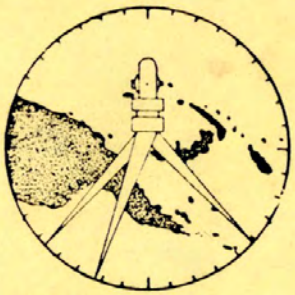
THE JOURNAL

of the

ASSOCIATION OF SURVEYORS OF

PAPUA AND NEW GUINEA



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BUSINESS MANAGER

A. C. Bassett

EDITOR

G. R. Hole

CONTENTS

(Views expressed herein are those of the authors and not necessarily those of the Association).

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THE ASSOCIATION'S FUTURE

by B.J. Mennis

At this present time in Papua New Guinea, there is much reappraisal of existing organisations. Government, semi Government and private bodies are all coming under this scrutiny, which is not merely superficial in most cases, but which goes right down to the fundamental issues in the particular organisation. One only has to look at the present government's announced policies in respect to the Public Service to see what their general intentions are.

We in the Association of Surveyors should be more concerned with which way this Association will change in the future. It is absolutely no use saying that we have organised the Association on Australian lines, and therefore it is the best possible organisation. This may be correct, but equally it may be completely incorrect.

In any discussions on the future of the Association, it is essential that our local members be given every opportunity to air their thoughts, and wherever possible to take leading roles in the discussion.

Now that local groups are operating in several centres, these provide one forum for discussion on the future of the Association, but they do not give much opportunity of ideas.

Letters to the Journal give another avenue, but with one issue only every three months, the process is much too slow.

It is my personal opinion that at least one full day should be set aside at a future Congress for a full and complete discussion on where we are going. It is absolutely no use making it an agenda item of the Annual Meeting as the time is just not available for exhaustive discussion.

Complimentary to the above, a sub-committee of council should be appointed, comprising a majority of local members, to make preliminary investigations into the suitability of our present organisation and to submit a report at least three months before the Congress. This three months will give interested people time to digest the contents and to prepare any arguments for and against. It is absolutely no use being presented with such a report just as one walks into the discussion.

As we have no local members on the Council, and only a few Corporate Members at the present time, it is obvious that next Congress will be too soon to put my suggestion into effect. This is a pity, as Lae would be an ideal centre where a number of future members will be studying. The Kieta Congress will be far too out of the way to expect a reasonable number of local members to attend, but any time later than that Congress will be too late.

Having said all that, I will now make a suggestion of my own on the future of the Association of Surveyors.

I have no doubt that the numbers of Surveyors in the future will be sufficient to form a viable Association if they remain sufficiently keen enough to put the effort into making it work. Therefore I do not really think that there is any worry there.

However, why restrict this Body to Surveyors or those branches of the profession currently accepted. Why not give consideration to expanding the Association to take in all professions occupied in dealing with land use and value. I refer to Town Planners and Valuers. Neither of these Professions have Professional Associations in the Territory, although I understand that the Valuers are contemplating such a move. The number of Town Planners will be most unlikely ever to be sufficient to form their own Association.

By this suggestion, an overall Association would be formed, and by numbers would be quite strong. It would deal with all aspects of land economy. What better name for this proposed body than the "Institute of Land Economy".

There would obviously be a lot of work necessary before such an Institute could come into being, and there would need to be a lot of give and take between the various professions represented. But with goodwill on all sides, I can see no insurmountable obstacles.

I have by this article thrown a few suggestions out to be shot down, modified, and to generally create discussion. If I fail in my last aim, to create discussion, heaven help this Association for the future, as there can be no doubt that change will come and it is up to us now to give guidance and assistance to our local members in making the changes that THEY decide will be necessary for the future.

. . . . . .

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. . . . . .

the P.S.M. - the reverse is unlikely. Again a bearing and distance to a formed gravel road ("edge of formation") has about the same usefulness - although requisitions have been issued to obtain this information. I can only assume these vague connections are to find the P.S.M. In preference, would it not be more practical to increase the charge slightly for a P.S.M., to allow regulations to stipulate that all P.S.M.'s must be protected by 3 pieces of angle iron, set in concrete to a depth of 2' or so, and standing about the P.S.M. to a height of 2' or 3'. This would protect the P.S.M. and it could be easily located. If this is considered an eyesore, then P.S.M.'s should be placed in steel boxes by the Land's Dept., for cost reasons, as is standard practice elsewhere. To do this it would be necessary to cut out external section boundaries first, so that P.S.M.'s can then be placed at convenient positions, rather than randomly located about a subdivision.

4. IN SUMMARY

I feel that current regulations should be altered immediately to give the following intentions for P.S.M.'s:-

i) In initial control work for new subdivisions, P.S.M.'s should be placed at convenient intervisible points, preferably intersections and road angles, and control work completed PRIOR to subdivision.

ii) Control closes between P.S.M.'s to be at least 1/16,000 - as is the case under Northern Territory survey regulations.

iii) Control shown in a separate field book.

iv) Where control is being placed in established towns, connections to secant and intersections points should be made to verified or redefined marks, such redefined marks being referenced with iron pins. This could entail considerable work, however it is essential, to allow P.S.M.'s to be used to their full extent in subsequent redefinition.

v) In preference to vague connections to edges of formation etc. either place P.S.M.'s in steel boxes, or protect them with angle iron set in concrete. Either way a P.S.M. should have a substantial marking post. Maybe an eyesore, but essential.

vi) All survey plans should have a P.S.M. traverse and connection table. In odd cases it may not be used (some rural work).

* * * *

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President Mick came upon wife Dianne chuckling over something she was reading in a hardback the other evening and upon further investigation discovered a passage with such Trigonometrical connotation that he has requested that it be inserted in our Journal for the edification of Members.

It seems that there was a very rich and civilized Indian Chief, and he had three squaws. The Indian Chief himself slept in a big double bed, but the three squaws followed the old tribal custom of sleeping on hides on the floor.

The first squaw slept on a lion's hide, the second squaw slept on a zebra's hide, and the third squaw slept on a hippopotamus' hide. In the fullness of time the squaw who slept on the lion's hide produced a son. Shortly afterwards, the squaw who slept on the zebra's hide also produced a son. And a little later the squaw who slept on the hippopotamus' hide produced twin sons.

All this goes to prove that the squaw on the hippopotamus is equal to the sum of the squaws on the other two hides.

* * * * *

RECOMMENDATIONS OF THE SEMINAR HELD BY THE COMMONWEALTH ASSOCIATION OF SURVEYING AND LAND ECONOMY, IN KUALA LUMPUR, IN FEBRUARY 1972

VI CONCLUSIONS:-

1. The Seminar has studied the present scope and activities of the professions of surveying and land economy in the Commonwealth countries of Asia, and the existing facilities for education and training in Ceylon, Hong Kong, India, Malaysia and Singapore.

ACTIVITIES OF THE PROFESSIONS

2. As regards the activities of the professions, the Seminar finds as follows -

(a) In the case of land surveying, each of the countries recognises the role of the profession in the fields of topographical mapping and cadastral surveys for the registration of land titles; but there is scope in several countries (notably Ceylon, India and Malaysia) for expanding the services of the profession in engineering and project surveys, preferably by the development of the profession in the private sector. The efficientcy of the profession in some countries is also impaired by the lack (due to economic constraints) of the sophisticated equipment which modern techniques require.

(b) (Refers Quantity Surveyors only)

(c) The position of land economy in the five countries is similar to that of quantity surveying. In Hong Kong and Singapore particularly, the profession is extensively used, in both the public and private sectors, in all aspects of land

use, land management and land development; as well as in the more specialised fields of valuation for land acquisition and land taxation. In Malaysia, official publications on the Second Malaysia Plan acknowledge the importance of land administration in stimulating economic activities and in the collection of land revenues, but the Seminar ventures to suggest that the profession could make a much greater contribution than it does now to the country's economic progress and development programmes, especially in the fields of land use control, land settlement, and land development in both the urban and rural spheres. In Ceylon and India, little use is made of this profession, beyond its modest contribution to the valuation of land for taxation and compulsory purchase; and in this case also CASLE is invited to examine with the governments concerned the need for developing skills in the wider sphere of land economy, as applied to both urban and rural problems.

STRUCTURE OF THE PROFESSIONS AND THEIR MANPOWER REQUIREMENTS

3. The Seminar endorses the policy of CASLE which aims to develop a two-tier structure in the three professions which it represents, and endorses the definitions of:

(a) A professional surveyor is one who is competent to apply his fundamental education and training to the analysis and solution of surveying problems; to exercise original thought and judgment; and to supervise the technical and administrative work of others. His work is predominantly intellectual and varied, and through his education and training he will have acquired a broad and general appreciation of that knowledge which constitutes the profession of a surveyor, in that discipline in which he is qualified.

(b) A surveying technician is one who can apply in a responsible manner proven techniques which are commonly understood by those who are expert in a branch of surveying, or those techniques which are specially prescribed by professional surveyors. Under general professional direction, or following established techniques, he is capable of applying the principles of measurement, evaluation, or management appropriate to that branch of surveying in which he is qualified.

4. The Seminar welcomes the proposal that CASLE should define more specifically and comprehensively the functions that technicians in each of the three disciplines should be trained to undertake, and to promulgate appropriate standards of education and training for such technicians. It further emphasises that technicians form an essential part of the total manpower requirements; that they are in fact likely to exceed the number of professional surveyors required; and that due priority be given to their education and training.

5. The Seminar endorses the policy that, to achieve the most efficient use of available manpower and educational resources:

(a) students to train as professional surveyors should be recruited from candidates who have attained the university entry standard of the country in which they reside or are being educated, being not less than the minimum entry standard required by London University as equivalent to two 'A' level passes;

(b) students to train as surveying technicians should be recruited from those who leave school with 'O' level passes in at least four subjects (or equivalent national standard);

(c) courses for qualifications at the professional level should achieve (as a minimum) a standard equivalent to that of a normal university pass degree in a developed country, and conform with other CASLE recommended standards concerning the duration and content of courses;

(d) courses for qualifications at the technician level should achieve (as a minimum) a standard equivalent to the HNC of the United Kingdon (or national equivalent); and be two year full-time courses, or provide equivalent instruction on a part-time basis;

(e) professional and technician courses should be separately designed, both as to content and standards;

(f) the educational arrangements should, however, provide opportunities for those who enrol for technician courses, but who subsequently prove to have the necessary aptitudes and competence to progress to the professional level, to qualify as professional surveyors.

6. The Seminar recommends that CASLE'S member-societies in the five countries should undertake studies of the manpower requirements in the three professions, having due regard to:

(a) the two-tier structure referred to in paragraph 3;

(b) the relevant parts of any national economic and social development programme, which require the skills of surveyors in their implementation;

(c) the potential development of the professions where their skills are not fully recognised or used at present;

(d) the desirability of establishing in each country a profession which is firmly based in both the public and private sectors;

(e) the desirability of encouraging direct entry to the profession through first-degree courses specially designed for surveyors (as mentioned in paragraph 5) in place of the existing practice in some countries of recruiting graduates in other disciplines, who must then be trained as surveyors by means of post-graduate courses, which is wasteful of educational resources.

EDUCATION AND TRAINING

7. As regards education and training:

(a) the Seminar agrees that the normal standard for entry to the professions should be full-time university degree courses (or equivalent) in the appropriate discipline;

(b) the Seminar endorses the standards which CASLE has promulgated for such degree courses;

(c) the Seminar recommends that, where the national manpower requirement is sufficient to warrant viable indigenous degree courses, these should be provided by the country concerned, and aim at conforming with the CASLE standards;

(d) where there appears to be insufficient demand to justify an indigenous degree course, the Seminar emphasises the advantages of neighbouring countries collaborating on a regional basis to meet their collective needs;

(e) the Seminar recommends that the criteria in (c) and (d) above should also apply to the education and training of technicians;

(f) the Seminar requests CASLE to investigate the need for teachers in each of the three disciplines, and the means of ensuring an adequate supply of suitably qualified teachers;

(g) the Seminar requests CASLE to investigate the need for new text books in the developing countries and to consider means whereby any local deficiencies might best be rectified.

STATUS OF THE PROFESSIONS

8. In connection with the status of the professions:

(a) the Seminar recommends that CASLE should take steps to communicate to governments and other appropriate bodies, information about the skills of surveying and land economy and the contributions which these skills can make to economic and social development;

(b) the Seminar supports the proposal that CASLE should foster the establishment of Departments of Surveying and Land Economy in appropriate universities and other educational bodies, which will provide courses in all CASLE disciplines for which there is a sufficient demand;

(c) the Seminar supports the efforts of CASLE to foster the establishment and development of strong national societies representing surveying and land economy and emphasises the advantages of forming one society to cover all three disciplines where this would strengthen the activities and influence of the professions;

(d) the Seminar emphasises the importance of such professional societies being independent bodies, representing the professions in both the public and private sectors;

(e) the Seminar requests CASLE to prepare appropriate literature which member-societies can use for publicising the activities of the professions and advancing the interests of the professions in their respective countries.

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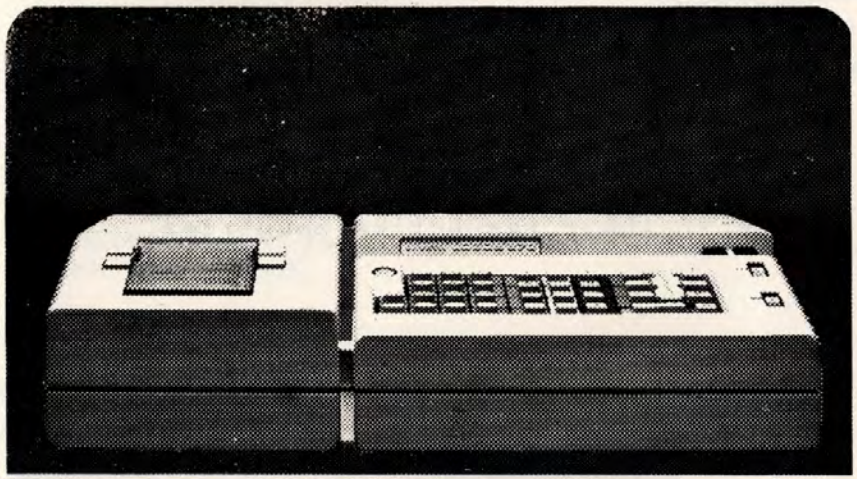

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PHOTOGRAMMETRY

SOME NOTES ON THE STEREOPLOTTING PROCEDURE

The use of aerial photographs for the production of maps, particularly topographic maps, has gained world wide acceptance. There is no doubt that photogrammetry, combined with minimal ground survey, can deliver a variety of mapping requirements for general planning and for engineering purposes.

In Papua New Guinea the Australian, as well as American military authorities have made wide use of aerial Photographs to produce topographic maps at scale of 1:50,000, 1:100,000 1 mile to an inch and 4 miles to an inch. The administration of Papua New Guinea has relied, in the main, on private consultants to provide it with topographic mapping at scales of 1:25,000 and 1:50,000 of various project areas and large scale mapping for urban development purposes.

It is true that in the past some Planimetric aerial mapping was conducted within the Administration, but it wasn't until early in 1972 that the first "rigorous" stereoplotter appeared in the Department of Forests at Hohola. Later in the same year, the more versitile Zeiss Stereometrograph precision plotter, combined with the Dell Foster Coordinate recording system and IBM card punch was installed in the Department of Lands, Surveys and Mines. The Department of Forests recently acquired its second Wild B8 stereoplotter and the Public Works Department operates a Kern PG2 stereoplotter.

All these plotters are of the mechanical projection type i.e. metal space rods are used for the reconstruction of the bundles of conjugate rays to form a "mechanical" spacial model.

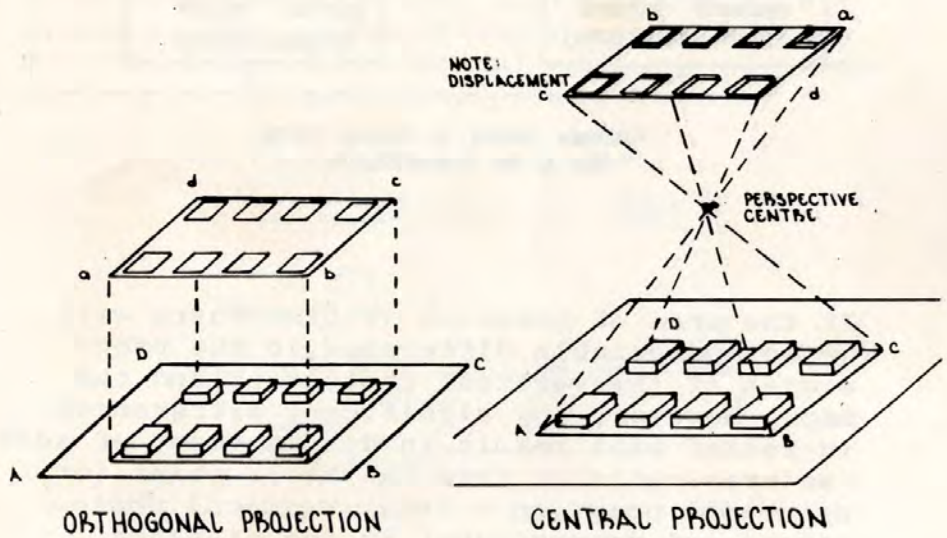
It is not the purpose of these notes to demonstrate the theoretical concepts based on the fundamental orientation formulae but rather to explain in general terms the various processes by which topographic mapping is prepared from aerial photograph, using analogue plotters.

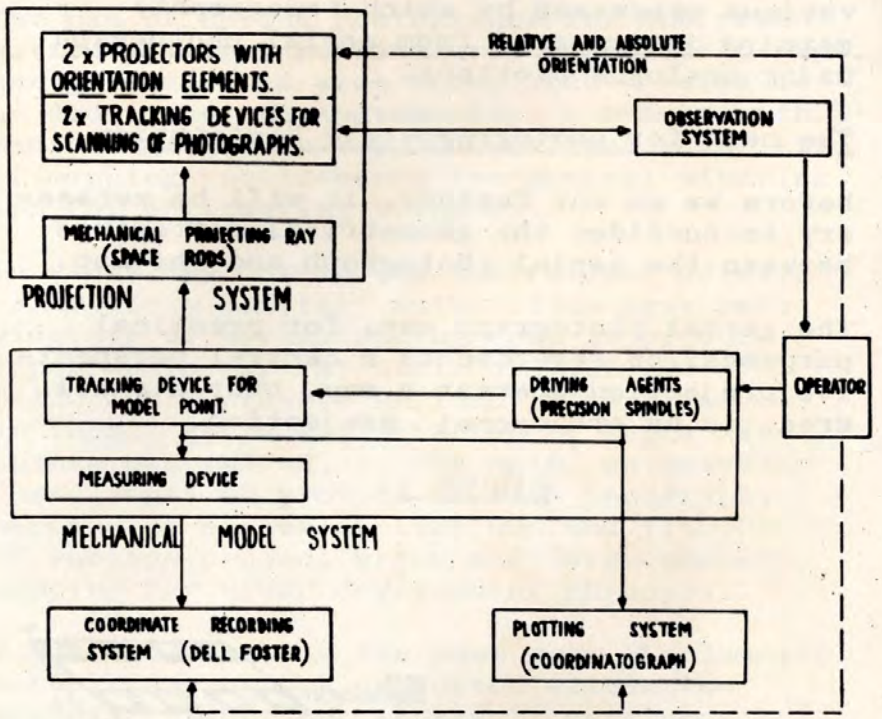
The need for photogrammetric Restitution.

Before we go any further, it will be necessary to consider the geometrical difference between the aerial photograph and the map.

The aerial photograph may, for practical purposes, be regarded as a central perspective projection whereas a map, over a small area, is an orthogonal projection.

FIGURE 1





FUNCTIONAL DIAGRAM OF PRECISION PLOTTER SUCH AS THE STEREOMETROGRAPH

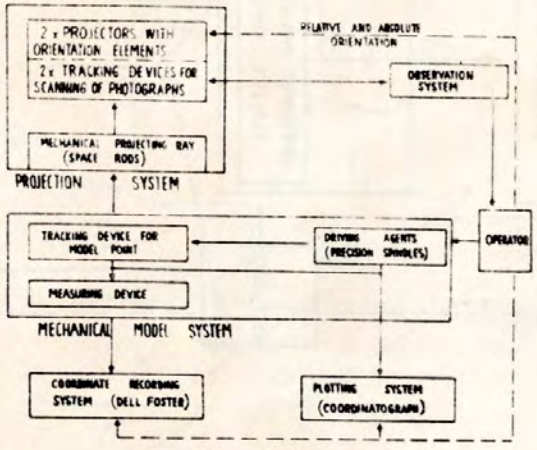
If the area of interest is flat there will be no appreciable difference in the properties of the vertical photograph and the map. However, any significant differences in relief will result in displacement of such features radially from the Nadir point (or principal point on a truly vertical photograph) and proportional to the distance from the Nadir point and the ratio: height difference/flying height. This in turn results in a continuously variable scale.

As only a very small percentage of terrain is likely to be flat, it is clear that restitution of the photograph, for displacements due to relief as well as displacement due to tilts, is necessary before it can be used as a map.

The Analogue Stereo Plotter

The stereo plotting instrument may be regarded as a number of mechanical and optical systems which combine to produce precise spacial geometric information in a plane rectangular axis system, from stable base photographs taken with a photogrammetric camera. The geometrical properties of the camera must be known and the output of the plotter may be digital or graphical.

The functional relationships of these systems is demonstrated in figure 2. Of course a variety of mechanical solutions are applied in the various plotters, particularly with regard to the layout of the projection systems, but all mechanical analogue plotters conform to the same basic principles.



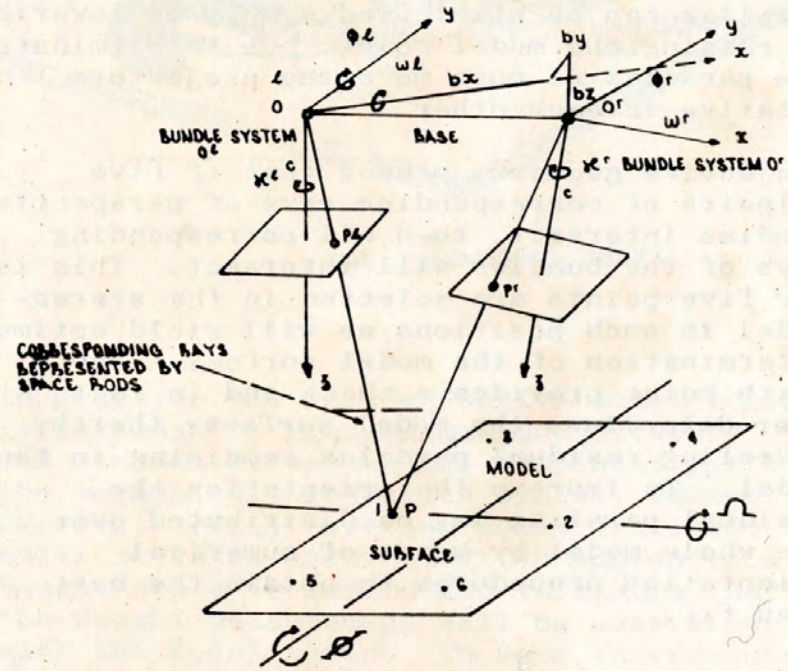
FUNCTIONAL DIAGRAM OF PRECISION PLOTTER SUCH AS THE STEREOMETROGRAPH

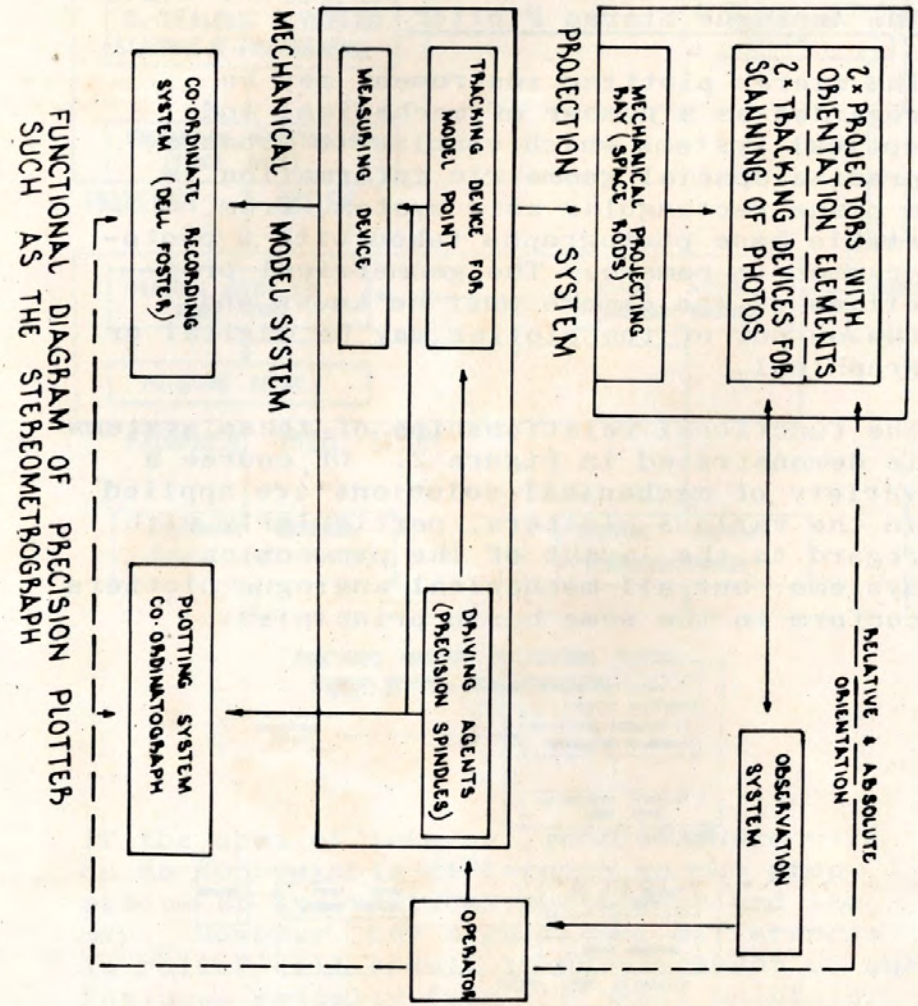
Stero Photogrammetry.

In stereo photogrammetry the rays which make up the photographic images are used and not the photographic images themselves.

To do this, we must reconstruct the bundles of rays of two overlapping aerial photographs by means of orientation in the stereoplotter.

FIGURE 3





FUNCTIONAL DIAGRAM OF PRECISION PLOTTER SUCH AS THE STEREOMETROGRAPH

Orientation is achieved in three separate phases, namely:

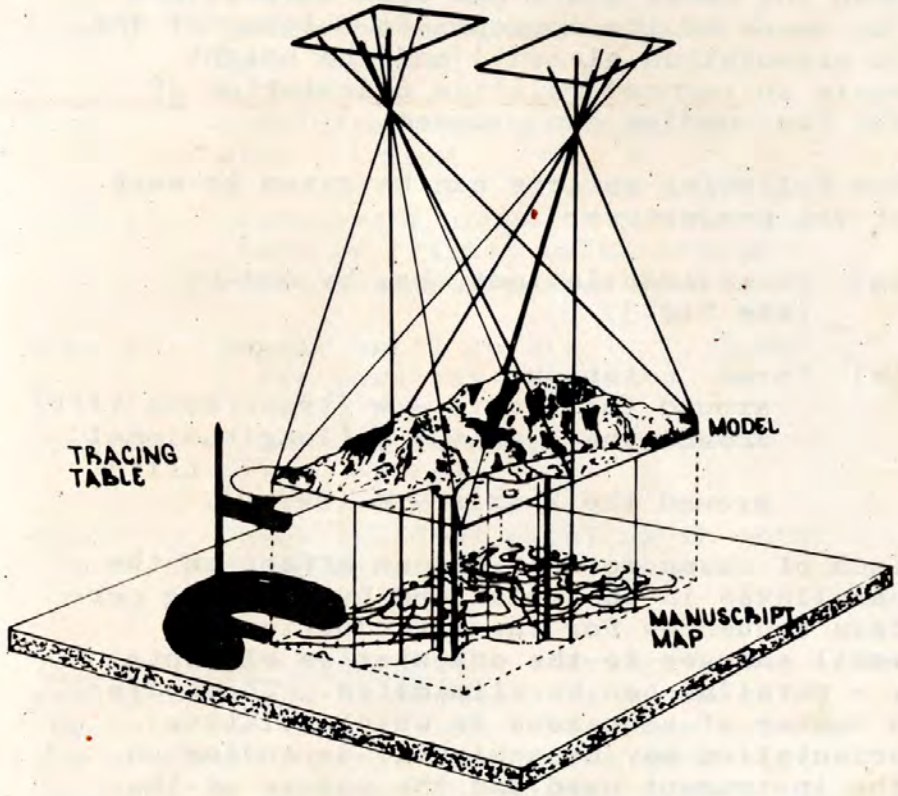
1. Inner Orientation.

Here we must ensure that the geometric properties of the camera are precisely recreated in the propectors of the plotting instrument. In practice, we ensure exact registration of the camera fiducial marks with the plate carriers of the projectors and we set the appropriate Principal Distance in the projectors by means of calibrated setting screws.

2. Relative Orientation. Relative orientation is said to have been achieved when the corresponding rays from the two overlapping photographs intersect; that is, when x - parallax and y - parallax has been eliminated from the optical stereomodel. The x - parallax can be eliminated simply by lowering or raising the model point, but to eliminate y - parallax we must move the projectors relative to each other.

Projective geometry proves that if five (5)pairs of corresponding rays of perspective bundles intersect, then all corresponding rays of the bundles will intersect. This is why five points are selected in the stereo-model in such positions as will yield optimum determination of the model surface. The sixth point provides a check and in fact over determines the model surface, thereby revealing residual parallax remaining in the model. To improve the orientation the residual parallax may be distributed over the whole model by means of numerical orientation procedures to obtain the best mean fit.

FIGURE 4



THE GEOMETRIC MODEL

In practice the most effective model scale is selected to provide maximum accuracy and minimum stress on the component parts of the mechanical projection system. Generally, the scale ratio between photo scale and model scale is about 1:2. An appropriate height scale is introduced to ensure that the height measurement will be consistent with the model scale. In some instruments this is done by means of interchangeable glass scales, but on the stereometrograph

a system of interchangeable gears in conjunction with a height counter is used. When the model scale has been established (by means of the appropriate setting of the bx orientation element) and the height scale introduced relative orientation of the two bundles can proceed.

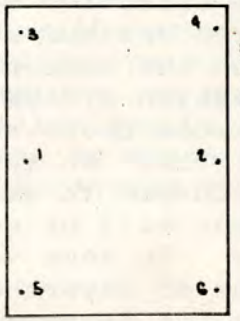
The following motions can be given to each of the projectors:

(a) Three translations, bx, by and bz. (see fig.3)

(b) Three rotations:
around the X axis - w (transverse tilt)
around the Y axis - φ (longitudional tilt)
around the Z axis - $\varkappa$ (swing)

Each of these motions has an affect on the parallaxes in the model and by adopting certain sequences for the introduction of small changes to the orientation elements y - parallax can be eliminated. There are a number of sequences in which relative orientation may be achieved, depending on the instrument used and the nature of the stereomodel. The following will serve as an example.

FIGURE 5



Step 1 : Eliminate parallax in point 1 with 'by' (left)

Step 2 : Eliminate parallax in point 2 with $\varkappa$ (left)

Step 3 : Eliminate parallax in point 3 with φ (right

Step 4 : Overcorrect in point 5 with ω (left) or (right) using appropriate over correction factor.

Step 5 : Repeat until points 1, 2, 3 and 5 are parallax free.

Step 6 : Eliminate parallax in point 4 with φ (left)

Step 7 : Check residual parallax in point 6 and distribute over model necessary.

3. Absolute Orientation. Having established the stereomodel by means of the relative orientation, there now remains the problem of transforming the model into the desired terrain co-ordinate system, and to establish the exact scale. This is the procedure referred to as absolute orientation. The model will be absolutely determined if at least two points can be identified whose planimetric positions are known and at least three points whose heights are known.

The process involves the accurate scaling of the model to the values of planimetric control and the levelling to the height values of elevation control points.

The control used may be full ground control or aero-triangulation control. Scaling and levelling are carried out alternately

until the residual errors on the control points are within the specified limits.

The only way in which the scale can be altered is by changing the base in the model (i.e. distance between the projection centres) and this is done by introducing small changes to the 'bx' orientation element. Depending on the instrument being used levelling may be achieved by the common orientation elements Φ and $\frown$ which enable the entire projection system to be rotated on the X and Y axes of the model. Few instruments of the mechanical projection type have provision for both common orientation elements however and levelling is usually achieved by a combination of projector elements and one of the common elements, or by the use of projector orientation elements only.

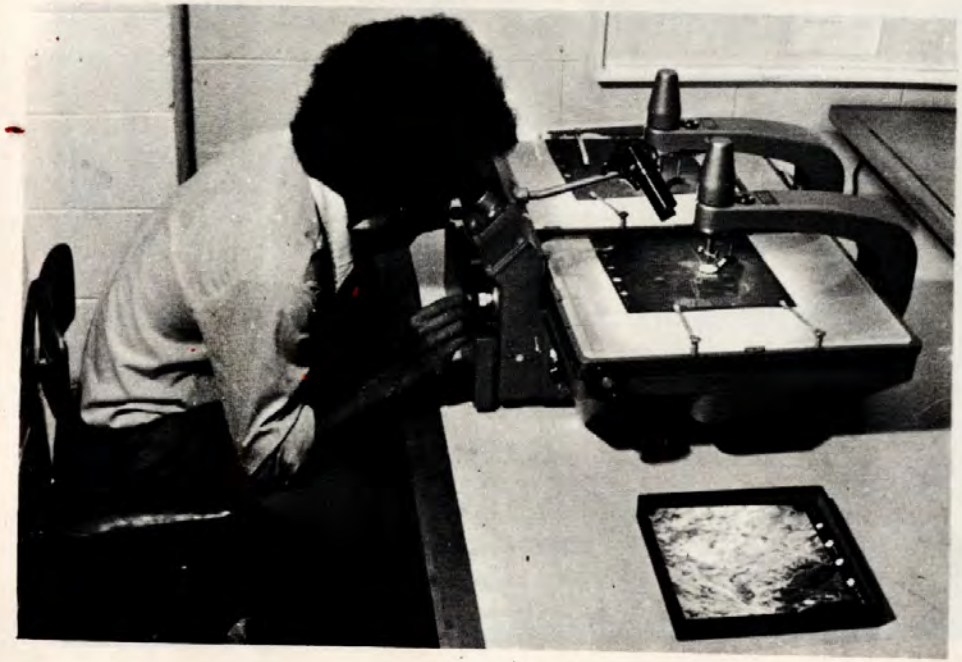
For example, the Thompson and Watts precision plotter has provision for both common Φ and common $\frown$ rotations and as a consequence the relative orientation is not affected by the absolute orientation process. The wild B8 stereo plotter only has provision for the common Φ rotation, the common $\frown$ rotation being effected by using both w projector elements. Finally, the Zeiss Stereometragraph makes no provision whatsoever for common Φ and common $\frown$ rotations. Levelling is achieved by means of projector orientation elements (bz , φ^{ℓ} , φ^{r} , ω^{ℓ} , ω^{r}) and consequently the relative orientation is temporarily destroyed during this process.

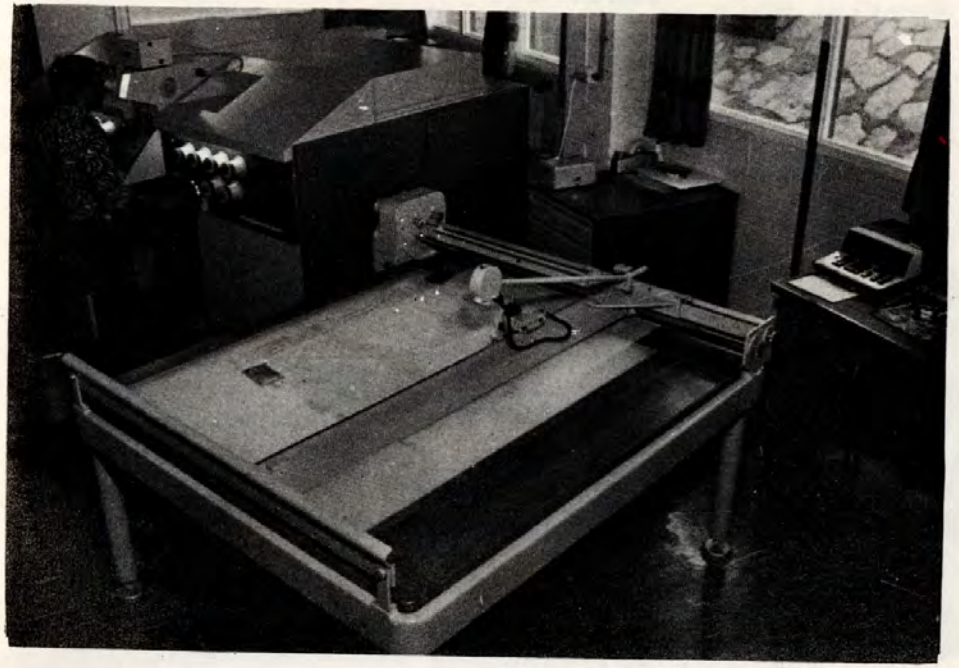
Inputs and Outputs of the Stereoplotter

The standard inputs for most modern stereoplotters today are normal, wide and superwide angle photography using film formats of up to 230 x 230 millimetres. Precision plotters, such as the Zeiss stereometragraph, are

PHOTO 1

PHOTO 2





restricted to photographic plates on transparent polyester or glass base for obvious reasons, but most topographic plotters, such as the Wild B8, Kern PG2 and Zeiss Topocart 'B', will also accept paper prints.

The output may be digital or graphical. If a digital output is desired, the plotter must have provision for measuring devices in X, Y and Z spindles, or alternatively, the revolutions of the spindles may be recorded by means of external encoders and counted and displayed as a linear value by the RSS-4000. The co-ordinates and heights are usually read to an accuracy of 1/100th. millimetre in the co-ordinate system of the plotting instrument.

Up to the present time the most common use for digital output remains aerotriangulation. X, Y and Z co-ordinates of pre-selected points in the model are recorded and by a process of strip formation and strip or block adjustment, values for the observed points are obtained in the desired terrain system. These values are then used as control for stereoplotting. The adjustment is carried out on large electronic computers.

With the advent of high speed electronic digitisers increased use is being made of the so called digital terrain model. For this purpose the digitising equipment is used in the dynamic mode to record high density digital data of the model surface on magnetic tape. The major advantage for having the terrain information in digital form is that it can be processed directly with associated engineering data for construction and other purposes and it can be also plotted at a later date (off-line) by means of an automatic plotting device.

Graphical output is obtained by coupling a plotting device, such as a co-ordinatograph or pantograph, to the X and Y spindles of the stereoplotter. Scale ratios between model scale and desired map scale may be introduced by means of interchangeable gears between the instrument and the plotting device. The mapping information may be drawn on any desired base material using a pencil point, or ink/ballpoint pen or scribing points. Height information may be recorded by means of contours at any specified contour interval and supplemented with spot elevations. The spot elevations may be recorded at random locations or in a regular grid pattern of any chosen interval. This information is useful in flat terrain where direct contouring becomes difficult and interpolation becomes necessary. It is also used for engineering purposes.

Other outputs which may be obtained from some of the plotting instruments are: data obtained from terrestial photographs of rock faces, land forms, buildings, etc. and cross sections or profiles for construction purposes.

Conclusion.

To conclude these notes it should be pointed out that photogrammetry is a data accumulation technique in which rigerous mathematical concepts are applied. In rendering the information useful to the mapmakes, planner or engineer, statistical procedures are applied for the adjustment of observations and analysis of the results. The current "state of the art" ensures delivery of a statistically predictable product. This means that all the required parameters can be obtained for any given mapping specification. It goes without saying that a high degree of responsibility and expertise is required to exploit the wide range of knowledge and technical equipment available to the photogrammetrist. However, in spite of the ingenuity and sophistication of to-days procedures and equipment, it must be remembered that the ultimate quality of the photogrammetric product rests with the skill and honesty of the photogrammetrist and his staff.

J.N. VAN AS

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COUNCIL NEWS

Council has met on seven occasions since the last Annual General Meeting, the fifty fifth meeting of Council being held in August, 1972 and the sixty first meeting in February, 1973. Hereunder are some items of Council business which may be of some interest to Members.

Surveyors Memorial Plaque. Council has decided to persue the idea of a plaque in honour of the Pioneer Surveyors being erected in Port Moresby. The plaque was to be erected in a park which Burns Philp plan to build at the North Western end of Musgrave Street, but as the Park has been shelved, we are now looking for an alternate site.

Scale of Fees. The Scale of Fees Sub-Committee has met on several occasions and made several recommendations to Council, most of which have been accepted.

The most significant move made in the sphere of Fees has been the new Format for the Engineering Scale. Action on this matter was initiated by the Public Works Department and after due deliberation a new Scale has been formulated which we hope will be satisfactory to all concerned.

The Scale of Fees Sub-Committee was charged with the task of coming up with a system of charges which would be acceptable to an Independant Papua New Guinea. This task has proven to be a most complex and challenging one, so much so that the Sub-Committee has sought the help of Council and indeed is seeking the help of all members to assist it with its deliberations.

A Seminar will be held in Port Moresby on the 13th. and 14th. of April next to discuss this and other problems.

Details of this Seminar appear elsewhere in this Journal.

District Groups. Groups comprising members of our Association have been formed and are active in Lae, Mount Hagen and Madang. Council is grateful for the ideas and support of these various Groups.

Professional Centre. In an effort to establish a Professional centre in Papua New Guinea, the Association of Professional Societies has been formed and meets monthly in Port Moresby.

The Executive of this Association is:

Mr. Don Best, Chairman (Representative of Institute of Engineers)

Mr. Mick Larmer, Vice Chairman (Association of Surveyors)

Mr. Bob Bowner, Treasurer (Accountants)

Mr. David Smith, Secretary (Engineers)

The Law Society, Medical Society and Institute of Management are also involved to varying degrees in this Association's activities.

The most pressing aim of this Association is the erection of a Professional Centre in the new City Centre at Waigani. A good deal of work has already been done in organizing this venture which allows for an office block incorporating the headquarters of the Association of Professional Societies, a convention hall and offices, available to be let to practicing consultants in the various Professions.

It is hoped that the Commonwealth Foundation will make some money available for this project.

The Director of the Foundation, Mr. Chadwick will be visiting Papua New Guinea with his wife in late February and the Association of Professional Societies has arranged to

meet with him for business discussions and also to entertain he and his wife at a Cocktail party.

Annual Cricket Match. The Institute of Engineers and the Association of Surveyors clashed for the third time in Port Moresby on Sunday 19th. November.

A fine time was had by all. The final scores. Surveyors

Council nominated Kim Gudgin, who has recently returned to New Zealand after three years in Papua New Guinea, to be the Association's representative at the 2nd. Seminar on Surveying and Land Economy to be held in Wellington in March.

A report prepared by our Association will be tabled at that Seminar.

Kisokau Pochapon who is currently attending a course in Sydney will represent the Association of Surveyors of Papua New Guinea at the forthcoming Australian Surveyors Congress which is being held in Canberra.

Council have regretfully accepted the resignations from Council of John Macartney and Graeme Arman. They have been replaced by Ken Blaik and Jason Garrett.

The names of Jason Garrett and Jeff Tierney have been submitted by the Association via the Surveyor's Board to the Minister for Lands in connection with the Association's replacement for Graeme Arman on the Surveyor's Board.

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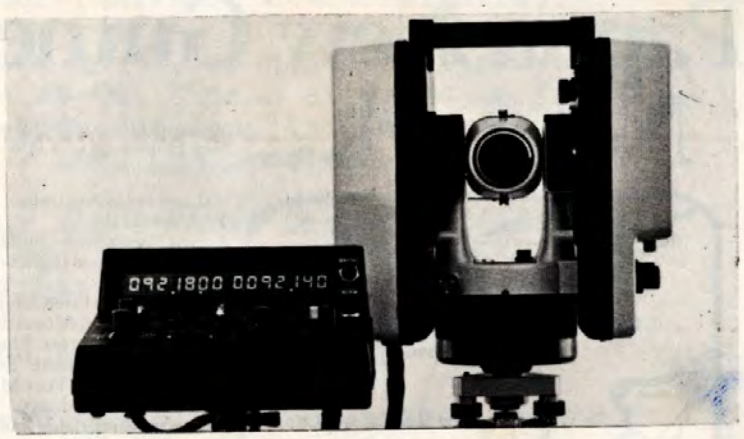

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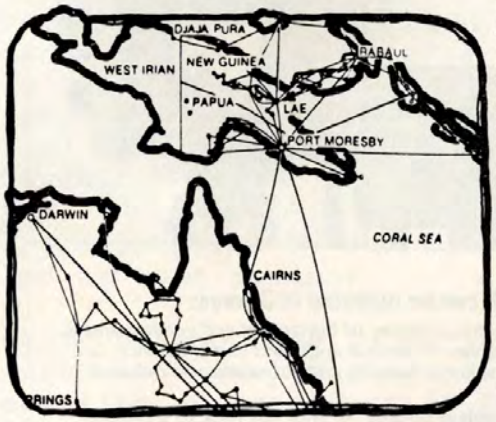

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THE HAGEN AXE

The ranks of the Surveying Profession have widened to allow entry of our newly registered staff surveyor David Croft Forster (Surveyor Extraordinaire).

Rumbles have been heard as far away as Hagen as Col Nissan attempts to find a flat piece of land in OKAPA.
We all have our problems.

Rumour has it that Graham Bateman has a new abacus. Goes by the name of HP 35. The first exercise performed by Graham was to work out the interest payable on his house in Perth.

Ed Palaitis has not been seen around town much these days. Between his new love and his old love (the Country Club) he does not seem to have much time for work.

Peter Fagan is a little luckier, he manages to combine the lot quite successfully.

John Hunter is in the chair at Regional Office and is managing quite well, to keep the wolves (in the guise of the Private members of our fraternity) from the door.

Peter Jolley has joined the ranks of the landed gentry. Peter has recently arrived back from south from a land buying spree. Private Enterprise must be booming; after Peter's effort, Clive Carson decided to go

one better and set up a used car yard.

Your erstwhile correspondant Gerry Morphett (and chief spiv around town) who just returned from leave, has succumed to the bright lights of the South land and is returning to his recently enlarged family in Melbourne FINISH.

MORESBY AND ALL THAT?

Cairns was invaded by A.S.P.N.G. members recently.

Those taking advantage of Xmas Charters included.

Clive & Margaret Bassett
John & June Kronenburg
Alan & Jill Mail

Enjoyed the ten day break among the stingers.

(Your editor ran the Department single Handed!)

Meeting up in the area were Sid Dahl and Mirek Erben; Other real estate tycoons, beware!

Congratulations to Paul Ning on his recent marriage to Miss. Frances Ide who is originally from England.

The list of people leaving, or about to leave the territory poorer for talent indicates the changing times.

David Buckley, John Macartney, "Ben"Hall, Brian Digby, Alan Mail, Kim Gudgeon, Graeme Arman, Sel Hopley, Bruce Serisier, Jim Bounds, David Smith, Heinz Karl, Mike Tarrell.

However pleased to see new faces arriving Greg Thomson, (D of I) John Liew (M & T) to name a few.

Mike Kellock has commenced his sabbatical leave in Brisbane.

Ian Johnson is lecturing in "Doo blin"

What did we say about a new baby competition?
Is it true that

Mike Larmer
"Slim" Bassett
Tony Skehan
Kim Gudgeon
John Ginn

are all lining up for the Nappy Stakes? As the inverse ratio of father's to child's weight seems to apply we put our dough on Kim.

New "Survivors" club member is Ivon Bryning who walked away from, (yet another) chopper prang. A night out at 6000' was avoided by being able to transmitt to D.C.A. accurate info as to their position so being a surveyor has some small compensation. (He was hourly rates I understand).

Clive Sparkes Carroll returned to Moresby from leave South eager for the boating season to start again.

PERSONALITIES

Few people have been more active in Association Affairs over the last 10 or so years than John Craig Macartney.

John first came to Papua New Guinea (the "Territory" in those days) in 1958 to join the Department of Lands Surveys and Mines.

This was after working in the Department of the Interior in Queensland and in private practice in Townsville.

His first appointment was district Surveyor Kieta in Bougainville, where he was the first Staff Surveyor since the 39-45 war.

John Surveyed the Town of Kieta and several plantations for title restoration purposes.

In 1960 he transferred to Port Moresby and worked most parts of Papua.

From 1964 onwards he became involved in Survey work on the West Irian Border, representing Australia at Conferences in Djakarta and Canberra, and with his duties culminating with his appointment as the Papua New Guinea Officer In Charge of the Joint Border Survey Team.

With Mike Kellock he was instrumental in establishing the Survey School which was eventually taken over by the Papua New Guinea University of Technology.

John was subsequently appointed chief Geodetic Surveyor, and later was Assistant Superintendent of Mapping during the formative stages of the Central Mapping Bureau.

During all this period John was a most active member of the Association holding all positions on the committee, including the Presidency in 1970-71. He is an out spoken campaigner against things that he believes are detremental to the profession and his most severe critics could never level at him the charge of insincerity.

John Macartney retired on ground of ill health on 31st January, 1973, and has returned to Australia to live.

DOWN THE MINE

BY THE "BOUGAINVILLAIN"

Following some admirable stirring at the last Congress, it has become evident that some members are now aware of the approximate location of the Copper Isle. We have therefore attempted to obtain some news of the Bougainvilleans.

Our Copper Isle correspondent reports

Don Smith promised to catch 100% more fish than his nearest rival in a recent game fishing contest. His second placing cost him more beer than he is prepared to admit.

After three years of climbing the mountains at Panguna and Ok Tedi, Mike Gallagher has seen the light and returned to the University of N.S. W. to do engineering.

Please advise the N.S,W. Division that Norm Leet is now resident under the large umbrella at Arawa.

Hash House Harriers are regular clients of Allan Cullum and Bryan McLennan. H.H.H. require a route survey to be marked with perforated paper each Friday afternoon; in order to obtain an acceptable close, the route must finish at a keg. Allan and Bryan claim to be the fittest alcoholic surveyors in Papua New Guinea.

Col Hard recently returned from leave with new daughter Tiffany, thus levelling the scores in the Smard Stakes at three all. However following a recent sneaky weekend at Arovo Island Hotel, Don Smith must be considered a chance to regain the lead.

Steve Hudson, also just back from leave, had a great time; played with all the new computers, wrote a few programs, anyone for a holiday?

Believe Allan Cullum is still trying to explain to his wife how a beautiful girl was able to produce an item of his underwear on the dance floor at a recent Arawa Ball.

Excerpt from 'Kieta K--p', chronicle of the Bougainville umbrella workers. 'Lands have moved their Arawa office from an I.M.Q to an A.R. 20. This is good in two respects. First, I.M.Q.'s are badly needed for officer accommodation, and second, the labour line was finding it hard to achieve a good day's sleep underneath with the house being so close to the ground.'

After some energetic stirring at the last Congress, Bryan McLennan proceeded on leave. Apparently his recuperation was complete as Stephanie is anticipating a visit from the stork.

Steve Hudson and Col Hard have contracted a peculiar ailment which prevents them from going out in the sun except on Sundays, and then only for the purpose of chasing an elusive little white ball.

Norm Leet got a good deal on his new tape deck, but it cost him a tumble drier to square off.

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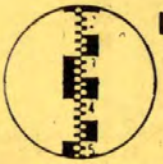

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