate the extent of our holdings and the services we offer to users both inside and outside the university. We also hope it will be useful to other map libraries for potential resource sharing. For example, one can view our air photo coverage from a generalized map index, or view a sample of the map data sets or electronic atlases available from our PC workstation. Other indexes include foreign topographic coverage, digital base maps, a link to our electronic atlas of Niagara ....and more. You must visit http://www.brocku.ca/maplibrary/ Comments and suggestions are certainly encouraged.

The Map Library has also completed a computer generated census atlas of St. Catharines-Niagara at the census tract level. Using MapInfo, data from the 1991 census profiles CD were linked to the cartographic boundary file creating 40 choropleth maps. The process of producing these census maps has been well established and is offered as a service to users on the PC workstation in the public area. Printed copies of these maps have already been used extensively by first year Geography students for a demographic assignment this past term. Plans for creating a similar atlas for Ontario at the census division level are in the works. Some of these maps

can be viewed from our web page at www.brocku.ca/maplibrary/census/census.html .

On the cataloguing front, we now have about 85% of our records online-including over 4000 map records. Needless to say, our card catalogue is slowly depleting. Most of the remaining items to be catalogued are foreign topographic series, air photos and the historical map collection. We will be focusing our efforts on these this summer.

Colleen would like to inform the membership that she has made a donation to the Brock Library with the Bulletin Editor honorarium she recently received. The money will be used to purchase computer software upgrades for the Map Library so that staff and users can remain on the cutting edge of this so-called "GIS" technology. It will be a busy summer!

Carleton University Map Library (Barbara Farrell)

The Map Library at Carelton is moving to its new home on the main floor of MacOdrum Library sometime this summer, changes will start in May. Three library departments, those serving Maps, Government Documents and Data will join forces to form Madgic, the Library's new Maps, Data, and Government Information Centre. This is a major reorganization within the Library with the aim to maintain and develop standards of service for users in the electronic age. Map users will enjoy longer hours and of course, the same quality of service that they have come to expect.

University of Ottawa Map Library (Grace Welch)

The Map Library home page is now complete at the following site: http://www.uottawa.ca/~gwelch. This is a temporary location until the library web page is complete.

On March 27, Grace Welch attended an all day workshop entitled "Components of the Canadian Spatial Data Infrastructure (CSDI)" sponsored by the Federal Inter-Agency Committee on Geomatics. About 45 participants, primarily from the federal government attended the workshop. There were presentations about Canadian government initiatives such as Mercator, GCNet, LINC and CeoNet, views from the private sector and a provincial government (B.C.) followed by a talk by Nancy Tosta about the U.S. experience in developing the National Spatial Data Infrastructure. The afternoon consisted of small group sessions to define the elements of the CSDI. Three other ACMLA members, James Boxall, Barbara Farrell and Karen Lochhead also attended the workshop to represent the map librarian (and user) perspective on this initiative.

One of the map library's most interesting acquisitions is a 3-D map produced by the military of the area around Banjaluka, Bosnia. While on display with a pair of 3-D glasses (shades of the 1950's) it attracted considerable attention from students and faculty.

University of Toronto Map Library (Joan Winearls)

The Map Library at the University of Toronto Library is moving again this summer to make way for the Library's Information Commons service (extensive computer support and multi-media clasroom services) on the first floor of the Robarts Library.

Originally the Map Library was to move to a separate and slightly smaller area on the 4th floor but instead, it has been decided that it would be more beneficial to move it to the 5th floor and merge it with the Government Publications and Data libraries in a new amalgamated service. The decision on this change has been made fairly quickly in light of budget cuts in the next 2 to 4 years and the fact that the Map Library was required to move anyway.

As originally planned about one-third of the map collection (the bulk of the foreign topographic series) will go into basement storage and will be available on a 24 hour retrieval system. Government Publications will also have to put about one-third of their

collection in basement storage. The Map Library will effectively have about the same space as originally planned in the new amalgamated area.

Over the past few years the three sections have been moving increasingly together particularly in the development of electronic services and this amalgamation should have considerable benefits for users in the long run. There will be one service desk but initially the three will offer separate services while beginning to plan for some amalgamation of services and the training of staff members.

The one difficulty for the Map Library is security. The area is totally open access and accessible to users when the service desk is not staffed. To cope with this situation the Map Library is undertaking a massive tattle-taping project in the next 6 months. It is hoped that at least the heavily used items, about one-fifth of the collection will be able to be tattle-taped in that time. A small proportion of older maps will be kept in a nearby restricted area. Construction on new offices and work space will be done in late May and early June and the Map Library should be moved by the end of June.

University of Waterloo Map and Design Library
(Richard Pinnell)

Statistical Activity

For the 10-month period, May 1/95 to Feb 1/95:
a) items received (but not necessarily added): 1154 maps, 656 images
b) map catalogue records created: 579
c) inventory: 77862 maps, 44120 airphotos, 9190 books (atlases and architectural design books), 931 reference books, 2250 government documents, 311 barcoded periodical volumes
d) items circulated: 21447 items
e) items consulted inhouse: 17414 items
f) reference questions: 4037
g) persons on orientation/tours: 664

Provincial Cuts
The University of Waterloo offered a special early

retirement package (SERP) to faculty and staff in December. A total of 340 faculty and staff took advantage of this, including 20 staff in the Library. Mary Channen, Library Clerk in the UMD Library, will take early retirement on July 1; I sought and obtained approval from senior management to replace Mary. Without Mary we would have lost 50% of our full-time circulation assistance at the public desk, as well as support for reserves processing and binding. I am now involved in a serial reviews project to deal with our book/serials budget problems; our target is to reduce serials expenditures by 15% of this year's serials budget allocation.

Library Reorganization
The UW Library continues to reorganize its staff in order to provide the best possible service to clients with existing human and financial resources. We have created 5 Process Groups organized along functional lines to deal with problem solving, and especially to deal with problems that are interdepartmental in nature. I am a member of the Client Services Process Group with a membership of 12 drawn from 5 or 6 departments. Ann Naese of the UMD Library is a member of the Community Needs Assessment Process Group with the following mission statement: Client needs are primary; this value drives all activities of the Library; it is the source of the Library's authority and accountability. The roles of the Process Groups and the roles of Department Heads (as head of the UMD Library, I am a department head), especially with regard to decision making, is currently a topic of considerable interest.

GIS and networked CD-ROMs
Little to report except that the UMD Library has now got two public access computers, one of them a Pentium, the other a 486DX66, that clients can use to access MapInfo, ArcView, the standalone CD-ROMs (such as Centennia, MapExplorer, Times World Map and Database, ERS-1 radar images) and networked CD-ROMs and data. The Library has provided network access to approximately 25 networked databases including Environmental Ab-

stracts, Geography Abstracts, GeoRef, Water Resources Index. Also available on the network is the Digital Chart of the World, the version we received from ESRI.

We have acquired some new digital data recently including the Canadian Atlas Map Bundle from DMTI, 4 NTS data sets (40P/7 through 10), Single Line Streetwork Network data from the Region of Waterloo including 7 thematic layers, local quaternary geology data corresponding to map 2508 from OGS, data for the Grand River Watershed (roads, boundaries, hydrography, urban areas, etc.) from the Biology Department, etc. I have purchased the data in a variety of formats and find this to be one of the most difficult decisions to make. Most often I purchase the DXF format, for reasons too complex to enumerate here.

We recognize that our greatest problem at the moment is staff training, two of us will be attending the ACMLA preconference session of GIS in Halifax and three of us have set for ourselves the objective of designing an implementing a GIS training program for other UMD staff and staff elsewhere in the Library. We are currenlty upgrading the staff machines in the Map Library so that everyone has access to the library server for word processing, spreadsheets, email, network clients (ftp, telnet), Web browsers (Netscape), and so on.

We have 3 PowerMacs in the UMD Library for public use; these machines provide access to the Internet so that clients can look at our own library catalogue as well as 100 or more other library catalogues, in addition to the vast resources on the Internet. Clients can download to floppy but they cannot at present send files to a printer. We have just completed the process of choosing a library system. It was a choice between the systems from Endeavor, Sirsi, and Innovative; we decided upon Endeavor's Voyager system. However, there is still more negotiating ahead on price and technical enhancements. The selection process has been long and difficult primarily because this was a Tri-University effort on

the part of Waterloo, Wilfrid Laurier, and Guelph. It is our collective intention to eventually have a common system .

Univerity of Western Ontario,
Serge A. Sauer Map Library (Cheryl Woods)

The collection has acquired some interesting and unusual cartographic material over the past few months. Two 12" globes - one of Venus and one of Mars have been purchased. The globe of Venus is based on radar data from the Magellan orbiter, which mapped the planet's surface from 1990 to 1994. It is coloured coded to represent elevation, and all major landforms are labeled. The globe of Mars depicts more than 100 identified topographic features as well as the major bright and dark regions visible from Earth.

A set of 32, 1:50,000 new topographic series of Slovkia, and a variety of city plans (approximately 60) for Lithuania, Latvia, Slovakia and Czech Republic have been added to the collection. One hundred maps of Nigeria showing vegetation and land use, 1:250,000 for 1993/95 arrived and can be used in comparison studies to the earlier set that is for 1976/78.

We are very excited about the purchase of a rare set of maps entitled "A copy of the maps and report of the commissioners under the Treaty of Ghent, for ascertaining the northern and northwestern boundary between the United States and Great Britain 1828." There are 7 maps of the western Great Lakes area with this report. There are only 3 other known copies in North America.

Our major project for the summer will be to take a physical count the entire collection of maps for its 10 year inventory. This will enable us to weed the collection and give us a check and

benchmark for future additions and deletions of maps to the collection.

National Archives of Canada, Visual and Sound Archives Division, DescriptionSection, Cartographic and Architectural Records (Velma Parker)

The remaining chapters for the *Rules for archival description* are in the process of being published. In fact their arrival from the printer is being awaited eagerly by the Bureau of Canadian Archivists.

The chapters to be issues are:

Chapter 5 Cartographic materials
Chapter 6 Architectural and technical drawings
Chapter 7 Moving images
Chapter 9 Electronic records
Chapter 10 Microforms
    and a revised chapter 21 Choice of access points

Chapter 8 Sound recordings
These chapters are available in English or in French from:

Bureau of Canadian Archivists
Planning Committee on Descriptive Standards
c/o Canadian Council of Archives
West Memorial Building, Room 1009
344 Wellington Street
Ottawa, Ontario
Canada
K1A 0N3

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IN THE NEXT ISSUE OF THE BULLETIN

ALL THE NEWS
FROM THE

1996 ACMLA
HALIFAX CONFERENCE

NOUVELLES RÉGIONALES
Melissa Leitch

TERRE-NEUVE

CARTOTHÈQUE UNIVERSITÉ MEMORIAL
(ALBERTA AURINGER WOOD)

Le 15 janvier dernier, il y a eu une amalgamation entre la cartothèque et la bibliothèque du centre de ressources audiovisuelles, pour devenir la division des cartes, des médias et de l'information avec deux sections soit la cartothèque et le centre des médias et de l'information. Alberta Auringer Wood est devenue la bibliothécaire en chef de ce nouveau centre. Les cinquième et premier étages de la bibliothèque Queen Elizabeth sont toujours occupés par les bibliothèques car la colocation n'est pas encore possible. Le personnel est demeuré le même malgré les changements effectués.

La bibliothèque participe à l'initiative de libéralisation de l'information et Alberta est la personne avec qui on peut communiquer pour ce projet. Alberta passera d'ailleurs la moitié de son temps au Centre des médias et de l'information et un ordinateur y a été installé pour elle. Joanne Costello qui est assistante cartothécaire VI sera en congé de maternité en mai. Nous espérons qu'une personne pourra occuper son poste par intérim pour la durée de son congé. En plus de nombreuses autres tâches, Alberta est gestionnaire de l'information pour le système d'information «MUN» accessible de partout sur le campus. Vous pouvez vérifier sa page Web, si vous pouvez la trouver!

Nous espérons pouvoir embaucher des étudiants au printemps et à l'été afin de continuer le travail pour des projets spéciaux et d'autres déjà en cours. Le centre pour la bibliothèque «MUN» pour les études sur Terre-Neuve commanditera la publication de la vision de Ruger de St. John's en 1879 dans le cadre de la nouvelle série de fac-similés de l'ACCAC.

CARTOTHÈQUE UNIVERSITÉ BROCK (COLLEEN BEARD)

Il est excitant d'annoncer que la cartothèque de l'Université Brock a récemment complété un site Web préparé par Jim Chernishenko. Nous avons adopté une approche très graphique, dans notre effort pour décrire notre collection et nos ressources. Notre objectif principal était de montrer l'étendue de nos fonds et les services que nous offrons aux utilisateurs à l'intérieur et à l'extérieur de l'Université. Nous espérons aussi que cela sera utile à d'autres cartothèques avec le potentiel de partage des ressources. Par exemple, il est possible de visionner l'étendue de nos photographies aériennes à partir d'un index cartographique général, ou de voir un échantillon des ensembles d'information cartographique ou les atlas électroniques disponibles à partir du poste de travail «PC». D'autres index portent sur la couverture topographique étrangère, les cartes sur base digitale, un lien avec notre atlas électronique du Niagara et plus encore... Vous devez visiter http://www.brocku.ca/maplibrary/ . Nous vous encourageons à nous communiquer vos commentaires et vos suggestions.

La cartothèque a aussi complété un recensement des atlas de St-Catharines-Niagara au niveau du «tract» du recensement et ce à partir de l'ordinateur. En utilisant «MapInfo», des données des profils du recensement de 1991 disponibles sur CD ont été combinées au fichier des frontières cartographiques créant ainsi 40 cartes «chloropleth». Ce processus pour produire ces cartes du recensement est bien établi et est offert comme service aux utilisateurs sur leur poste de travail «PC» dans les aires publiques. Des copies de ces cartes ont été utilisées par des étudiants

de première année en géographie pour un travail sur la démographie au trimestre dernier. Des projets visant à créer un atlas semblable pour l'Ontario au niveau de la division du recensement sont en cours.

Certaines de ces cartes peuvent être consultées à partir de notre page Web à l'adresse suivante www.ca/maplibrary/census/census.html .

En ce qui a trait au catalogage, nous avons maintenant environ 85% de nos entrées accessibles par ordinateur, incluant plus de 4 000 entrées pour des cartes. Il va sans dire que notre catalogue sur fiches fond lentement mais sûrement. Presque tous les items qui n'ont pas encore été catalogués, sont des séries topographiques étrangères, des photographies aériennes, et la collection de cartes historiques. Nos efforts porteront sur ceux-ci durant l'été.

Colleen aimerait informer les membres qu'elle a fait un don à la bibliothèque de l'Université Brock grâce aux émoluments qu'elle a reçus comme éditrice du bulletin, récemment. L'argent servira à l'achat de versions améliorées de logiciels pour la cartothèque afin que les employés et les utilisateurs puissent être à l'avant-garde de cette technologie «GIS». L'été sera certainement une période occupée.

Cartothèque Université Carleton
(Barbara Farrell)

Trois départements de la bibliothèque soit : la cartothèque, les documents gouvernementaux et l'information seront amalgamés pour l'été afin de former «Madgic»; devenant ainsi le nouveau centre pour les cartes, l'information et les documents gouvernementaux de la bibliothèque. Ceci s'inscrit dans une réorganisation importante de la biblio-thèque qui vise à maintenir et à développer des normes de service pour les utilisateurs dans l'ère électronique.

Université d'Ottawa (Grace Welch)

Le site web pour la cartothèque est maintenant complété et accessible à l'adresse suivante : http://www.uottawa.ca/~gwelch. Cette adresse sera temporaire jusqu'à ce que le site web de la bibliothèque soit prêt. Le 27 mars dernier, Grace Welch a assisté à un atelier d'une journée dont le sujet était : «Composantes de l'infrastructure de l'information spatiale canadienne (CIISC)» commandité par le comité fédéral inter-agence sur la géomatique. Environ 45 personnes ont assisté à cet atelier et la majorité des participants venait du gouvernement fédéral. Il y a eu des présentations sur les initiatives entreprises par le gouvernement fédéral telles que : « Mercator, GCNet, Linc et CeoNet », des représentants du secteur privé et du gouverne-ment de Colombie-Britannique ont fait une présentation, par la suite Mme Nancy Tosta nous a parlé de l'expérience américaine en ce qui a trait au développement de « l'infrastructure de l'information spatiale nationale ». Dans l'après-midi, il y a eu des sessions de travail en petit groupe pour définir les éléments du CIISC. Trois autres membres de l'ACACC ont aussi assisté à cet atelier à titre de représentants des cartothèques et des utilisateurs pour y présenter leur point de vue; il y avait donc James Boxall, Barbara Farrell et Karen Lochhead.

Une de nos acquisitions les plus intéressantes est une carte en trois dimensions (3-D) de la région de Banjaluka en Bosnie produite par des militaires. Lorsque cette carte a été exposée, elle a attiré énormément d'attention, on pouvait l'examiner avec des lunettes 3-D.

Université de Toronto (Joan Winearls)

La cartothèque de l'Université de Toronto déménagera à nouveau cet été afin de céder l'espace qu'elle occupait au service d'information «Commons» de la bibliothèque (soutien inform-atique

et services multimédia offerts à la classe) au premier étage de la bibliothèque Robarts. Au départ, la cartothèque devait être aménagée dans un espace un peu plus petit et différent au quatrième étage, mais il a été décidé que cela serait plus intéressant qu'elle soit mise au cinquième étage et amalgamée aux bibliothèques sur les publications gouvernementales et de l'information. La décision a été prise assez rapidement en raison des coupures budgétaires prévues d'ici deux à quatre années sans compter le fait que la cartothèque devait déménager de toute façon.

Comme cela était prévu à l'origine, environ un tiers de la collection cartographique (le gros des séries topographiques étrangères) sera déposé dans un entrepôt au sous-sol et pourra être disponible 24 heures après que la demande sera faite. Il y aura à peu près un tiers des documents des publications gouverne-mentales qui seront aussi entreposées au sous-sol. La cartothèque bénéficiera du même espace qu'elle devait avoir comme cela avait été planifié dans la nouvelle bibliothèque amalgamée.

Dans les dernières années, les trois sections se sont rapprochées de plus en plus, particulièrement dans le développement des services électroniques et cette amalgamation devrait représenter des avantages considérables pour les utilisateurs et ce, à long terme. Il y aura un point de service, mais au départ, les trois offriront des services séparés tout en planifiant l'amalgamation de services et la formation des membres du personnel. La première difficulté de la cartothèque est la sécurité. Cet endroit est totalement ouvert et accessible aux utilisateurs même quand il n'y a personne au comptoir de service. Pour faire face à cette situation, la cartothèque a entrepris un projet important soit le «tattle-taping» dans les prochains 6 moins. Nous espérons que les articles très utilisés, soit environ 1/5 de la collection sera «tattle-taped» durant cette période. Une petite partie des anciennes cartes sera gardée dans un endroit à accès restreint tout près de là. La construction des nouveaux bureaux et des espaces de travail sera terminée à la fin mai ou au début juin et la cartothèque sera déménagée d'ici la fin du mois de juin.

Université de Waterloo (Richard Pinnell)

Activité statistique
Pour la période de 10 mois du 1er mai 1995 au 1er février 1996 :

   a) articles reçus (mais pas nécessairement additionnés) : 1 154 cartes, 656 images
   b) entrées pour le catalogue cartographique : 579
   c) inventaire : 77 862 cartes, 44 120 photographies aériennes, 9 190 livres (atlas et livres sur le dessin architectural), 931 livres de référence, 2 250 documents gouvernementaux, 311 volumes de périodiques avec code à bâtonnet
   d) articles en circulation : 21 447 articles
   e) articles consultés à l'interne : 17 414 articles
   f) questions posées à la référence : 4 037
   g) personnes venues pour des sessions d'orientation ou des visites guidées : 664

Coupures provinciales
L'Université de Waterloo a offert un programme spécial de retraite anticipée à ses employés en décembre. Au total, 340 personnes se sont prévalues de ce programme y compris 20 employés de la bibliothèque. Mary Channen commis bibliothécaire de la bibliothèque «UMD» prendra sa retraite anticipée le 1er juillet; j'ai obtenu l'approbation de la haute gestion afin de remplacer Mary. Sans elle, nous perdrions la moitié de l'aide à plein temps que nous avons au comptoir de la circulation, ainsi que le soutien pour le traitement des documents mis en réserve et la reliure. Je suis maintenant impliqué dans un projet de révision afin de gérer les problèmes liés à notre budget de livres/périodiques; notre objectif est de réduire les dépenses liées aux périodiques de 15% de notre budget de périodiques pour cette année.

Réorganisation de la bibliothèque
La bibliothèque de l'Université de Waterloo (BUW) continue à réorganiser son personnel afin d'offrir le

meilleur service à ses clients avec les ressources humaines et financières disponibles. Nous avons créé 5 groupes de processus en suivant les fonctions afin de s'attaquer à la résolution de problèmes et plus particulièrement aux problèmes inter-départementaux. Je fais partie du groupe sur les processus de services à la clientèle avec 12 membres provenant de 5 des 6 départements. Ann Naese de la BUW est membre du groupe de processus sur l'évaluation des besoins de la communauté, leur énoncé de mission est le suivant : les besoins des clients sont prioritaires; ceci guide toutes les activités de la bibliothèque; c'est aussi la source de son pouvoir et de son imputabilité. Les rôles des groupes de processus et les rôles des chefs de départements (comme bibliothécaire en chef de la BUW, je suis un chef de départe-ment), particulièrement en ce qui a trait au processus de prise de décision sont présentement un sujet de grand intérêt.

«GIS» et CD-ROM en réseau
Il y a très peu de choses à dire à ce sujet sauf que la BUW a maintenant deux ordinateurs à la dispo-sition des utilisateurs soit un Pentium et l'autre est un 486DX66, que les clients peuvent utiliser pour avoir accès à MapInfo, ArcView, les disques au laser (tels que Centennia, MapExplorer, Times World Map et Database, ERS-1 images radar) et les disques au laser en réseau et l'information. La bibliothèque offre un accès en réseau à approxima-tivement 25 bases de données en réseau y compris «Environmental Abstracts, Geography Abstracts, GeoRef, Water Resources Index». La «charte digitale du monde» est aussi disponible en réseau, en version «ESRI».

Nous avons acquis récemment de nouveaux docu-ments digitaux incluant l'ensemble de cartes de l'atlas canadien de «DMTI», 4 ensembles de données «NTS» (40p/7 à 10), des données sur le réseau des rues de la région de Waterloo comprenant 7 strates thématiques, des données géologiques quaternaires locales qui correspond-ent à la carte 2508 de «OGS», des données du

bassin hydrographique de la rivière «Grand» (chemins, frontières, hydrographie, secteurs urbains, etc.) du département de biologie, etc. J'ai acheté les données sous plusieurs formats et je trouve que cela est une des décisions les plus difficiles à prendre. J'achète presque toujours le format «DXF», pour des raisons trop complexes pour être énumérées ici.

Nous reconnaissons que notre plus grand problème en ce moment est la formation du per-sonnel, deux d'entre nous participeront à la ses-sion de la pré-conférence de l'ACACC de «GIS» à Halifax et trois d'entre-nous se sont fixés comme objectif de préparer et de mettre en oeuvre un programme de formation «GIS» pour les autres membres du personnel de la cartothèque et le per-sonnel ailleurs dans la bibliothèque. Présentement, nous avons augmenté la puissance des ordinateurs des employés dans la cartothèque afin que tous aient accès au serveur de la bibliothèque pour le traitement de textes, les chiffriers, le courrier électronique, le réseautage avec les clients («ftp, telnet»), les internautes (Netscape), et ainsi de suite.

Dans la bibliothèque «UMD», il y a trois « PowerMacs» accessibles à la clientèle; ces ordinateurs donnent accès à l'Internet pour que les personnes puissent consulter notre répertoire ainsi que celui d'une centaine de bibliothèques ou plus, sans compter les autres ressources disponibles sur Internet. Les clients peuvent sauvegarder l'information sur disquette mais pour le moment, ils ne peuvent envoyer leurs fichiers à l'imprimante. Nous avons sélectionné un système pour la bibliothèque. Voici les choix qui nous étaient proposés étaient : «Endeavor, Sirsi et Innovative»; nous avons opté pour «Endeavor's Voyager». Cependant, il y a encore des négociations au sujet du prix et des améliorations techniques. Le processus de sélection a été long et ardu en grande partie parce que ceci impliquait trois universités soit : Waterloo, Wilfrid Laurier et Guelph. Nous avons l'intention d'avoir éventuellement un système commun aux trois partenaires.

Université Western Ontario, Cartothèque Serge A. Sauer (Cheryl Woods)

Depuis quelques mois, nous avons acquis du matériel cartographique intéressant et tout à fait inhabituel. Deux globes de 12 pouces, dont un de Vénus et l'autre de Mars, ont été achetés. L'information pour le globe de Vénus provient de la sonde Magellan, qui a relevé la surface de la planète entre 1990 et 1994. Les différentes couleurs représentent les dénivellations et la plus grande partie de la forme des terrains est indiquée. Le globe de Mars présente plus de 100 caractéristiques topographiques identifiées ainsi que la majorité des régions brillantes et sombres visibles à partir de la terre. Un ensemble de 32, 1:50,000 nouvelles séries topographiques de Slovaquie et une variété de plans de villes (environ 60) de Lituanie, Lettonie, Slovaquie, et de la République tchèque ont été ajoutés à cette collection. Nous avons reçu 100 cartes du Nigéria qui montrent la végétation et l'utilisation du terrain 1:250,000 pour 1993/95 et elles peuvent être utilisées dans des études comparatives avec l'ensemble précéndant datant de 1976/78.

Nous sommes très heureux de l'achat d'un ensemble de cartes très rares intitulées «A copy of the maps and report of the commissioners under the Treaty of Ghent, for ascertaining the northern and northwestern boundary between the United States and Britain. 1828». Il y a 7 cartes de la région Ouest des Grands Lacs avec ce rapport. Notons qu'il y a seulement 3 autres copies connues de ces documents en Amérique du Nord.

Notre projet principal pour l'été consistera à compter toutes les collections de cartes dans leur ensemble pour l'inventaire fait à tous les 10 ans. Ceci nous permettra d'élaguer la collection tout en nous donnant des points de repère pour les acquisitions futures et le retrait des cartes dans les collections.

Archives nationales du Canada, Section des acquisitions cartographiques et architecturales et de la recherche, Dossiers cartographiques et architecturaux (Velma Parker)

Le reste des chapitres pour les Règles pour la description des documents d'archives sont maintenant dans le processus relatif à la publication. De fait, le Bureau canadien des archivistes attend leur arrivée de chez l'imprimeur avec impatience. Les chapitres qui seront publiés sont :

Chapitre 5   Matériel cartographique
Chapitre 6   Dessins architecturaux et techniques
Chapitre 7   Images en mouvement
Chapitre 8   Enregistrements sonores
Chapitre 9   Enregistrements électroniques
Chapitre 10 Microformes

ainsi que le chapitre 21 révisé Choix des points d'accès. Ces chapitres sont disponibles en français ou en anglais au Bureau canadien des archivistes, comité de planification sur les normes descriptives a/s

Conseil canadien des archives
Édifice commémoratif de l'Ouest, pièce 1009
344, rue Wellington
Ottawa (Ontario)
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REVIEWS
Geoff S. Brown

AN ATLAS OF ANCIENT MAPS IN CHINA (Zhongguo gudai ditu ji) : FROM THE WARRING STATES TO THE YUAN DYNASTY (476 B.C. -A.D. 1368). edited by CaoWanru, Zheng Xihuang, Huang Shengzhang, Niu Zhongxun, Ren Jincheng, JuDeyuan. Beijing : Cultural Relics Publishing House, 1990. 119 p., 205 plates. $200 U.S. ISBN 7- 5010-0304-1. May be ordered from: Milwaukee Map Service, Inc., 959 North Mayfair Road, Milwaukee, Wisconsin 53226.

"China, one of the earliest advanced civilizations in the world, was also a leader in early map-making techniques." So says the advertising brochure for this atlas. This is the first of three volumes planned to cover the production of Chinese maps from 475 B.C. to the present. This volume covers the period 475 B.C. to A.D. 1300, with volume two to continue the story to 1800, and the final volume to extend it to the present. Planned publishing dates for volumes two and three were 1995 and 1997, respectively. In September 1983 the Institute of Natural Sciences under the Chinese Academy of Sciences called together all of the organizations related to map-making. An editorial board was established for the compilation of an atlas of ancient Chinese maps. The purposes were to preserve the remaining ancient maps, to make these rare and scattered maps available to researchers, and to "promote further inquiry into the development of ancient geography and map-making technique in China." The atlas includes "all maps drawn on silk, paper or walls as well as those engraved on stones, bricks, rocks or wood by the ancient Chinese so long as they belong to the realm of cultural relics." It does not include all printed maps from block-printed editions or photo-offset copies.

Representative selections have been included from early books which contain many maps. This is a bi-lingual atlas, with preface, foreword, introduction, captions and descriptive notes in Chinese and English. There are 22 essays in Chinese by various authors relating to problems of conservation, study and interpretation of several of the maps, with "summaries" in English, in from 3 to 16 lines, plus "A chronicle of events in the history of cartography in China" by Zheng Xihuang only in Chinese. The 205 plates in this atlas show 149 maps. Many of the early maps are very worn or damaged. In some cases photographs are shown of the original, followed by a sketch and reconstruction. Rubbings were made of some of the maps engraved on stone. Silk, stone, brick and wood-block maps are preserved in museums, archives and other institutions scattered across China. Cave and tomb murals, and a map engraved on a cliff remain in situs. Most of there productions are reasonably clear and of considerable interest. Smaller reproductions of about 25 of the earliest maps are included in "Cartography in China" by Cordell D.K. Yee, in The History of Cartography, Volume Two, Book Two: Cartography in the Traditional East and Southeast Asian Societies. Cao Wanru, the senior editor, says in his foreword: "It is hoped that the publication of this atlas will be helpful to further research into the history of cartography in China, East Asia and South Asia as well as the development of world cartography as a whole." This volume does make available to researchers many interesting maps otherwise inaccessible. Cao and his colleagues have obviously worked long and hard to this end. Just a little more effort would have made this landmark publication so much better. The work is badly marred by numerous typographical, grammatical and translation errors. Surely a project of this magnitude could have employed a good English-speaking editor?

The essays sound quite interesting, and would have added considerable value to the atlas if full English translations had been included. The "summaries" are

so brief that at best they are tantalizing and frustrating. The Chinese text includes many additional maps, tables, etc. which would be of interest to researchers. Zheng Xihuang's chronology table would be useful, too. Why is it only in Chinese? Each part of this atlas has a different set of page numbering, with the pages of plates unnumbered. There is no index, nor any simple listing of map titles. It took this reviewer some effort to identify each map and relate it to the appropriate plates, notes, essays and summaries. Surely a user should not have to work so hard to use an atlas, even if it is bilingual, and in such disparate languages? Despite its flaws, this is a very interesting, and potentially useful atlas. The user, however, must be a determined researcher to reap the rewards. The binding may not stand up to much heavy use. The reviewer's copy, which arrived with the front cover loose, is now in pieces. On the whole I would say that this atlas is not for the average collection. Considering the cost and other problems, I would recommend this atlas primarily to Asian studies libraries, or map libraries with comprehensive collections in the history of cartography or Asian cartography. However, if someone offers this atlas as a gift, take it!

Frances Woodward
Historical Maps & Cartographic Archives
University of British Columbia Library
Vancouver, Canada

NEW CENTURY WORLD ATLAS. MAPLEWOOD, NJ: HAMMOND, 1995. $29.95 S, $19.95 US (pbk). ISBN 0-8437-1196-5, 0-8437-1197-3 (pbk).

The challenge of an inexpensive atlas in particular, is in choosing what is important, and doing it well. This challenge has been well met with this beautiful, intelligently crafted atlas, created from a "completely new digital database using satellite data and fractal geometry". It employs a variety of techniques to convey geographic information clearly and accurately.

The first of seven sections begins with an explanation of projections, introducing the Hammond Optimal Conformal Projection. This computer-generated, individualized projection, is calculated to show size and shape as accurately as possible for continent maps and location maps. Most of the world maps use the Robinson projection, with continents intact. The regional maps use the Lambert conformal conic, and polyconic projections. "How To Use This Atlas" discusses legend, scale, choice and hierarchy of names and political boundaries. The World Reference Guide is very attractive and current, with accurately coloured national flags and statistics for each country.

The Global Relationships section is sixteen pages of thematic maps, photos, schematics, graphs, tables and text on: Solar System; Structure of Earth (plate tectonics, volcanoes, earthquake zones); Environmental concerns (acid rain, pollution, species extinction, desertification, ozone depletion); Population, using cartograms to show "current" and projected 2020 population by country, and a dot map showing population by country, and a dot map showing population and annual increase (colour differences are very subtle); Language and religion, including an Indo-European language tree; Standards of living, equal interval maps showing literacy, birthrate, life expectancy, GNP (another cartogram which can easily be compared with the population cartograms); Energy and resources, showing fuels and metals; Agriculture and manufacturing, with a graph of employment in agriculture and other sectors for sixteen countries. The graphics are restrained, spare and informative. The choropleth maps employ subtle but distinct colour changes, and there are no proportional symbols or proportional flow lines.

"Physical World" features Hammond's beautiful TerraScape maps. They show relief and ocean floor, with elevation tints and illuminated shading for emphasis, and are the only maps in the atlas with bathymetric tints and spot depths of major ocean trenches. Colour intensity varies between plates. Country and major city names are clearly shown and political boundaries indicated.

The 'endpapers' world maps index the 95 page maps of the World section, including scale of even metropolitan area maps. Progressing "clockwise" by continent around the map, from Europe to North America, each continent is introduced by thematic maps: topography (major features), population densities, land use and minerals. The political map on the facing age uses coloured borders to differentiate the countries. The consistent classification and placement of the maps facilitates cross-comparisons between continents. Next are regional topographical maps showing relief through tinted elevations and hill shading. Regions of higher population density within the continent are mapped at larger scales. All maps include bar scale; while some do not have RF, it is indicated on the endpapers. Scales range from 1:14, 000, 000 or smaller, to 1:3, 500, 000. The bright but not overpowering warm tints range from warm blue water to saturated green land below sea level, through lighter greens, yellow, umber, taupe and grays. The issue of elevation tints for Antarctica is explained: "as Antarctica is almost completely covered by ice and snow, the use of elevation coloration could be misleading. Thus, only relief shading and point elevations are shown on this map".

Most pages have location maps. Adjoining maps are indicated by numbered arrows, very helpful for countries not shown in their entirety. The two-plate maps are bound-in to the spine of the hard cover atlas reviewed, and so some information, while not entirely lost, is very hard to read. The labelling is clear, with a distinct hierarchy which is easy to grasp, and blue italic labels distinguish the water features.

Consistent with the regional rather than national focus, southern Canada and northern U.S. are shown together, split east-west, with approximately equal space given to each side of the border. The Caribbean area of the "Middle America" map is kept intact by making the western half of Mexico an inset on the eastern side of the map. Hawaii appears on the map of the United States, while Alaska is instead the last of the North American regional maps. Names and highways look accurate for my region, even showing the new Coquihalla Highway, and naming the Juan de Fuca Plate on the tectonics map.

Next are a time zone map and world statistics, including planets, earth circumference (equatorial and polar), dimensions of geographical features, longest river, highest mountain, etc., then the Master Index of 45, 000 places on 46 pages. Sources are the U.S. Board of Geographical Names, official maps or gazetteers of the country, or, in the U.S., the U.S. postal service. Page and grid references, rather than coordinates, are used.

Small annoyances: Mt. Logan, shown in all of the maps as 6050 m. high, was indexed in the Statistics section as 5951 m.; in the legend, some terminology (e.g. "third-order city") is baffling to most users; a perspective map on the dustcover of the atlas reverses east and west; on the endpaper index map, plates 75 and 84 do not appear to overlap (but do, in fact, in the maps).

Evaluation

Geographical relationships, relief and populated areas are emphasized. This atlas starts with flags and national statistics but moves quickly to a global perspective, through world maps and maps which emphasize the physical environment of land regions, while including political boundaries and names. It treats the reader as an intelligent member of international society: "I am not born for one corner: the whole world is my native land". Such quotes and the perspective maps which divide sections subtly set the tone of the atlas. Throughout, the perception of world-as-country is challenged, in this time of growing awareness of the global scope of many issues. The Hammond New Century embodies clear presentation and intelligent choices, at a very reasonable price, and would be a welcome addition to most libraries or a beautiful and informative coffee table reference.

Lori Sugden
University of Victoria

KENT MAPS AND PLANS IN THE LIBRAR-IES OF KENT AND THE ADJOINING LON-DON BOROUGHS. A FINDING LIST.
Wyn Bergess (comp.)
London: The Library Association, 1992. L30.00 plus postage. ISBN 0 90211934 6

This is one of those books that you may really want on your library's shelves but may find it hard to justify in these days of ever shrinking budgets. In the British Isles the book should be very useful and frequently consulted for any number of reasons. In North America it will be of most use to genealogists and historians. If those groups are major users of your library this would be a worthwhile acquisition. The compiler has listed the maps in three categories, Topographical Maps, Miscellaneous Maps, and Subjects. He has adopted the dictionary definition of topographic maps, meaning thereby, detailed maps of a small part of the earth's surface. Such maps may not include relief information. This includes maps of Kent County as a whole, its regions and its towns and cities. Scales here range from as little as 3/8" to 10 miles [1:1,689,600] to detailed plans at least 1:1,200 and maybe larger (as in some estate plans). One would hardly call the first mentioned a topographic map by any definition, but because it covers the county specifically, it has been included here. On the other hand, Ordnance Survey topographic maps at scales smaller than 1:10,000 are not included. No explanation for their exclusion is given but we might surmise that they are so numerous in their different editions and states as well as being so common in occurrence that it was not deemed reasonable to even attempt their inclusion. Many special editions of these maps do appear with overprints for various administrative purposes. Miscellaneous maps are those of larger areas, ie. Britain, European Economic Community, London or neighbouring counties, which have relevance to Kent. The subject categories used are administrative areas, constituencies, and general. This last includes such subjects as air photos and mosaics, agriculture, antiquities, and geology. A numbered "List of Repositories" precedes the map entries. Each entry is followed by one or more numbers indicating in which of the libraries or archives the item might be consulted. Since maps were deliberately excluded from the Kent Bibliography and its supplement (1977 and 1981), this book should be seen as a complementary item. It concludes with a "Name Index", and a "Subject and Place Index". They seem very complete and assist greatly in finding things in what first seemed an odd arrangement. We should always keep in mind that there is more than one way to do any job and when a good mind is faced with a task such as this, it will usually devise something that will work at least reasonably well.

Another difference between this cartobibliography and others of English counties is that it is not restricted to those maps published, lets say, before 1900. It includes maps from the 16th century to the 1980s. One of only two declared restrictions is that not all the holdings of the Centre for Kentish Studies (formerly held by the Kent County Archives Office) were included because of the very large numbers of items involved. The other concerns maps in books. These have only been included when a repository reported them, because, as is stated in the introduction, although additional 2 locations for these books may be found in "The Kent Bibliography" and Supplement, there is no certainty that the maps still remain in them, an unfortunate truism. As mentioned above, however, a large segment of the Ordnance Survey's coverage of the area is also not included. One of the few complaints I have with the book is that where no date is given on a map, no attempt to date it, even as to century, has been made. This is true even when the cartographer or publisher has been shown. One way in which cartobibliographies such as this can be used in libraries and by dealers and collectors, is to check the date of a map based on research carried out by other antiquaries, archivists, collectors, dealers, historians of cartography, librarians, and others. Even if this book doesn't fit your collection's policy, but does fit the desires of your clientele, you will find this a worthwhile acquisition.

Ronald Whistance-Smith

THE NEWBERRY LIBRARY
The Hermon Dunlap Smith Center for the History of Cartography
60 West Walton Street
Chicago, Illinois 60610-3380 (312)943-9090

MAPS ON THE MOVE: CARTOGRAPHY FOR TRANSPORTATION AND TRAVEL

The Twelfth Kenneth Nebenzahl, Jr., Lectures in the History of Cartography
October 24 TO 26, 1996
at The Newberry Library

For thirty years the Kenneth Nebenzahl, Jr., Lectures in the History of Cartography at the Newberry Library have stimulated public and scholarly interest in the history of cartography. From the first series, presented by the late R.A. Skelton in 1996, to the most recent, "Cartographic Encounters: Studies in Native American Cartography," (1993) the lectures have encouraged discussion and publication in emerging fields of interest.

The Hermon Dunlap Smith Center for the History of Cartography at the Newberry Library is pleased to announce the Twelfth Kenneth Nebenzahl, Jr., Lectures in the History of Cartography, Maps on the Move: Cartography for Transportation and Travel." Seven specialists in the history of transportation and transportation mapping will present lectures on this relatively unexplored topic, focusing in particular on the cartography generated for and by industrial transportation technologies. The lectures will be held October 24, 25, and 26, 1996 at the Newberry Library, which is located at 60 W. Walton Street in Chicago.

The lectures are free and open to the public.
However, persons wishing to attend must reserve their place by writing
"Maps on the Move," Hermon Dunlap Street Center for the History of Cartography,
60 W. Walton Street, Chicago, IL 60610-3380,

or by contacting either
James Akerman, Acting Director of the Smith Center
(312-255-3523; email akermanj@newberry.org),

Tina Reithmaier (312-255-3656),

or the Newberry's Center for Public Programs (312-255-3700).

This schedule for the lectures is as follows:

8:00 pm Introduction
James Akerman, The Newberry Library

Catherine Delano Smith, University of London, "Milieus of Mobility: early Route, Road, and Itinerary Maps"

Friday, 25 October

9:00 am James Vance (University of California, Berkeley), "A Cartographic Overview of Industrial Era Transportation"

11:00 am Andrew Cook (The British Library), " A considerable mass of information judiciously arranged and digested : The Growth of the British Admiralty Chart"

2:00pm Jerry Musich (Independent Scholar, Indianapolis, Indiana), "Mapping a Transcontinental Nation: Nineteenth-Century American Railroad Cartography"

3:30pm James Akerman (The Newberry Library), "Directions and Destinations: Mapping and Making an American Motorized National Space"

Saturday, 26 October

9:00 am Ralph Ehrenberg (Library of Congress), "From Aero-Maps to Aeronautical Charts: The Emergence of Aviation Cartography in the United States."

11:00 am Michael Dobson (Rand McNally) "Automobile Navigation Systems: Where Did the Road Map Go?"

2:00 pm General discussion of the theme

Persons attending the lectures will have the opportunity to visit "Paper Trails: Maps, Highways, and American Journeys in the Twentieth Century." This exhibition of automobile road maps, guidebooks, and related artifacts, mounted with the support of Rand McNally and the Lila Wallace Readers' Digest Fund.

The Center invites persons attending the Nebenzahl Lectures to consider also attending a symposium and exhibit on the history of globes at the American Geographical Society Collection of the University of Wisconsin-Milwaukee on Wednesday afternoon, 23 October. The main speakers at the symposium will be Arthur Robinson, Peter Van der Krogt, and David Woodward. For Further details about this symposium, please contact Chris Baruth at the AGS Collection, P.O. Box 399, Milwaukee, WI 532012; phone 800-558-8993; email cmb@csd.uwm.edu.

VISUAL AND SOUND ARCHIVES OF CANADA
CANADA 1:125 000

DUPLICATE MAPS FROM THE VISUAL AND SOUND ARCHIVES DIVISION NATIONAL ARCHIVES OF CANADA

To obtain copies of the following, contact Heather Stevens at hstevens@archives.ca

NOTE: Entries with a "b" after the date indicates that the map shows shaded relief.

21 I/NE (E_)	Cascumpec Bay	1971, 1971b	62 J/SW	Neepawa		1970
11 L/SE	Georgetown	1971, 1971b	63 K/NE	Oakburn		1970b
11 L/SW	Charlottetown	1971	62 K/SW	Moosomin		1970
21 H/NE	Amherst	1969b	62 M/SW	Ituna		1972
21 M/NE	Clermont	1970b	62 N/NE	Duck Mountain		1968b
21 M/SE	Beaupré	1969b	62 N/NW	Kamsack		1969
22 C/SW	Trois-Pistoles	1969b	62 N/SE	Valley River		1970b
31 F/NE	Fort-Coulonge	1963b	62 N/SW	Roblin		1970b
31 F/NW	Golden Lake	1963b	62 O/NE	Lake St. Martin		1972
31 G/NE	Lachute	1965, 1965b	62 O/NE	Winnipegosis		1972
31 G/NW	Buckingham	1965b	62 O/SE	Ashern		1972
31 J/NE	L'Ascension	1965	62 O/SW	Ste. Rose du Lac		1970
31 K/NE	Tomasine	1967	63 B/NE &			
31 K/NW	Lac Dumoine	1965, 1970	63 G/SE	Ashmall Point		1972
31 L/NE	Lac Beuchéne	1965	63 C/NE	Pelican Rapids		1972
31 M/NE	Lac Simard	1967	63 C/NW	Red Deer Lake		1972
31 M/SE	Belleterre	1966	63 C/SE	Cowan		1972
31 N/NE	Vimy	1967	63 C/SW	Woody River		1972
31 N/NW	Grand Lake Victoria N	1967	63 D/NE	Etomami		1972
31 O/NE	Parent	1968	63 D/NW	Mistatim		1972
31 O/NW	Chioquette	1968	63 D/SW	Nut Mountain		1972
31 O/SE	Kempt Lake	1968	63 F/NW	The Pas		1972
31 O/SW	Petawaga	1965	63 G/NE	Limestone Point		1972
32 B/SE	Barrage-Gouin	1968	63 K/NW	Flin Flon		1972b
32 B/SW	Oskelaneo	1968	72 E/NW	Forty Mile Coulee		1972
32 C/SE	Lac Faillon	1968	72 E/SE	Pakowki Lake		1972
32 D/NE	Taschereau	1972	72 E/SW	Etzikom Coulee		1970
32 D/SE	Rouyn Lake	1968	72 F/NW	Maple Creek	1970, 1970b	
32 D/SW	Rouyn - Larder Lake	1968	72 J/NW	Lucky Lake		1971b
52 E/NW	Falcon Lake	1969b	72 K/NW	Leader		1970b
52 L/NW	Manigotagan Lake	1970, 1970b	73 B/NW	Redberry Lake		1972
62 E/NE	Moose Mountain	1967b	73 B/SW	Biggar		1972
62 I/NE	Pine Falls	1969b	73 C/NW	Manito Lake		1972
62 J/NE	Lundar	1971	73 G/SE	Shellbrook		1972
62 J/NW	McCreary	1970b	73 G/SW	Witchekan Lake		1972
62 J/SE	Gladstone	1970	92 I/NE	Kamloops Lake		1963

CANADA 1:506 880

DUPLICATESVISUAL AND SOUND ARCHIVES NATIONAL ARCHIVES OF CANADA

NOTE: In many cases 2 copies are available for each map listed.

1 NW	Avalon - Burin	1947, 1951	22 NE	Gaspe	1940, 1945
2 SW	Notre Dame - Bonavista	1948, 1950	22 SW	Chicoutimi - Rimouski	1950, 1957
11 NE	La Poile - Burgeo	1940	23 NE	Dyke Lake	1953
11 NW	Magdalen Islands - Charlottetown		23 NW	Kaniapiskau	1952, 1958
		1939, 1950, 1951	23 SE	Ashuanipi	1947, 1953, 1958
11 NW (S_ &			23 SW	Nichicun	1950
11 SW	Charlottetown - Sydney	1938	24 NE	George River	1944, 1950, 1957
11 SW	Halifax -Louisburg	1939, 1952	24 NW	Fort Chimo	1946, 1954
12 NE	, Harrington - Belle Isle	1940,	24 SE	Indian House	1945, 1949, 1957
		1948	24 SW	Fort McKenzie	1944, 1946,
12 NW	Mingan- Cape Whittle	1939, 1943, 1953			1954,1957
12 SE	St. Georges - White Bay	1940, 1950	25 NW &		
12 SW	Anticosti Island	1939	25 NE	Frobisher Bay	1946, 1950
13 NE	Hamilton - Hopedale	1941, 1943, 1954	25 SE	Resolution Island	1953
13 NW	Naskaupi	1945. 1957	25 SW	Wakeham Bay	1950, 1958
13 SE	Battle Harbour - Cartwright	1941,	26 NW &		
		1942, 1945, 1953	26 NE	Nettilling Lake	1951
13 SE &			26 SW &		
pt 3 SW	Battle Harbour - Cartwright	1958	26 SE	Cumberland Sound	1945, 1953
13 SW	North West River	1942, 1947, 1951,	27 NW &		
		1954	27 NE	Clyde	1950
14 NW	Hebron - Cape Territok	1957, 1959	27 SW &		
14 SW	Nain - Nutak	1957	27 SE	Home Bay	1950
16 NW & 16 NE	Cape Dier	1943, 1945, 1950	29 N_ &		
16 SW & 16 SE	Hoare Bay 1953		19 N_	Kane Basin	1955
[20 NE (N_) &			29A S_, 19A S_, &		
21 SE (S_)]	Yarmouth - Windsor	1939, 1951	9A S_	Kennedy Channel	1955
21 NE	Campbellton - Moncton	1940	29A N_, 19A N_ &		
[21 NE (S_) &			9A N_	Markham Inlet	1956
21 SE (N_)]	Fredericton - Moncton	1935,	31 NE	Parent - Three Rivers	1941
		1940, 1944	31 NW	Upper Ottawa River	1940, 1950
21 NW	Quebec - Edmunston	1941, 1950	31 SE	Ottawa - Montreal	1033, 1940
21 SW	Megantic - Bangor	1950			1948, 1953
21 SW (N_)	Megantic	1934, 1940	31 SW	Toronto - Ottawa	1940, 1947
22 NE	Clarke City - Mingan	1939,1944,	32 NE	Mistassini	1953
		1950,1953, 1956	32 NW	Rupert House	1948, 1952
22 NW	Pletipi	1945, 1953	32 SE	Chibougamau - Roberval	1942,

		1951			1951, 1959
32 SW	Noranda - Waswanipi	1942, 1950	46 NW &		
33 NE	Lac Bienville	1953	46 NE	Melville South	1951
33 NW	Great Whale	1951	46 SW &		
33 SE	La Grande	1953	46 SE	Southampton Island North	1945,
33 SW	Eastmain	1952			1951, 1959
34 NE	Payne Lake	1951, 1958	47 NW &		
34 NW	Port Harrison	1951, 1955, 1958	47 NE	Bernier Bay	1951
34 SE	Lake Minto	1951	47 SW &		
34 SW	Belcher	1951	47 SE	Melville North	1951, 1956
35 NW &			48 NW &		
35 NE	Hudson Strait West	1950, 1956, 1959	48 NE	Devon East	1952, 1954
			48 SW &		
35 SE	Povungnituk River	1949, 1958	48 SE	Admiralty Inlet	1951
35 SW	Cape Smith	1950, 1956, 1958	49 SW &		
36 NW &			49 SE	Craig Harboir	1955
36 NE	Foxe Basin South	1953	49 N_ &		
36 SW &			39 N_	Bache Peninsula	1957
36 SE	Foxe Peninsula	1950, 1955	49A N_ &		
37 NW &			39A N_	Challenger Mountains	1955
37 NE	Cockburn Land	1951	49A S_ &		
37 SW &			39A S_	Greely Fiord	1957
37 SE	Foxe Basin North	1950	51 NE	Duluth - Houghton	1948, 1951
38 SW &			52 NE	Pickle Crow -Armstrong	1044.
38 SE	Pond Inlet	1951			1952
39 S_ &			[52 NE S_ &		
29 S_Smith Bay		1956	52 SE N_]	Sioux Lookout - Nipigon	1939
[40 NE &			52 NW	English River	1934, 1951
30 NW]	Windsor - Toronto	1940, 1947, 1950	52 SE	Ignace - Fort William	1952
41 NE	Chapleau - Sudbury	1941	[52 SW]	Kenora - Hudson	1939
41 NW	Michipicoten - Sault Ste. Marie	1941	52 SW	Kenora - Fort Frances	1942, 1948,
41 SE	Manitoulin - Owen Sound	1941,			1951
		1947, 1953	53 NE	Severn River	1949, 1952
42 NE	Moosonee	1948	53 NW	Gods Lake	1943, 1950
Part of 42 NW &			43 SE	Wunnummin Lake	1949
42 SW	Nakina -Pagwa	1939	53 SW	Berens River	1943, 1949
42 NW	Kowkash -Martin Falls	1944, 1949, 1952	54 NW	Churchill	1947, 1950, 1955
42 SE	Hearst - Cochrane	1939	54 SE	Cape Tatnam	1952
42 SW	Geraldton - White River	1940	54 SW	York Factory	1944, 1949, 1953,
43 NE	Henrietta -Maria	1949			1955
43 SE	Akimiski Island	1948, 1952, 1955	55 NW &		
43 SW	Attwapiskat	1951	55 NE	Chesterfield Inlet .	1956, 1960
45 NW &			55 SW	Eskimo Point	1958, 1960
45 NE	Southampton Island South	1944,	56 NW &		

56 NE	Chantrey Inlet	1954	59 N_	Sverdrup Islands		1955
56 SW &			69 SW &			
56 SE	Wager Bay	1952, 1958, 1960	69 SE	King Christian Island		1955
57 NW &			69A S_ &			
57 NE	Boothia	1951, 1957	59A S_	Nansen Sound		1955
57 SW &			72 NE	Moose Jaw - Watrous	1940, 1951
57 SE	Rae Strait	1957	72 NW	Nanna - Kindersley	1940, 1951
58 NW &			[72 NW S_ &			
58 NE	Wellington Channel	1952, 1955	72 SW N_]	Medicine Hat - Maple Creek	1939,
58 SW &						1940, 1950
58 SE	Somerset Island	1955	[72 SE N_ &			
59 SW &			72 NE S_]	Swift Current - Regina	1939, 1943,
59 SE	Norwegian Bay	1955, 1959				1952
62 NE	Neepawa -Gypsumville	1940, 1952	73 NE	Green Lake - Stanley	1943, 1950, 1953
62 NW	Broadview -Dauphin	1940, 1947	73 SE	Saskatoon - Prince Albert		1940,
62 NW (S_) &						1951
62 SW (N_)	Indian Head -Brandon	1939, 1953	73 NW	Lac La Biche - Peter Pond		1946
62 SE_ &			73 SW	Wainwright - Battleford	1940, 1952
62 NE_	Brandon - Winnipeg	1939, 1950	74 NE	Black Lake		1949
63 NE	Upper Nelson River	1943, 1952	74 NW	Lake Athabasca	1946, 1950
63 NW	Flin Flon	1943, 1950, 1952	74 SE	Mudjatik - Geikie		1948
63 SE	Lake Winnipeg	1931, 1942, 1950	74 SW	McMurray		1945
63 SW	Pasquia Hills - Swan River	1942,	75 NE &			
		1947, 1951	75 NW	Artillery Lake	1932, 1943, 1951
64 NE	Seal River	1950, 1956	75 SE	Wholdaia Lake		1956
64 NW	Wollaston Lake	1950, 1952, 1955	75 SW	Fort Smith - Nonacho		1956
64 SE	Southern Indian	1951, 1956, 1957	76 NW &			
64 SW	Reindeer Lake	1957	76 NE	Bathurst Inlet		1950, 1954
65 NW &			76 SW &			
65 NE	Dubawnt	1952, 1960	76 SE	Upper Back River		1950, 1954
65 SE	Nueltin Lake	1950, 1960	77 NW &			
65 SW	Kazen River	1953, 1960	77 NE	Victoria Island East	1952, 1956, 1957
66 NW &			77 SW &			
66 NE	Ogden Bay	1950, 1953	77 SE	Cambridge Bay	1950, 1956, 1958
66 SW &			78 NW &			
66 SE	Aberdeen Lake	1953	78 NE	Byam Channel		1954
67 NW &			78 SW &			
67 NE	M'Clintock Channel	1950, 1955	78 SE	Hadley Bay	1953, 1955, 1957
67 SW &			79 SW &			
67 SE	King William Island	1956, 1958	79 SE	Hazen Strait		1954
68 NW &			82 NE	Banff - Bassano		1950
68 NE	Barrow Strait West	1953, 1955	82 NW	Vernon - Golden	1943, 1951
68 SW &			82 SE	Granbrook - Lethbridge	1938, 1950
68 SE	Prince of Wales Island	1956	82 SW	Okanagan - Kootenay	1939, 1952, 1955
69 N_ &			83 NE	White Count - Athabaska	1942, 1946

83 NW	Grande Prairie - Peace River	1941
83 NW	Grande Prairie	1944, 1951
83 SE	Red Deer - Edmonton	1940, 1951, 1955
83 SW	Tete Jaune - Edson	1943, 1950
84 NE	Fort Vermilion	1945, 1949, 1958
[84 NE]	Wood Buffalo Park	1947
84 NW	Hay Lake	1951
84 SE	Wabascaw River	1945, 1950, 1958
84 SW	Peace River	1944, 1951, 1958
85 NE &		
85 NW	Rae	1932, 1951
85 SE	Great Slave	1952, 1956
85 SW	Providence	1944, 1953
86 NW &		
86 NE	Coppermine	1955
86 SE &		
86 SW	Camsell River	1932
86 SW &		
86 SE	Camsell River	1944, 1950, 1954
87 NW &		
87 NE	Fort Collinson	1952, 1956
87 SW &		
87 SE	Dolphin and Union Strait	1955, 1958
88 SW &		
88 SE	Banks - Victoria	1955, 1957
89 NE &		
79 N_	Borden Island	1950, 1954
92 NE	Merritt - Lac La Hache	1943, 1950
92 NW	Campbell River	1942, 1950
92 SE	Victoria - Vancouver	1938, 1947, 1950, 1953
92 SW	Nootka Namaimo	1941, 1952
93 NE	Dawson Creek - Prince George	
		1942, 1944, 1947, 1950
93 NW	Smithers - Fort St. James	1942, 1952
93 SE	Williams Lake - Prince Georges	
		1943, 1951, 1957
93 SW	Ocean Falls - Cotsa Lake	1942, 1951, 1955
94 NE	Fort Nelson - Kotcho Lake	1943, 1951
94 NW	Liard River	1944
94 SE	Hudson Hope	1929, 1942, 1946
94 SW	Finlay River	1947, 1956
95 NW &		

95 NE	Wrigley	1945
95 SE	Simpson - Liard	1950, 1958
95 SW	South Nahanni	1945, 1948
96 NW &		
96 NE	Colville Lake	1956
97 NW &		
97 NE	Amundsen Gulf	1951, 1955, 1957
97 SW &		
97 SE	Anderson River	1957
98 NE, 88 NW &		
88 NE	M'Clure Strait	1954, 1956
98 SW &		
98 SE	Banks Island	1955, 1957
99 SE &		
89 S_Prince Patrick Island		1950, 1954
103 NE	Prince Rubert - Stewart	1942, 1949
103 NE &		
103 NW	Prince Rupert - Stewart	1957
103 SE	Queen Charlotte Island - Bella Bella	
		1941, 1950
104 NE	Dease Lake	1947, 1955
104 NW	Juneau - Atlin	1947, 1950, 1958
104 SE	Stikine River	1943
104 SE &		
104 SW	Stikine River	1957
105 NW &		
105 NE	Pelly River	1946, 1958
105 SE	Wolf Lake - Watson Lake	1943, 1947, 1954
105 SW	Whithorse - Teslin	1946, 1958
106 NW &		
106 NE	Arctic Red River	1945
106 SW &		
106 SE	Ogilvie Range	1945
114 NE	Alsek River	1951
115 NW &		
115 NE	Fort Selkirk	1950, 1958
115 SW &		
115 SE	St. Elias	1946, 1952
116 NW &		
116 NE	Porcupine River	1945, 1958
116 SW &		
116 SE	Klondike	1946
117 SW &		

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Cathy Moulder
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