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THE ASSOCIATION OF SURVEYORS
OF PAPUA NEW GUINEA

OFFICE BEARERS 1977 - 1978

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Please address all communications to the:

Hon. Secretary
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THE JOURNAL

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ASSOCIATION OF SURVEYORS OF PAPUA NEW GUINEA

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EDITOR:

D.J.McNEE

BUSINESS MANAGER:

M.J. LARMER

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LETTER TO THE EDITOR

Despite the best efforts of those involved in doing all the work, 'The Journal' has, to my mind anyway, declined in its value to Members of our Association in recent times.

The main reason for this is the lack of support from the very same Members and I appeal to Members, no matter what grade of Membership they have attained, to give serious thought to what contribution they can make to the Journal. Articles on customary land, historical articles, technical articles and more light hearted personal notes are always welcome.

The only thing our overseas members get for their K15 per annum subscription to the Association is 'The Journal' and it would be great to think they had something to look forward to.

I particularly appeal to some of the 'old timers' to make contact with you even if just via the 'Letters to the Editor' column. Guys like John Macartney, Graham and Ken Matheson, Tom Jackson, Graeme Arman, Tom Richards, Peter Jolley, the Sparkes Carroll's, etc etc., used to be very active Members and I'm sure any contributions by these fellows would be greatly appreciated even by the younger PNG Members who have heard of, if not met them.

The Association has a great deal to thank these Members for and if they can do their bit to assist in spicing up the Journal we will be even further in their debt so lets have some significant imput from this end as well.

MICHAEL J. LARMER

The following is a paper presented by Steven Low to the combined Congress of the Associations of Surveyors from New Zealand and Fiji at Suva in October last year. Steve was our representative at the Congress and we look forward to a full report in the next issue of the Journal.

ORGANISATION IN THE PROFESSION

Steven Patrick Low
B/Surv, M.A.S.P.N.G,
L/SURVEYOR

ABSTRACT AND INTRODUCTION

This paper discusses the professional body known as THE ASSOCIATION OF SURVEYORS OF PAPUA NEW GUINEA. It will outline the structure, the normal yearly operation of the working Council and will endeavour to show the problems involved in the Papua New Guinea situation.

This Association is not unique in its objectives, structure and Management, it adopts basically the international method of running a professional Association. The aim of this paper however is to try and relate some experiences that this Association may have that other South West Pacific Countries can compare with their own organisation.

BRIEF HISTORY

An inaugural meeting took place in Port Moresby on the 4th of May 1960. Thirteen members were present to discuss the formation of an Association that would seek affiliation with the Australian Institute of Surveyors. Each foundation member paid a levy of one Guinea to get things moving. In those days professional fees were always expressed in guinea's which were twenty one shillings. Hence a very professional meeting.

The original members were all expatriates and it was not until 1970 that the first nationals became members, initially as Associates and then three years later as corporate members.

After twenty one years the membership roll now stands as follows:

Nationals

Corporate members	-	21
Associate members	-	30
TOTAL	-	51

Expatriates

(Resident in Papua New Guinea)

Corporate members	-	39
Associate members	-	10
TOTAL	-	49

Expatriates

(Resident Overseas)	-	83
TOTAL MEMBERSHIP	-	183

2. OBJECT

The objects of the Assocaition include the following:-

(a) To promote the science and practice of surveing in all its branches, and the usefulness and efficiency of persons engaged therein.

(b) To raise the character and status and advance the interests of the profession of surveying and those engaged therein.

(c) To encourage the study of surveying and to improve and elevate the general and technical knowledge of persons engaged or intending to engage in the profession of surveying.

(d) To promote and safeguard the interests of the profession of surveying generally.

(e) To amalgamate, affiliate or co-operate with any other Institutions or Association having objects altogether or in part similar to this Association. Provided that in any amalgamation of affiliation the identity and autonomy of the Association of Surveyors of Papua New Guinea shall not thereby be lost.

(f) To do all such things as the Assocaition may think incidental or conducive to the attainment of the above objects or any of them .

THE STRUCTURE OF THE ASSOCIATION

COUNCIL (all Corporate Members)

* President
* Vice - President
* Honarary Secretary/Treasures
* Six Councillors

GRADES OF MEMBERSHIP OF THE ASSOCIATION

* Corporate member
* Fellow
* Honarary Fellows
* Associates
* Technical Associates
* Students

4. QUALIFICATION FOR MEMBERSHIP

(A) QUALIFICATION OF FELLOW

(i) Fellows shall comprise all those persons who have been elected into the grade of Fellow so long as their names remain on the Register as such.

(ii) Such additional Fellows shall be elected by the Council from nominations of members who have rendered conspicuous service to the profession.

(iii) The number of Fellows not to exceed 20 per centum of the total corporate Membership.

(B) QUALIFICATION OF MEMBERS

(i) Members of the Foundation Association at the time of formation of the Association shall be accepted as members of the Association.

(ii) Additional Members shall comprise all those persons who have been elected into the grade of Member so long as their names remain on the Register as such.

(iii) A candidate for election or transfer into this grade shall produce evidence to the satisfaction of the Council.

(a) That he is at least 21 years of age

AND

that he holds a Certificate of Competency issued by the Surveyors Board of Papua New Guinea, an Australian State, or New Zealand, or is a graduate of at least two years standing of a School of Surveying recognised by The Association as being of a standard not less than that Certificate.

OR

(b) That he is at least 23 years of age

AND

that he has been trained as a surveyor and having been engaged for at least four years excluding apprenticeship training, pupilage or training in the practice of the profession of surveying, shall have gained thereby experience deemed satisfactory to the Council.

AND

that he has passed in or been exempted in whole or in part from passing the Membership Examination of the Association and in the case of a partial exemption has passed the subjects for which exemption has not been granted.

OR

(c) that he is at least 40 years of age

AND

that he has been trained in a branch of surveying to the satisfaction of the Council.

AND

that he has been professionally engaged in the practice of surveying for a period of not less than 10 years, 5 years of which shall have been in a responsible technical executive position.

AND

that he has submitted a satisfactory thesis on a subject prescribed by the Council, unless he is over the age of 50 years and in the opinion of the Council his eminence in the profession is such that a thesis is not necessary.

(C) QUALIFICATION OF HONORARY FELLOWS

(i) Honorary Fellows shall comprise all those persons who have been elected into the grade of Honorary Fellow so long as their names remain on the Register as such.

(ii) Honorary Fellows shall be either distinguished persons who from their position have been or are able to be of assistance to the Association in carrying out its aims or persons eminent in science and experienced in pursuits kindred to those of the Members of the Association.

(D) QUALIFICATION OF ASSOCIATES

(i) Associates shall comprise all those persons who have been elected into the grade of Associate so long as their names remain on the Register as such.

(ii) A candidate for election or transfer into this grade shall produce evidence to the satisfaction of the Council,

(a) That he is at least 21 years of age,

AND

has been trained as a Surveyor to the satisfaction of the Council

AND

has passed in obtained exemptions in such examination as the Council may from time to time prescribe

OR

(b) That he is trained and engaged in a branch of the profession of Surveying for a period of not less than 10 years, 5 years of which shall have been in a senior technical position with interests, attainments and status which enable him to promote the Objects of the Association as defined in Clause 2 of the Constitution.

OR

(c) That he is trained and engaged in an allied profession, and has interests, attainments and status which, in the unanimous opinion of the Council, enable him to promote the Objects of the Assocaition as defined in Clause 2 of the Constitution.

OR

(d) That he is a Commissioned Officer of the Royal Australian Survey Corps, Australian Regular Army or a First Grade Assistant Surveyor of the Hydrographic Service, Royal Australian Navy.

(E) QUALIFICATION OF TECHNICAL ASSOCIATES

(i) Technical Associates shall comprise all those persons who have been elected into the grade of Technical Associate so long as their names remain on the register as such.

(ii) A candidate for election or transfer into this grade shall produce evidence to the satisfaction of the Council

(a) That he holds a Certificate of Surveying from the Papua New Guinea University of Technology or from another Technical institution recognised by the Association

AND

(b) that he has a minimum of five years post certificate experience to the satisfaction of the Council.

(F) QUALIFICATION OF STUDENTS

(i) Students shall comprise all those persons who have been elected into the grade of Students so long as their names remain on the Register as such

(ii) A candidate for election into this grade shall produce evidence to the satisfaction of the Council.

(a) That he is not less than 16 years of age

AND

(b) that he has passed in or been exempted in whole or in part from such examination as may be prescribed by the Council and in the case of partial exemption has passed in the subjects for which exemption has not been granted

AND

(c) that he has received or is receiving training as a Surveyor and has received or is intending to obtain such practical and scientific training as will fit him for engagement in the profession of surveying.

(iii) No person shall remain in the grade of Student for more than eight years or if he becomes eligible for a higher grade of membership.

The association cater for all Surveyors practicing under any of the branches of the Profession of Surveying:

(a)	Geodetic	surveying
(b)	Topographic	surveying
(c)	Aerial	surveying
(d)	Hydrographic	surveying
(e)	Cadastral	surveying
(f)	Engineering	surveying
(g)	Mining	surveying
(h)	Geological	surveying
(i)	Cartgraphy	

It is understood that the New Zealand Institute of Surveyors basically caters for Surveyors engaged in Cadastral or Legal surveys and only alllows as members those who have passed the Registration examination of the New Zealand Survey Board. Whereas our Association aims to represent all Surveyors involved in the many facets of surveying by virtue of our varying grades of membership and the qualifications required.

THE COUNCIL

The Council is the main Working of the Assocaition and deals with the yearly operation of the organisation. It is normal to have a Council Meeting every month but when there is very little business within one month. The meetings can be at two monthly intervals. Our By-Laws say that there shall be at least two meetings of the Council in each year.

At our Annual General Meeting which is held at our yearly Congress we nominate other working Committees to work on various projects. Our most active Sub-Committee is the Scale of Fees Committee and their function is to upgrade the Scale of Fees according to the consumer price index so that practicing private Surveyors can keep up with inflating economy. We try to nominate some members from the Government Sector to take part in this committee also. The Government being the largest source of work for our private practicing Surveyors.

We have established sub-committees to look into various means of promoting the profession so that the public is aware of our position in the community and also to attract the right young students to the University to study surveying.

COMMUNICATION WITH MEMBERS

As one can see on a map of PNG the topography and the geography of the land makes it quite hard for the members to get together very often, so our journal is a very good and convenient media. The main problem is in getting articles and news items for members for the Journal which is published quarterly. It seems that our members have no time to prepare articles and news items because of work commitments.

The various roads only link some towns and this leaves travelling mainly by air and sea. We have extremely modern telephone network and this helps a lot in our Communication problem.

When Council decides to send correspondence to each member in the country we have to allow at least two weeks before we can assume that most of the letters have arrived.

ANNUAL CONFERENCE

Every year the Association runs its conference at one of the main centres. In the past the venue has any of the towns, but due to high cost rises we have kept it between LAE and Port Moresby, the two largest centres in PNG, in recent years. The annual conference allows members to come together as a group to discuss ideas and problems both in the formal session and the informal and formal social functions.

As stated before the high cost of running a Survey Conference has made it harder to get the numbers attending to increase every year.

These survey conferences are not only beneficial to every member but it is most beneficial to our young graduates and students. They learn to participate in open discussions at an early stage so that their confidence is strengthened for their future work life.

During our conferences we invite manufacturers like WILD to display their latest survey equipment and accessories. We also try to arrange small workshops on various subjects related to surveying e.g. Business Management.

BENEFITS OF THE ASSOCIATION

Members may sometimes question the benefits of the Assocaition, like "what do I, as a person gain from being a member". The answers are:

1. Involvement as a large group allows the Surveyors to make a combined approach on matters effecting the profession and in turn thus effect each member personally.

2. Educating oneself by involvement with other members. In other words members can learn from each other and by being in the Association makes it easier to do so because there are more people to learn from.

3. For private practicianers, the scale of fees is an important factor and in standardicing it allows the clients, be it government or otherwise to respect increases of fees instigated by large group instead of single Companies.

4. Job promotion. It is well known that if one is a member of a well known and respected professional body, that person must be of a certain standard to be allowed membership so that his ability as a good operator or worker may not be questioned when it comes to promotions to a higher position.

5. Participation in the Council allows a member to be richer in Managment, self confidence in public relation etc.

6. Socially, the member would be richer in knowledge and experiences especially during congress week.

CONCLUSION

An Association must have a strong Council to instigate moves to solve different problems. Normally the ordinary member goes about his daily chores and very seldom finds time to think of the other problems, but in the Council the members set aims and they get together at meetings to solve them. The Council would then communicate with the members by way of Correspondence, telex, telephone etc. asking them to participate in various projects.

It is the aim of the Association to improve relationship amongst members and encourage members to make positive moves to actively take part in the running of the Assocaition and also in the functions or projects instigated by Council. It is only by Members becoming actively involved in their Association that the strength and respect of the Assocaition within the community can develope.

MINUTES OF THE 140TH COUNCIL MEETING HELD IN PORT MORESBY ON 26/2/1982.

PRESENT:	Steve Low	President
	Jerry Sipuman	Hon. Sec/Treasurer
	Brian Mennis	Councillor
	Francis Posanau	Councillor
	Cholai Polume	Councillor
	Gairo Wai	Councillor
	Clive Bassett	Councillor
	Skerry Palanga	Councillor
ABSENT:	Des McNee	Councillor

The President opened the meeting at 4.30 pm.

1.0 MATTERS ARISING FROM PREVIOUS MEETING

1.1 Steve Low pointed out in item 5.1 that Jerry Sipuman will do any of the Association depositing at the Lae Branch while the payment will be made at Port Moresby by the President.

1.2 Brian Mennis moved that the Minutes of the 139th Meeting be accepted.

Seconder: Francis Posanau
carried.

2.0 APPLICATION FOR MEMBERSHIP

2.1 Applications were received from the following:

Nicholas Matui
Mark Zorro
Robert Taafee
Steve Konena
Saweime Madu

2.2 Only Nicholas Matui and Mark Zorro were accepted as Associate Members while the others must submit a copy of their certificate before the application could be considered.

Moved by Francis Posanau
Seconder: Brian Mennis
carried.

4.1 Letters of resignations were received from the following members.

Geoff Bebb
Frank Young
M.D. Allan
Amado Cano

4.2 Clive Bassett moved that the resignations be approved.

SECONDER: Francis Posanau
Carried.

5.0 PAYMENTS OF ACCOUNTS

5.1 Mrs Bebb charged the Association K84.50 for typing the last survey journal.

Terry Lester sent a copy of the telex costing K19.30 from the National Works. This in payment of telex sent to Canada notifying CASTLE of KISOKAU POCHAPON's Travelling Arrangements.

On the October 24th Council Meeting the Council sent a cheque of K327 to Unitech being for Annual Awards, Graduation and my airfare refund. However the amount sent K327 was not sufficient after deductions by K14.77.

Brian Mennis moved that the above payments made to Mrs Bebb K84.50, Terry Lester K19.30 and Jerry Sipuman K14.77 be accepted.

Seconder. Steve Low

6.0 OUTSTANDING DEBT.

6.1 It was brought to the notice of the Councillors that the following members owe The Association over K60 -

L. Tabua	R. Sioni
A. Waisale	M. Popeu
E. Adoremus	P. Nama
K. Pochapon	J. Hunt
A. Dion	P. Breria
R. Gurao	K. Blaik
P. English	J. Obera
Capt Pearson	D. Forster

7.0 SURVEY CONGRESS REPORT.

7.1 Brian Mennis indicated that everything is running smoothly. Only couple of minor alteration to the congress format.

(a) Opening will be at the Papuan starting at 5.00pm followed by the Cocktail Party.

(b) Annual Dinner will be on Thursday night.

(c) There will be no home entertainments.'

As to who will open the Congress, it will be left until the general Election.

8.0 SURVEY JOURNAL.

8.1 Jerry Sipuman indicated that staff members at Unitech namely Ted Nacino and Balu have indicated their willing to have the journal back at Unitech if the present Editor have difficulty in producing the Journal on time.

9.0 Scale of Fee.

The scale of fee Committee will be meeting again and will come up with recommendations/ ammendments to the Council next meeting.

However, Mike Larmer in a letter to the President suggested to the Council endorse the scale factor of 2.00 and the new rate be effective from March the first.

Francis Posanau moved that the scale factor of 2.00 be accepted.

Seconder: Steve Low
Carried.

10.0 Next Meeting

10.1 To be in second week of May.

JERRY SIPUMAN
HON. /SEC. TREASURER.

NOTES ON THE USE OF TERRESTRIAL PHOTOGRAMMETRY IN PAPUA NEW GUINEA - 1.

by M. Zeman, Dip. Surv Czech.,Assoc. Dip Cart., Grad Dip TP (S.A.I.T.), lecturer, PNGUT.

1.0 INTRODUCTION

Photogrammetry is now a firmly established procedure of map production worldwide. Its usage has been particularly high in the preceding thirty years in Papua New Guinea,a developing nation where the need for mapping was correctly seen by policy making bodies as an essential prerequisite to effective and orderly exploration and development of its natural resources. A considerable aid programme was implemented and the use of aerial photography with its potential for wide ranging quantitative and qualitative information retrieval has been highly beneficial not only to a photogrammetrist but also to various other professions. Aerial photography has been used to an ever growing extent and with remarkable success in engineering geology, forestry, urban and regional planning and numerous other disciplines concerned with the environment.

The impetuous development of science and technology in the past decade resulted in ever more demands made on various photogrammetry areas of knowledge and they have been dealt with in the most effective ways, photogrammetry is continuously extending its field of application. The alliance of photogrammetry and electronic data processing has brought most momentuous advancements in the form of digital terrain models and computer filing of digitized information.

Interpretative or non-metric photogrammetry also began to be employed more widely than ever before and the development of various sensing instrumentation operated from airborne and spaceborne platforms gave birth to remote sensing technology a powerful multi-disciplinary tool for the monitoring of the environment.

Thus photogrammetry as a science has passed on some most impressive and rapid developments and its techniques came to be utilized as a standard tool in numerous other areas.

As Papua New Guinea, now a newly independent nation is undergoing ever more profound and probably faster accelerating change than most other countries the need for mapping is greater than elsewhere.

There should be no doubt that the availability of advanced technology will greatly facilitate the present and future environmental mapping tasks and assist in the attainment of this country's environmental aspirations. Yet in retrospect, taking into view the role photogrammetry has played in fulfilling Papua New Guinea mapping needs it is surprising to say the least that there have been no reported uses in the photogrammetry area of knowledge as old as the science itself namely the photogrammetry terrestrial mode. This absence of terrestrial photogrammetry techniques employment is even more surprising in view of a great many number of large scale engineering projects such as hydro electric power sites with which terrestrial photogrammetric has always been very closely associated in other countries including Australia.

It is not the intention of these notes to analyze reasons for terrestrial photogrammetry non sequitur in this country but instead discuss the feasibility aspects of terretrial photogrammetric survey including the factors directly influencing the choice of a particular method and the limitations as well as the advantages of terrestrial photogrammetric system. It is hoped that this discussion will aid the prospective user in making a judgement on how to utilize terrestrial photogrammetry to provide solutions to his own mapping problem.

2.0 TERRESTRIAL PHOTOGRAMMETRY BASIC PRINCIPLES

While it is thought unnecessary to give a detailed treatment of theory and practice of terrestrial photogrammetry, a brief outline of general principles and techniques is thought useful.

2.1 Definitions

Terrestrial photogrammetry is an important branch of the science of photogrammetry. Historically the photogrammetry had its beginning with terrestrial photography, topographic mapping being the first application. Terrestrial phtogrammetry can be defined as that branch of photogrammetry dealing with the photographs taken from fixed positions on the surface of the earth. It is subdivided on the basis of application into topographic and non-topographic mode. As the applications of terrestrial photogrammetry extended, especially those of non-topographic mode, the term close range photogrammetry has been adopted for terrestrial photographs having object distances of up to about 100 metres.

Photogrammetry be it in aerial or terrestrial mode can be further sub-divided into two distinct groups according to the methods employed, namely mono-photogrammetry, or single image photogrammetry and stereo-photogrammetry, or double image photogrammetry utilizing stereopairs of photographs. Since most applications of photogrammetry require three dimensional information, a single photo-graph application is rarely utilized due to the fact that it provides information in two dimensions only. Generally stereophotogrammetry is employed, the photographs taken from different viewpoints forming a stereopair which provides additional information in third dimension. The quantitative evaluation of such stereopair supplies accurate three dimensional data necessary for the reconstruction of the photographed object shape, size and position.

.2 Stereophotogrammetry

The basis of stereophotogrammetry as a measuring technique is the fact that photography is acquired in a manner that satisfies the conditions for stereoscopic vision and thus enables the sterescopic measurement. Such photographs are the exact perspective pictures or central perspective projections of a photographed object. The geometric relationship that exists between the object and its photographs at the time of exposure can be reconstructed on account of geometry recorded on the photographs making it possible for the physical measurement of the object to be replaced by the measurement of the object images on the photographs. The central perspective projection of the photographs is transformed into a parallel orthogonal projection. This transformation can be materialized analytically, graphically or mechanically using specially constructed precise instrumentation.

Thus the information required is obtained for a geometric description of the photographed object in form of numerical data, i.e. three dimensional co-ordinates, graphical data i.e. plans, maps, profiles or other graphic forms of recording of photographed objects, or possibly a combination of both.

There are three basic types of photography used in terrestrial photogrammetry, division based on the direction of camera axes in relation to camera base. Thus we have the normal case, the parallel averted case and the convergent case. (Fig.1).

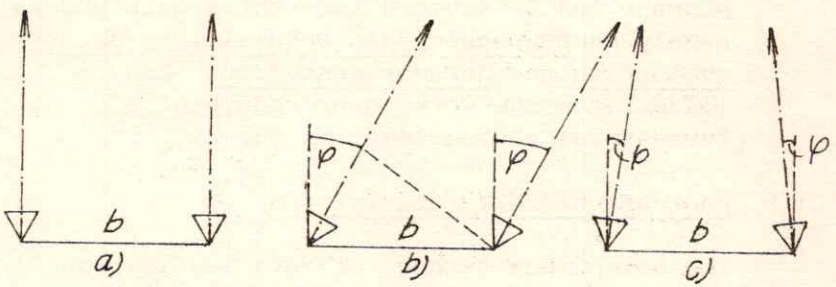

Fig. 1 Terrestrial photogrammetry photography types.

The configuration for the normal case with the camera axes parallel to each other, horizontal and perpendicular to the base b is shown in Fig 1a.

In the parallel averted case the camera axes are parallel but averted from the base by the angle φ This configuration is used to increase coverage from a camera base and hence to keep to the minimum the number of camera stations needed to photograph a particular object. The parallel averted case with the camera axes averted to the right from the base is shown in Fig. 1b.

Fig 1c illustrates the convergent case. The camera axes are non-parallel and hence form different aversions from the base. It is not the generally adopted configuration although in some situations it may be of advantage to introduce a small angle of convergence to obtain increased stereoscopic coverage.

2.3. Terrestrial photogrammetric survey

Terrestrial photogrammetric survey involves carrying out all the necessary work to produce the desired end project. The survey for that matter any other measurement process can be divided into three main phases, namely photographic data acquisition, data evaluation and data presentation. Fig. 2 illustrates the working procedure of a terrestrial photogrammetric survey.

2.3.1 Photographic data acquisition

The basic requirements of data acquisition of terrestrial stereo-photogrammetry can be summed up as follows:-

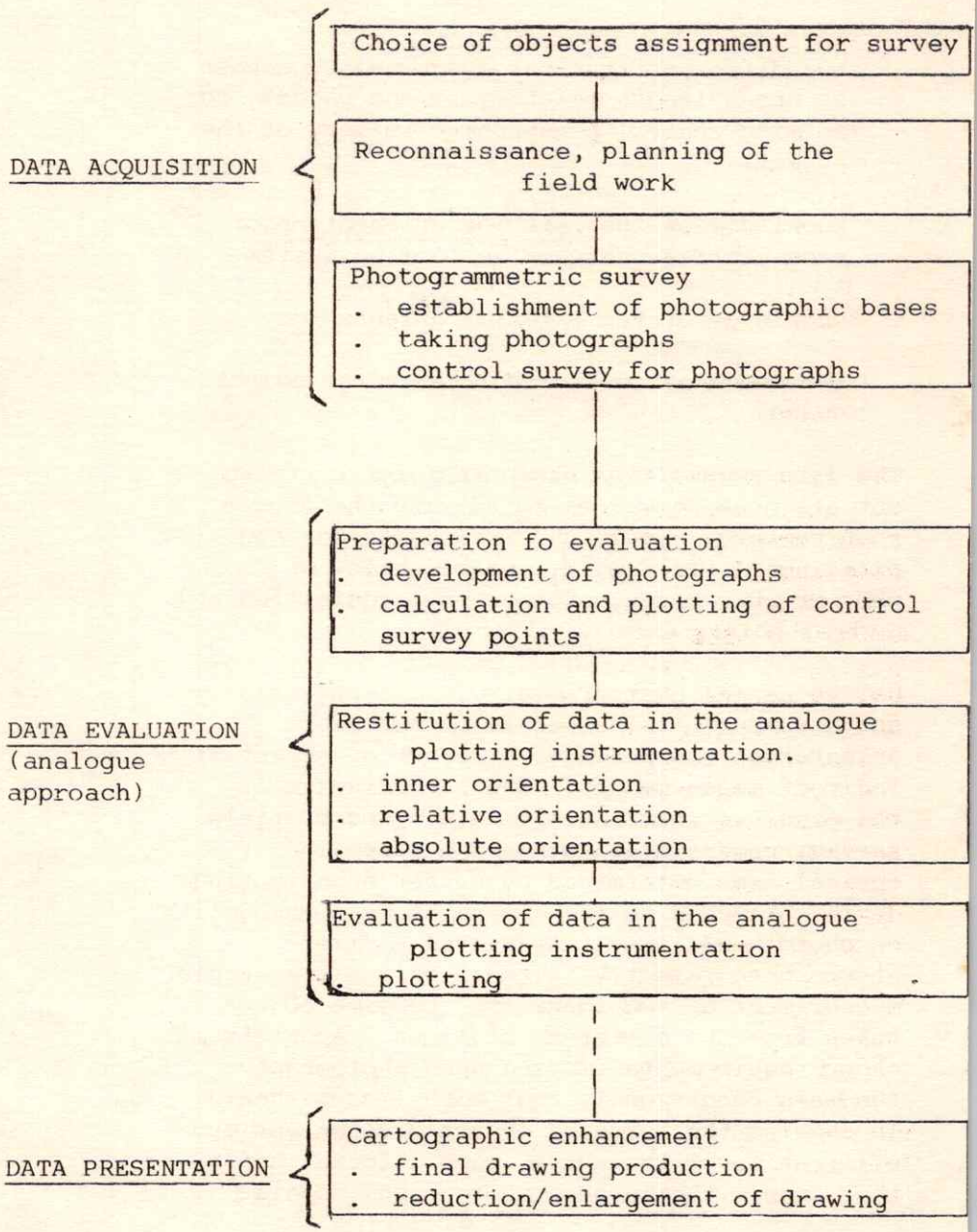

Fig. 2 The working procedure of a terrestrial photogrammetric survey.

- two different stations separated by a base of known length relative to the object, for forming central perspective imagery of the object.

- knowledge of the interior orientation of each central perspective forming system.

- knowledge of the exterior orientation.

- knowledge of control points in the object space.

The data acquisition phase includes carrying out all necessary work to satisfy the above requirements, namely the reconnaissance and planning of field work, establishment of photographic bases, photography acquisition and control points data acquisition.

Unlike aerial photogrammetry, in terrestrial photogrammetry all elements of exterior orientation are known as a result of direct or indirect measurements. The co-ordinates of the exposure stations are determined by field survey, camera orientation and direction of optical axes determined by either an orienting device attached to the camera or by a theodolite on phototheodolites. As stated earlier stereophotogrammetry is based on a stereoscopic measurement of two images of the same object taken from the different stations. Apart from other requirements imposed upon photography, the main condition is that both images should in showing the surveyed object give an optimum utilization of the survey camera format and thus ensure the largest photographic scale.

Assuming that due considerations had been given to the requirement of accuracy and consequently a certain base length decided upon, the base stations are set out in a manner where the object is covered by the least number of them. Often it is advantageous to photograph from the same base in accordance with the cases elucidated earlier. In this regard due consideration must be given to both the methods and instrumentation available for the data evaluation.

The survey of control points completes the data acquisition phase, determining the co-ordinates of a number of control points strategically distributed in the object space. These serve as a control during the evaluation and check among other factors that the elements of interior and exterior orientation have been determined with sufficient accuracy.

2.3.2. Data evaluation

The data evaluation phase involves techniques and processes by which the information required for a geometric description of an object is obtained from the photographic data.

Depending on the desired end product, its accuracy specifications and the instrumentation availability in both, the data acquisition and data evaluation phases there are basically three alternative approaches for stereogrammetric data evaluation namely analogue, analytical and semi-analytical.

Analogue approach

The analogue approach is universally adopted whenever the desired end product is an output in a continuous line form. It is done on precise photogrammetric plotting instrumentation in which the position of the photographs as they were at the time of exposure is restituted. The stereopair is then viewed in three dimensions, the stereomodel measured with the floating mark. The position of any point within the stereomodel is determined by bringing the floating mark in contact with that point, its movement transmitted to a plotting table where the accurate plan is drawn at the predetermined scale in the form of pencil manuscript.

Prior to the actual data evaluation an orientation comprising three stages is carried out namely the interior, relative and absolute orientation.

Interior orientation is achieved by setting the plotting instrument projectors to the same calibrated focal length as that of the taking camera and aligning the fiducial marks on each photo with the corresponding of each projector.

Relative orientation is carried out in order to set the two projectors in the same perspective conditions as that of the taking camera at the time of exposure. In terrestrial photogrammetry the elements of exterior orientation are known and hence can be set directly on the plotting instrument.

The effects of the small deviations from the known exterior orientation show up as residual y- parallaxes throughout the stereomodel. The relative orientation is then achieved by an iterative, usually empirical procedure that minimizes these parallaxes. Result of the relative orientation is a y- parallax free, stereoscopic model of yet unknown scale and azimuth.

Fixing the precise scale and azimuth is the purpose of absolute orientation. In absolute orientation the stereoscopic model is related to control distributed in object scale and determined during the data acquisition phase.

Analytical and semi-analytical approach

The analytical approach uses comparators, either mono or stereo, an instrument designed for measuring image co-ordinates to a very high accuracy. Stereo comparator consists of a precision measuring instrument for measuring image co-ordinates and co-ordinates parallax values and a unit for recording these values automatically. The stereomodel is not reconstructed as on the analogue instrumentation, the stereoscopic viewing is used only for the co-ordination of detail contents of both images to enable two-dimensional co-ordinates to be measured simultaneously. The stereo-comparator measurements are then fed into a computer in either on-line or off-line mode where the transformation of these to spatial, three-dimensional co-ordinates is carried out by a number of methods based on the two fundamental conditions of analytical photogrammetry namely the collinearity and coplanarity.

Semi-analytical approach uses conventional analogue stereoplotters interfaced directly with computers to form hybrid systems which combine the basic features of the analogue with that of the analytical. The stereomodel is formed, however the third stage of the orientation process, the absolute orientation is carried out analytically.

2.3.3 Data Presentation

The data presentation phase involves carrying out all the necessary work by which the data evaluation output is transformed into the desired end product.

In the case of the analogue approach it involves a cartographic enhancement of compilation manuscript and sometimes the reduction or enlargement of the completed drawing to the desired scale.

Part 2 of Mike's article will appear in the next issue of the Journal. In this second part he deals with the feasibility aspect, cost effectiveness etc.

PROFESSIONAL STANDARDS

B.J.Mennis

The professional standards I am going to write about in this short article are not our professional technical standards, but the standards of the way we present ourselves to the public.

We can produce the most technically perfect survey that it is possible to produce and that will mean precisely nothing to the person for whom we are doing the survey and who is paying the bills for all our time and effort. He cannot see, does not understand, and most certainly does not care about our standards of accuracy, or all our hidden iron pins, or all of the rest of our professional mumbo jumbo.

But he can see, and does understand;

(a) poorly drawn plans.

(b) pegs not placed and aligned properly, or obviously leaning.

(c) indiscriminate cutting of ornamental bushes.

(d) holes left where we went looking for old marks and forgot to fill in.

(e) Sharp spear like sticks left standing all over the footpaths ready to spear the first unwary pedestrian the night the job is completed.

(f) temporary pegs left protruding an inch or so above the ground surface, ready to catch an unwary toe or the blade of a motor mower.

(g) sloppily dressed persons who look like labourers but who are charging enormous hourly rates.

Any or all of these can be found on virtually every survey carried out in this country at the present time. The amount of effort required to correct all of them is so little as to be not even worth considering.

Some of them, like unfilled holes and pickets left standing could result in large compensation claims even in a western society, much less in Papua New Guinea where "compensation" is a way of life to certain groups.

Standards of dress might cost a little more but again it is essential that a professional person appears to be a professional person to the public, particularly when he is working in urban areas. One hopeful "professional" even turned up to the Board for his final examinations in a football jersy, number and all. The Board was not impressed, and one number even commented that the standard of the candidate's dress was almost enough to fail him.

While there is an old saying "you cannot judge a book by its cover", the public certainly does judge the surveyor on his personal appearance and that of his work, simply because they have no other standards. If we want to be respected as professionals, and paid accordingly, we must make every effort to appear to the public as professionals, both personally, and in the appearance of our completed work, plans, pegs etc.

CALL FOR PAPERS

The Second South East Asian Survey Congress, jointly hosted by The Royal Institution of Chartered Surveyors (Hong Kong Branch) and The Hong Kong Institute of Land Surveyors will be held in Hong Kong in early December 1983. The theme is "Regional Development Potential" and many papers have been invited from overseas speakers, kindred institutions, and from among members of the two host organizations. Anyone who has not been invited but would like to present a paper to the Congress should send details to:-

The Chairman, Technical Papers Committee,
2nd South East Asian Survey Congress,
Hong Kong Institute of Land Surveyors,
P.O. BOX 515, Kowloon Central Post Office,
Kowloon, HONG KONG.

by the end of August 1982. If accepted, the paper itself will be required by April 1983, and will be prepublished and circulated in the bound volume of conference papers. The papers will be presented during three concurrent technical sessions. The three streams are:

1. Land, Engineering and Hydrographic Surveying.
2. General Practice - Land Valuation and Land Economy.
3. Quantity Surveying and Building Surveying.

Instructions regarding the form of actual presentation will be sent to authors well in advance. Papaers should be of South East Asian regional relevance and be presented in English.

THE SECOND SOUTH EAST ASIAN SURVEY CONGRESS
HONG KONG
5TH - 9TH DECEMBER 1983

The following is an article received from the Joint Organising Committee for the above Congress. Along with this Article came an attractive brochure, advertising the highlights of the Congress. There are scheduled 2 full days and 2 half days of technical sessions, leaving many free hours to enjoy the experience of Hong Kong. There is a host of social functions organized for participants including cocktail parties, sightseeing tours, a moonlight cruise, a banquet, a race meeting and a selection of Pre and Past Congress Tours lasting from one day to seven days.

Interested? If you would like to have a copy of the Brochure than write to the Editor or see one of the Association Councillors who will pass the request on, or write direct to the organizers of the Congress.

The Association of Surveyors is a member of the Commonwealth Association of Surveying and Land Economy. (C.A.S.L.E). The following are extracts from a report from the last general meeting held in Ottawa, Canada in September 1981.

COMMONWEALTH ASSOCIATION OF SURVEYING AND LAND ECONOMY FOURTH GENERAL ASSEMBLY, OTTAWA, CANADA, 14-19

REPORT OF THE RETIRING EXECUTIVE COMMITTEE

1. MEMBERSHIP AND MEETINGS

1.1 The third General Assembly elected the following as members of the Executive Committee to hold office until the first day of the fourth General Assembly;-

President:	John Bloomfield (Jamaica)
Secretary:	Robert Steel (UK)

Regional representatives:

Africa	O A Aderibigbe (Nigeria)(QS) S H Gadegbeku (Ghana)(LS) J M Wairagu (Kenya) (LE)
Asia	J K Divecha (India) (LE) A P S Gunewardene (Sri Lanka) (LS) Mohamed Tahir (Malaysia) (QS)
Atlantic	V A Hart (Trinidad and Tabago) (QS) T D W McCullouch (Canada) (LS) L N Patterson (Jamaica)(LE)

Europe	C P Franklin (UK)(LE) J R Hollwey (UK)(LS) James Nisbet (UK)(QS)
Pacific	H W Hunter (New Zealand) (LE) J E McNaughton (Australia) (LS) A L Perry (New Zealand) (QS)

At its first meeting the Executive Committee elected J M Wairagu, A P S Gunewardene, C P Franklin and A L Perry as Vice Presidents.

1.2 The Executive Committee met in Accra, during the period of the third General Assembly, and in Hong Kong on 1-2 March 1979. At the latter meeting it was agreed that CASLE could not finance a further meeting of the full Executive during the period March 1979 - September 1981 but that Executive Committee members who would be participating in the Pacific regional seminar to be held in Papua New Guinea in September 1980 should meet there to transact essential business. In the event the 1980 meeting, held on 5 September was attended by 10 members of the Committee, including Mr John Wairagu, and the Committee wishes to place on record its thanks to him for having travelled to Papua New Guinea entirely at his own expense.

2. ACCRA SYMPOSIA: FOLLOW-UP ACTION

2.1 The resolutions of the symposia held during the period of the third General Assembly were reviewed at the Hong Kong meeting of the Executive Committee. Action taken to implement those resolutions that related to education and training is summarised in the accompanying report of the retiring Commonwealth Board of Surveying Education (CBSE) (GA/P(81)2.

2.2 The Executive Committee noted the suggestion that a more appropriate name should be found for the land economy profession which would be more acceptable to the profession and more conducive to a clear public image, but decided that, as the term "land economic" was gaining credence, it should be retained. The Committee also noted that, in furtherance of a resolution of the land surveyor's symposium, the attention of appropriate government departments had been drawn to the need for improved conditions of service and career prospects for land surveyors, and it decided that, within the resources available to it, the secretariat should disseminate information about research, practices and procedures (using, inter alia, the medium of the CASLE newspaper) and encourage CASLE member-societies to exchange data on these topics.

3. REGIONAL SEMINARS

3.1 In furtherance of decisions taken by the third General Assembly the following meetings were organized during the period covered by this report -

1-4 November 1977:	Pacific regional seminar, Fiji
24-26 April 1978:	Atlantic regional seminar, Barbados
4-7 September 1978:	Africa regional seminar, Nairobi
26 February-1 March 1979:	Asian regional seminar, Hong Kong
1-4 September 1980:	Pacific regional seminar, Papua New Guinea
31 March-3 April 1981:	Central and Southern Africa regional seminar, Malawi.

Responsibility for organising each event was vested in a local organising committee, with back-up support from individual members of the Executive Committee and/or the secretariat as required. This arrangement worked extremely well, thanks to the initiative and hard work of members of local committees and of those Executive Committee members concerned. The assistances of the secretariat was in some cases sought when programmes and speakers were being determined, but CASLE involvement was otherwise largely limited to organising and administering travel grants for participants who could not otherwise have attended the meetings and producing the reports of the proceedings. To ensure a degree of cross-regional fertilisation, participants in each seminar normally included selected delegates from other parts of the Commonwealth who could make a positive input to the proceedings (and, whenever feasible, the President and/or the Secretary of CASLE), but the seminars were essentially regionale vents which thus fulfilled the desired aims of devolving responsiblity for CASLE activities to the regions and creating a greater sense of community between CASLE members within each region.

3.2 It was agreed by the third General Assembly that the costs incurred locally of organising regional seminars should wherever possible be recouped by charging participants a registration fee. This policy was adopted in the majority of cases, and income so derived was sometimes augmented to by voluntary contributions from local surveyors and/or their member-societies.

Where necessary CASLE made good, from its own resources, execesses of expenditure over income (e.g. where a fee had to be paid for the hire of meeting accommodation) and in some cases the secretarirat undertook the typing, duplication and distribution of the papers issued in advance of a seminar. CASLE also contributed towards the costs incurred by local member association (s) in hosting informal receptions for visiting seminar participants and local dignatories.

3.3. The Fiji seminar was organised by a committee of Fijian Surveyors with assistance from Mr Howard Hunter on behalf of the Executive Committee and was attended by over 100 delegates, including 14 participants from Pacific islands (other than Fiji) whose travel costs were financed from a New Zealand government grant. An outstanding keynote address was given by Dr James Maraj, Vice-Chancellor of the University of the South Pacific, on the role of professionals and professional societies in developing countries and 26 other papers were presented in plenary sessions and discussed in group meetings. These covered the main topics of land tenure and titles; surveying and mapping, quantity surveying, education for surveying and land economy; and CASLE and the profession in the region. Action taken persuant to resolutions that survey manpower needs in the region be quantified and steps taken to establish the necessary indigenous educational facilities is reported in paragraphs 4.2 - 4.6 below.

Other resolutions dealt with the need to devise acceptable and practical land tenure systems and for the University of the South Pacific to continue its comparative study of such systems within and without the region; the requirement for co-ordinated surveying and mapping systems in the Pacific Islands; and the importance of members of the surveying and related disciplines in the smaller islands endeavouring to form unified societies. CASLE members in the region were asked to initiate follow-up action on all the resolutions, other than those relating to survey manpower and educational requirements, following distribution of the report of the seminar proceedings to appropriate government deparmtents and educational establishments in the Pacific.

3.8 Organisation of the Papua New Guinea seminar, attended by 147 delegates was undertaken jointly by CASLE and a committee of members of the Association of Surveyors of Papua New Guinea. The costs of the attendance of 14 Pacific island delegates and of the Executive Committee members were partially offset by a Commonwealth Foundation grant of £7,000. The seminar concentrated on the profession's role in rural development programmes and on education for the professional - existing facilities and how these could be expanded. A total of 41 papers included 13 situation reports from member-societies and correspondents in the Pacific region, all of whom have subsequently been asked to draw the attention of their respective governments and other relevant organisations to those seminar resolutions urging that maximum use be made of existing training facilities; that there should be close co-operation at national regional level, in developing additional facilities, and that due recognition be given to the importance of each country surveying and identifying the resources of its off-shore exclusive economic zone.

The seminar reaffirmed its support for the Fiji seminar recommendation concerning the formation of professional institutions connected with the land in the South Pacific, and CASLE has written to the South Pacific Bureau for Economic Co-operation to enquire whether it can help to promote and strengthen Pacific regional links between relevant professions. Progress made in implementing those resolutions relating to the need for additional training facilities within the region is reported in paragraphs 4.2-4.6 below.

4. Manpower and Educational Requirements.

4.2 The South Pacific

Arising from resolutions endorsed by the CASLE Pacific regional seminar held in Fiji in 1977 the University of the South Pacific commissioned a study of survey manpower and education requirements in that region which was financed by the Commonwealth Fund for Technical Co-operation and carried out by Professor Denman in November/December 1980. This revealed that, in relation to land economy surveyors, two-thirds of the established posts were vacant, the corresponding figures for land and quantity surveyors were one in five and one in four respectively. Professor Denman estimated that, if future requirements were also taken into account, 254 land economy surveyors and 42 land surveyors would need to be trained and recruited and that subsequent annual replacements would run at the rate of 29 and 12 respectively; for the time being he estimated QS needs at only two new recruits per annum. He recommended that, to help make good the substantial short-fall in land economy surveyors, a degree be established within USP and, with the active support of its Vice-Chancellor, USP took immediate steps to implement that recommendation.

In 1980 the Chairman of the CBSE was invited to Fiji to assist in developing the programme and the first students were due to be enrolled on a course leading to a first degree in land management and development during 1981.

4.3 As well as the Pacific Island CASLE's Pacific region embraces, in addition to Australia and New Zealand, Papua New Guinea. That country is not served by USP but it has its own tertiary training establishments - the University of Technology and the University of Papua New Guinea which offer respectively a three-year diploma in valuation and a one-year diploma in land administration. The CASLE seminar held in PNG in 1980 noted with satisfaction the steps that were being taken to develop these courses to broaden the scope of their students, and first degree and post-graduate courses, modelled on the CASLE concept of land economy, are also being developed in Australia. Providing all countries in the Pacific region make full use of and collaborate in the development of these and other possible future training programmes, it should be possible to make a start on remedying the former severe shortage of land economy professionals in the Pacific Islands.

4.4 USP has no plans at present to establish a land surveying degree course, though it is hoped that graduate and registered land surveyors can be enrolled on appropriate parts of the USP land economy course. However, the region's land survey needs can probably be met on the one hand by the PNG University of Technology (which is already satisfying national requirements and has the capacity both to undertake courses in hydrographic surveying and other specialist fields and to provice for continuing education if required) and, on the other, by Australian and New Zealand Universities.

4.5 Although the shortfall of QS skills within the South Pacific islands is not as great as those that exist in the two other CASLE disciplines the quantity surveyors who attended the PNG seminar emphasised the urgent need to improve educational facilities in the region as a whole. In PNG, for example, there was an immediate requirement for 40 professionally qualified quantity surveyors; this was expected to rise to 84 by 1985; yet at present only 16, all expatriate, were in post. The seminar was therefore pleased to note that a PNG government working party was exploring the possibility of setting up degree courses in building surveying and quantity surveying at the PNG University of Technology. That working party has recommended that both courses be established; but even if the necessary government funding is forthcoming (which is by no means certain) they could not commence until 1983 with the first students graduating in Janury 1989. In the meantime, on the initiative of Mr Peter Kingston (New Zealand Institute of Quantity Surveyors) arrangements are being made to enrol PNG students, under the New Zealand government aid programme, on the NZIQS associate membership correspondence course and for that training to be supplemented by local lectures and assistance with coruse assignments.

4.6 It is appropriate to mention here the very substantial help which the New Zealand government is giving to South Pacific survey training programmes. In addition to the aid mentioned in paragraph 4.5 above it has been financing students on and providing lecturers for the survey technician course at Honiara since 1976 and in 1980 it made a three-year period for that University's land management and development degree course.

6. PUBLICATIONS

6.1 The 16-page CASLE newspaper has been published at six-monthly intervals throughout the period covered by this report, with issue no. 13 appearing in July 1981. Production costs have been offset by advertising revenue and by grants from the Commonwealth Foundation £500 per issue). There has been a slight fall-off in the number of copies sent to member-societies because some societies, mainly on grounds of costs, only distribute the newspaper to those of their members who are interested in CASLE activities. CASLE has also had to take account of increased postal costs, by sending bulk copies of the newspaper by sea wherever feasible (though any society affected by this measure also receives a small quantity of each issue by air mail). Other recipients of the newspaper include educational establishments, libraries, representatives of governments, banks, regional and international aid and development agencies, allied professional societies, commercial organisations engaged in surveying and development and individuals interested in CASLE activites inside and outside the Commonwealth.

6.2 The value of the newspaper as a medium for the dissemination of information on technical and educational developments has been endorsed at practically every CASLE regional Seminar. It would therefore by reassuring to know that it is given wide distribution by member-societies - which would not always appear to be so judging from the number of requests to be place on the mailing list that are recieved from surveyors in some of the countries represented within CASLE.

In all such cases the enquirer is referred to the appropriate member-society.

6.3 The importance of CASLE members contributing material for the newspaper cannot be over-emphasised. Information that is not provided cannot be disseminated: whilst papers presented at regional seminars are a good source of copy they necessarily report only a portion of the developments that are taking place throughtout the Commonwealth. CASLE member-societies and correspondents could make a greater input to the newspaper by commissioning articles about new or existing techniques, technologies, training programmes and publications, etc that would be relevant to professional development in other Commonwealth countries.

6.4 CASLE has published reports of the proceedings of all regional seminars held since 1977 and of the Bangladesh seminar referred to in section 5 of this paper. The regional seminar reports have been distributed to societies and correspondents and are also available for sale - though the level of sales has dropped during the past six months, possibly because of the recent world-wide recession.

7. COMMONWEALTH SECRETARIAT ADVISORY COMMITTEE

7.1 At their meeting in Ottawa in June 1977 Commonwealth Heads of Government requested the Commonwealth Secretary-General to establish and advisory committee to report on positive steps to promote mutually beneficial ties between the official and unofficial Commonwealth - i e Commonwealth non-governmental organisations (NGOs).

The President of CASLE was appointed a member of the advisory committee which met in London in January and June 1978. Its reports, "From Governments to Grassroots" (copies of which were sent to CASLE members) was published in 1979 and endorsed CASLE's own view of the importance of governments liaising with national NGOs (which include professional societies). The report did, however, stop short of identifying ways in which governments and professional bodies could ellaborate more effectively in evolving and implementing national policieis; though it recognised the relevance of professional skills to development programmes and identified the Commonwealth Foundation as a major influence in the effectiveness of CPAs.

8. THE COMMONWEALTH FOUNDATION

8.1 Mr John Chadwick CMG who was appointed in 1965 to be the first Director of the Commonwealth Foundation, retired from his post in July 1980 and has been succeeded by Mr Rich Throssell, formerly a senior diplomat with the Australian foreign service.

8.2 The "Government to Grassroots" report referred to in paragraph 7.1 above recommended, inter alia, that the Commonwealth Foundation's mandate should be expanded in areas including culture, information, social welfare and rural development. This was accepted by Commonwealth Heads of Government at their meeting in 1979, subject to an evaluation being made of the Foundation's policies and activities.

That evaluation was completed during 1980 and on 15 December 1980 th 20 CPAs which operate under the aegis of the Foundation were informed that the Foundation's wider mandate now required it to reduce its level of support for CPSs. Henceforth the older-established CPAs such as CASLE would have to find other sources of funds to cover their administrative costs (including administrative meetings such as those of the Executive Committee, the CBSE and General Assemblies) but the Foundation would continue to consider requests for grants to fund project-orientated activities. CASLE has in fact been operating under this revised policy since May 1979, having received its last "general" Foundation grant in the year ending 30 April 1979; since when all its regional seminars and the CASLE newspaper have qualified for project finance. The effects which the revised policy could have on future CASLE activities is discussed in the accompanying paper GA/P(81)9.

8.3 Earlier this year the New Zealand Institute of Surveyors applied to the Commonwealth Foundation for a grant to help finance the attendance of one or two surveyeors from each of 10 Pacific islands at its 1981 annual conference, which is being held in Fiji with the objective of supporting and development surveying and mapping in the South West Pacific. CASLE informed the Foundation of its strong support for the NZIS initiative and expressed the hope that the grant would be forthcoming, and it was subsequently approved by the Foundation's grants committee.

8.4 In February, 1979 the Foundation organised a seminar, held at the Professional Centre in Kuala Lumpar on the theme "The Professional in the Wider Community". The Secretary of CASLE was invited to be one of the participants and to present a paper on "Developing the Professions in Developing Countries".

3.5 In March 1981 the Director of the Foundation visited Zimbabwe to re-establish contact with the indigenous professions and to explore opportunities for developing contacts between Zimbabwe and other Commonwealth countries. He invited the Secretaries of CASLE and the Commonwealth Nurses' Federation to accompany him, to assist in observing the role of the professions in the country's plans for reconstruction and development. In addition to the meetings that took place with groups of related professionals, the Secretary of CASLE held separate discussions with representatives of the land surveyors, quantity surveyors and valuers societies, which included consideration of the possibility of surveyors in Zimbabwe establishing a single organisation embracing all the CASLE professions; and with faculty members of the University of Zimbabwe whose courses are allied to CASLE disciplines. These initial contacts were furthered by the attendance at the Malawi seminar of seven surveyors from Zimbabwe, together with the director of the University's regional and urban planning centre.

More recently the Survey Institute of Zimbabwe has been admitted to membership of CASLE and a membership application has been received from the Zimbabwe valuers (see accompanying paper GA/P(81)8).

9. INTERNATIONAL HYDROGRAPHIC TECHNICAL

9.1 As the result of an initiative by Mr Tom McCulloch, the Canadian International Development Agency financed the attendance of representatives of five CASLE member-societies at the above conference, held in Ottawa on 14-18 May 1979. None was a professional hydrographic surveyor, but all came from countries (Guyana, Jamaica, Papua New Guinea, Sri Lanka and Trinidad) which need to develop a hydrographic surveying expertise to help them exploit the resources of their off-shore exclusive economic zones. Each of the five respresentatives reported in detail on the conference to his respective professional association and some made representatives to their governments, either directly or through their associations.

SURVEYORS BOARD FINAL EXAMINATIONS

B.J.Mennis

It is beginning to appear to Members of the Board that Papua New Guineans do not want to get Registered. We base this observation on the way candidates present their projects to the Board and their approach to the final practical examination, which, in both cases, show a complete lack of care in presentation and preparation.

The following are actual examples of these points.

1. Submission of Projects

   (a) No certificate on the plan as required by Regulation 8(3) certifying that the project is the candidates own work.

   (b) Plans drawn by a draftsman and not personally by the candidate as required.

   (c) Zoning plans not coloured in accordance with standard zoning colours, or not at all. The colouring should be done on a print, not on the original.

   (d) Two projects rolled together, resulting in one project not being noticed by the Registrar. As there was no covering letter, this is understandable.

   (d) Projects submitted after the two year limit has expired.

   (f) Forwarding everything rolled, instead of neatly placing papers and prints in a file cover, and only forwarding original plans rolled.

2. Chain Standardization

(a) Fifteen millimetres missing out of a chain being standardised.

"mended it last week".

(b) A Standardisation Certificate was not available for determining the true length of the base after laying out.

"Can't find it"

(c) A Standardisation Certificate out of date.

(d) Candiates not knowing what they are doing when actually carrying out a standardisation.

"Haven't done a standardisation for a long time".

(e) Applying temperature correction the wrong way.

(f) Not ensuring that the chainman was aware of the problems with parrallax.

3. Adjustment of Instruments

(a) Candidates not being able to adjust efficiently their instruments.

"Haven't adjusted an instrument or checked an adjustment for a long time".

"Have never adjusted a horizontal colimation".

(b) Candidates not being aware of the use of the circular bubble as a means of making the first coarse adjustment.

4. Levelling

(a) Not checking the level before levelling the course.

(b) Not using staff bubbles when doing the levelling.

(c) Not being careful with the type of change points used.

(d) Not summarising the observations and providing mean final values of each point.

5. Sun observation

(a) Azimuth observations not presented as required by the Directions, and then only in True Bearings and not Grid.

6. Oral Examination

(a) Not knowing the current Directions, Survey Act etc, which is the last part of the examination before Registration. And probably the easiest!

All the points mentioned above show a complete lack of attention by candidates, not only to the requirements of the Regulations under the Survey Act and of the Board, but to the requirements of normal survey practice. It is painfully obvious that candidates are just simply not making themselves aware of these requirements.

There is no secret about the examination requirements, which are laid out in the following.

1. Survey Act.
2. Regulations under the Act.
3. "A guide to Applicants for Registration", Surveyors Board.
4. "Chain Standardisation", Journal ASPNG, June/Sept 1980.
5. "Observing the Sun for Azimuth", survey Division 1981.

There is also no secret about the tests given in the final examination. However, I will list them down so that everybody is aware of what is required of them.

1/. Standardisation of a chain directly from a Subsidiary Standard. (i.e. you must first layout a standard).

2/ Adjustment of theodolite and/or level.

3/ Level a section of about 600 metres.

4/ Determination of Azimuth by solar or stellar observations. (Method is at Candidate's option).

5/ Practical survey of an allotment, selected to demonstrate the candidates knowledge of survey and reinstatement.

6/ An oral examination in virtually anything to do with surveying, but mainly on the Survey Act, and the Survey Directions.

It should be obvious that in the month prior to coming to Moresby for the Final, candidiates should do at least one standardization, and be familiar with the methods of adjusting their instruments. If they are not familiar with azimuth observations, these should be practiced.

A thorough study should also be made of the material that may be covered in the oral Examination.

The final examination is not at all difficult and only covers points that the candidate should be familiar with in his day to day survey practice. Chain standardisation, for instance, has to be carried out every six months. The adjustment of instruments should be regularly checked. Sun observations for azimuth are usually a regular feature of survey practice in Papua New Guinea. And of course, to regularly practice cadastral surveying, one must be well aware of the Laws, Regulations and Directions that affect that practice.

If the candidate does not know these procedures, how can he carry out his normal duties, as a practicing professional, either for his employer or for a client?

PERSONNEL NOTES

Professor Ken Lyons left his position at the Unitech in Lae and fled to cooler "Climates". He has taken up a similar position at the University of Queensland in Brisbane. Just in time for the Commonwealth Games. All the best for the future,Ken.

Peter Done took up the post of Associate Professor in the Department of Surveying at Unitech in February 1982.

Most of his working life had previously been spent in the Royal Navy which he joined as an Ordinary Seaman in 1955. His service included qualifying in various unlikely fields such as Russian, submarine nuclear propulsion and meteorology - and teaching in the latter, and astronavigation, in RN Colleges, but his most valuable experience was in Ocean Survey Ships HMS HECLA, HMS HECATE and RS DISCOVERY, engaged on various surveys in the Mediterranean, North and South Atlantic and Greenland and Barents Seas. He retired as Lt. Cdr. in 1976 and having gained a Master's degree in Survey at Glasgow University worked as a field surveyor for 5 years with HUTING SURVEYS LTD, in Saudi Arabia (desert irrigation and oil pipeline surveys) UK (height and plan control for photogrammetry) Iran (oil related work in Knuzestan) Somalia (irrigation scheme on the Lower Shebeli) and Nigeria (Engineering Surveys connected with a major hydroelectric project).

Personnel Notes from the Far North by The Machine Munching Man from MADANG.

Cholai Polume seems to like Surveyors with a first name of Clement and who works at Wewak. He has just pinched his second from Lands.

BX-10 expert Norm Leet is finding out that a computer programmer's lot is not any easy one. Various Oldbads from around the country keep calling him with complaints that the computer is wrong because it doesn't agree with their abacus.

Lands Department Cadets
Bimdim Salomo and Emil Bakanan have just returned from "Down South". Both appear to have benefitted from their adventures, but they feel the cost of living is a bit high (or should that be the "High living" cost).

It is rumoured that the Madang Model Aeroplane club is having problems reaching a quorum at its committee meetings. If Norm is out of town nobody else attends. Not surprising as he is the President, Secretary, Treasurer and Committee. Matter of fact he is the Club.

****

From the Scribe of Port Moresby.

Titiek Arman had her fourth child recently. Proud Daddy Graeme now has eight. Current score - Christians 4 - Muslims 4. According to Graeme there will be no extra time so the game is tied.

Joe Wolfe, Geoff Patterson, Ian Billows and Co. still buried in the rain forest at darkest Tabubil (Ok Tedi Base Camp). It's supposed to be the wet season there now but as it has not stopped raining in the 9 months they have been there they hardly notice it.

Mike Larmer was recently appointed a Commissioner to the National Capital District Interim Commission so if your water supply runs out in future you know who to contact.

****

For the Fit and Energetic amongst our ranks. A recent survey of Marathon runners in America revealed that 87% of those surveyed thought about sex while running; 76% thought about running while having sex; 22% preferred running to sex and 14% would rather give up sex than running!

If it is that good, where are my track shoes?

The HP-11C is Hewlett-Packard's newest scientific programmable calculator, featuring a handsome slim-line design and an easy-to-read liquid-crystal display.

Advanced Programming Power.

Take advantage of the HP-11C's array of programming tools to simplify repetitive calculations by using eight conditional tests and two flags for program decision making.

Additional programming tools include five user-definable keys, four subroutine levels, 15 labels, conditional and unconditional branching, and controlled looping.

Editing Features.

Add new instructions by using the go to (GTO) key to access any part of your program. Delete a program line instantly by pressing the backarrow (←) key. Other editing functions let you step through a program one line at a time, so you can make changes or test program execution line by line, or insert program lines.

203 Program Lines.

The HP-11C memory allocation begins with 63 program lines and 20 data registers, plus the index register. The calculator automatically converts one data storage register into seven lines of program memory, one register at a time, as you need them.

Physical Specifications:

■ Length:	12.7 cm (5")
■ Width:	8.0 cm (3⅛")
■ Height:	1.5 cm (⅝")
■ Weight:	113g (4 oz)

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