

APRIL 58

INSTRUMENT  
SOCIETY of  
AMERICA

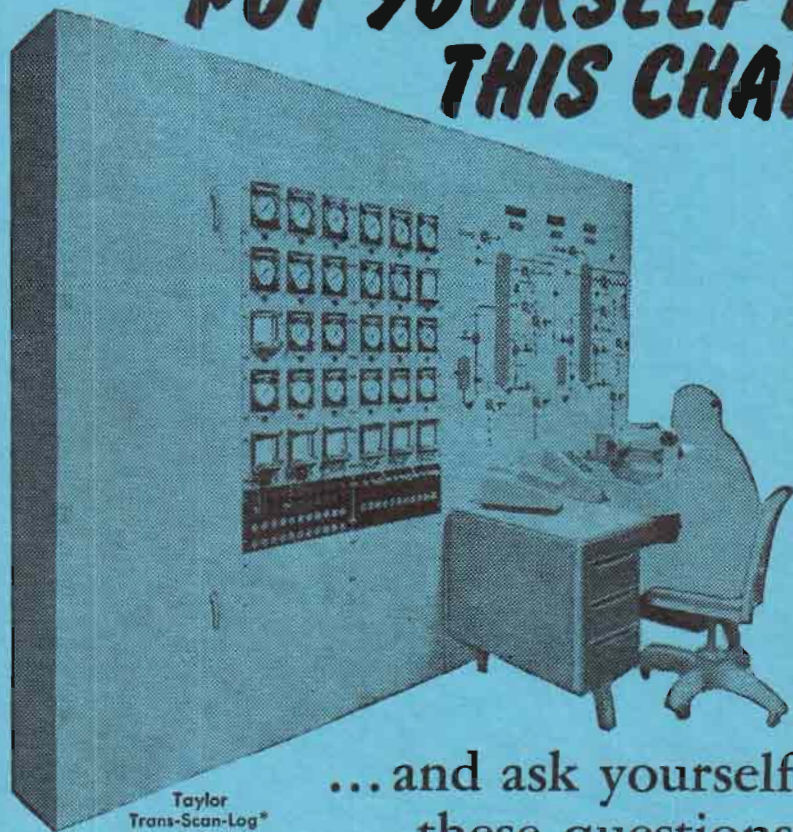


SARNIA SECTION



Monthly Bulletin

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# **The Instrument Society of America**

## **SARNIA SECTION**

has as its objective the advancement of the arts and sciences associated with the theory, design and use of measuring and control instruments in the various industries in the Sarnia area.

The immediate benefits derived by the Sarnia members include a monthly meeting at which a qualified speaker discusses an instrument subject after which members fraternize with other instrument men and interchange ideas and news at a social hour, a subscription to the "I.S.A." JOURNAL, a subscription to the Sarnia Section "BULLETIN", access to all technical data, servicing techniques and standardization policies developed by the National Committees of the ISA and an annual school for mechanics and technicians.

As a member of the National body of the Instrument Society of America, a rapidly growing and influential technical society, the member partakes indirectly in the progress of instrumentation made possible by the work of the various National Committees.

Executive Officers for the 1957-58 season are:

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Meetings are held on the fourth Monday of each month from September to May inclusive at 8.00 P.M. The meetings are held at the Vendome Hotel unless otherwise announced.

Anyone earning his livelihood through the manufacture or use of instruments and who is acceptable to the executive body may become a member of the Sarnia Section, I.S.A. Dues are \$12.00 per annum. Associate Members are those who are associated with instruments but who do not earn their livelihood directly from them, such as stationary engineers, process operators, etc. Their dues are \$7.50 per annum.

Copy for "THE BULLETIN" should be sent to the Managing Editor, Mr. H. Hobbs, 122 Cameron Street, Sarnia, Ontario.

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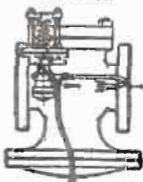
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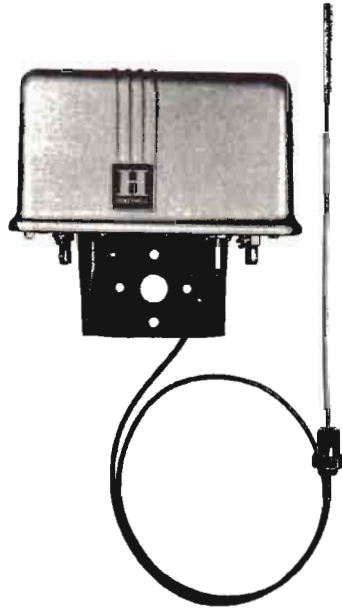
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# The "BULLETIN"

VOLUME 7: No. 8

APRIL, 1958

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## EDITOR'S NOTE

In this April issue we would like to remind everyone of the importance of attending the regular meeting, where our election of officers will be held. Turn out, members, and keep our Section strong.

We have articles by Bill Kirk, who always takes pity on me, and I hope, will never grow as hard-hearted as he suggests he will.

The April meeting appears to be destined to be very interesting with a topic that must appeal to all of us.

The plans for the May dinner meeting, are just about complete. The Sarnia Golf Club will be the probable location, as dining space is somewhat limited, the tickets are being offered to all members before others are approached. This promises to be an enjoyable affair.

\* \* \*

## MARCH MEETING

The regular monthly meeting of the Sarnia Section, I. S. A., was held at 8 p.m., March 24th, 1958. Some thirty members and friends attended and watched a colour film, "This is Automation" presented by General Electric. This film illustrated some fascinating aspects of automaiton as applied to non-process industries. We saw clever machines that baked cookies, blew glass, built light bulbs, filled beer bottles and best of all tied knots in regiments of pretzels. This last machine, with very little coaching, could be a natural at diapering babies.

Our speaker for the evening was Mr. Tom Hislop, Canadian representative of Panellit, Incorporated. His topic was "Present Day Trends in Instrument Panel Design".

This is a very broad subject, as Mr. Hislop soon pointed out. What broadens the subject a great deal is that everyone with a finger in the panel-design pie, whether he be engineer, pipefitter, janitor or stockholder, believes that he is also gifted panel man. This widespread mental condition, said Mr. Hislop, has resulted in many wierd and wonderful designs, doped out by rugged individuals who seem determined to steer diverging courses. Therefore "trend" as applied to panel-design is a laughable misnomer where each independent and self-qualified artiste writes his own dogma and views with scorn the pitiful attempts of his competitors.

This warfare reaches its surrealistc best in graphic-panel design, where those who fancy themselves the equal of Salvador Dali can employ a riot of colour and geometric scrabble to earn the amused scorn of their fellow Picassos and completely puzzle the tourist-trade.

Panellit has made a laudable effort toward standardization of colour and design in these graphic panels. This effort has gone the way of many

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good intentions. The typical panel-buyer will not accept such dictation. He considers their suggestions as merely an outline of one of the ways he will **not** have it done.

We were shown numerous enlightening slides, which indicated that the panel, as we know it may disappear altogether and be replaced by nasty console-type nerve centres. Let us hope that when this day arrives, the instrument mechanics will have adapted themselves to the new working conditions. They will need to be placid-tempered dwarfs, with locking knee-joints, two-way folding spines, and with eyes on the end of their fingers. I can imagine the effect of grabbing a hot wire while trapped in such a confined space. Not even room to swear properly.

Our thanks to Mr. Hislop and Panellit for a thought-provoking lecture.

H. Hobbs.

\* \* \*

### LETTER TO THE EDITOR

It has been rumoured, that the Instrument Mechanic will soon be a thing of the past. If this is so, it can be attributed to a number of things. Part of it is due to the type of instruments manufactured. By this, I mean that with the trend to more and more of the plug in type of components, which by the way are reasonably trouble free, it does not require much skill to plug in new or exchange component parts until the control system once again functions properly.

This is one reason, I believe, that people with a little basic training can effectively service instruments.

I also think, that with the present literature and proper shop equipment, this same man could do the necessary maintenance, without really understanding what these strange creatures called instruments are doing. I feel it is like a production line in an auto factory. Each individual is trained to do a definite job, the end result being a completed auto. These people do not care **how** this auto performs particularly, so long as enough are sold to keep their pay cheque coming.

Let's not let our trade get itself in such a dilemma.

Are we, people that have spent years building this trade to a high standard, going to let it fall into the hands of Engineers and laymen, that are not totally familiar with all its aspects.

Sure, it is the Engineers that figure out what type of control, etc., that a certain process requires, but isn't someone with an intimate knowledge of Instruments and Process problems of great assistance to these people.

I think that many of us mechanics that have struggled to master this Instrument Trade are now standing still and once this happens, we automatically start to decline. If we want the Instrument Trade known as a highly skilled profession, then I say it is up to us to keep it so. We must have higher objectives, such as Technicians or Assistant Engineers, and work for this goal.

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When such a level has been reached then people called mechanics could do our plug in and out work.

I feel that one of the best ways to start such a movement, is by giving our I. S. A. the shot in the arm it needs, (especially our local section) and give it some support.

It may be later than you think.

E. W. Kirk.

\* \* \*

## **INSTRUMENTS ARE MY LINE**

By E. W. Kirk

There are many Instruments in use to-day, that present various difficulties to an Instrument Mechanic, but one of the most common, yet annoying ones is the level meter.

Level meters may be used as a check of material or as primary measurement in a control system to maintain a level in a vessel, which is part of a continuous process.

One of the first considerations in measuring a liquid level is to determine the shape of the vessel containing the liquid. A tall vessel of small diameter can be more accurately measured than a flat vessel of large diameter. On the other hand, when controlling a level in a vessel, it is usually more desirable to use a vessel which is low in height, and large in diameter to give capacity to the controlled system. Thus the shape of the vessel not only affects the control of measurement, but also dictates the type of instrument most desirable for the application.

I think, basically, there are two types of level measurement:

1. Head measurement.
2. Pressure.

I also think level instruments can be divided into four general groups,

1. Visual indicators.
2. Float actuated.
3. Static pressure.
4. Pressure differential.

For this article, I will deal with one head measurement (float) and one pressure measurement, the differential type.

There are two basic types of float instruments, one being the float and chain or shaft, the other one being the displacer meter.

The basic difference of a displacement level meter is the float (or displacer) is always heavier than the liquid it displaces. The movement of the displacer can be described as becoming more buoyant by the amount of liquid it has displaced. Thus it is quite important to know the specific gravity (S.G.) of the liquid to be measured if you intend calibrating this instrument.

For shop calibrating, it is impractical to use the actual liquid, so generally water is used, but allowance must be made because of the different S. G.

---

Here are a couple of sample calibration figures for a displacer level meter with a 14" displacer measuring a liquid with S. G. of .5

#### NO INTERFACE

full scale read gravity of 1 (H<sub>2</sub>O) = 1 x 14 = 14"

full scale read gravity of .5 (H<sub>2</sub>O) = 1 x 14 x .5 = 7"

half scale read gravity of .5 (H<sub>2</sub>O) =  $\frac{1}{2}$  x 14 x .5 = 3.5

As can be seen 7" of water has the same effect as 14" of the .5 liquid.

However, if this meter had been measuring the interface of two liquids with S.G. 1 and .5, the calibration would be,

amount of liquid in chamber = 14"

S. G. = .5

amount of H<sub>2</sub>O for condensation = .5 x 14 = 7"

Therefore with 7" of water the meter should read zero scale or with 14" of water 14 x 1 = 14" for top scale.

By these figures it is evident that the calibration figures can be obtained by multiplying the specific gravity of the liquid to be measured by the total height of the displacer.

These types of levels are fine if the amount of level is not too great, but if you wanted to measure the level in a sphere it would be better to go to a differential type of level instrument.

A differential level meter is really a flow meter with crossed leglines or a drop leg manometer mercury flow meter. We will assume that the types of meters I am referring to, have been adapted for level measurement. The high side of the meter is then the top connection of the sphere. Thus, when the vessel is empty the greatest differential occurs because of the head of seal. When the vessel is full the liquid nearly balances the seal head and this difference is sometimes referred to as suppression. Thus, the calibration figures would be as follows for a mercury meter, empty tank or zero scale would be height in inches x S.G. of seal

$$(50' \times 12) \times 1.14 \times 13.7 \quad \text{x mercury factor, or} \\ (13.7 - 1.14) \quad \quad \quad = \text{span.}$$

Thus zero scale minus the span = full tank read.

Working this out it appears as

$$\text{zero scale} = (50 \times 12) \times 1.14 \times \frac{(13.7)}{(13.7 - 1.14)}$$

$$600 \times 1.14 \times 1.01 = 690''$$

$$\text{zero scale} = 690''$$

$$\text{span} = (50 \times 12) \times .8 \times \frac{13.7}{(13.7 - 1.14)}$$

$$500 \times .8 \times 1.01 = 484''$$

$$\text{full scale} = 690 - 484 = 206''$$

If this same service were used with a Taylor aneroid or one of the many DC cells, the calibration would be the same except omit the seal over the mercury factor. The reason for this is quite obvious, the dry type of meters do not displace any seal going from zero to full scale, as do mercury types.

### PROGRAM CHAIRMAN'S REMARKS

At the last ISA show at Cleveland, a number of data loggers of different manufacture were displayed. One of the more impressive models was the Beckman 112, which is said to have been designed from the ground up to have all of the features of a first class data logger, particularly reliability and low maintenance. One interesting aspect of the Beckman 112 is that if you add three zero's to the model number you are pretty close to the cost in bucks.

The description of this machine and its background took considerable time, but it was well worth hearing. Many of the remarks pertained to the Beckman machine, of course, but there was considerable information on the general subject of data loggers presented as well.

In order that we may all hear this discussion, we have invited the Beckman Systems Division Regional Engineering Manager, Mr. Larry Keenen, to come to Sarnia and speak at our April 28 meeting. During the course of the discussion, there may be, it is true, some sales promotion. It would be next to impossible for our speaker to avoid this. However, the quality of the talk will not be adversely effected, and since none of us are able to put up the price tag anyway we need not be concerned.

This is our data logging meeting. If you have any interest in data logging, you shouldn't miss it.

We also have another interesting film. This one is entitled, "Electronics for Accounting and Business". It illustrates many of the operations which can be done by computing machines.

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# MEETING NOTICE

- TOPIC:           **Data Logging and the Beckman Model 112**
- SPEAKER:       **MR. LARRY KEENEN, JR.**  
                    **Regional Engineering Manager**  
                    **Beckman Systems Division**
- DATE:            APRIL 28, 1958
- TIME:            8.00 P.M.
- PLACE:           VENDOME HOTEL
- FILM:            **"ELECTRONICS FOR ACCOUNTING AND BUSINESS"**  
                    **Sound-colour publication on the uses of computing ma-**  
                    **chines.**
-

**WRITTEN ON A ROLL CHART**

'Way back yonder in the dawn of time,  
In an almost-forgotten Neolithic clime,  
Lived a strong successful Neolithic man,  
Lord and leader of a powerful clan.  
He lived like the competent king he was,  
(Entire torso covered with fuzz.)  
And wind might howl and storm might rave,  
Who cared in the warmest, driest, cave?  
Who cared by the roaring cheerful fire,  
What took place in the mud and mire.  
For he wrapped himself in fur and feather,  
And blandly ignored inclement weather.  
His wives indulged his every whim,  
And made a household pet of him.  
He basked as kings are wont to do,  
And blandly ignored progress too,  
He'd carved his niche, he'd found his slot,  
Intensely happy was his lot.  
His formidable set of muscle,  
Was fit for any sort of tussle,  
His simple method brought success  
And guaranteed his happiness  
Should man or beast de-chip **his** shoulder,  
He crushed its skull with a handy boulder.  
This method worked for many a year,  
'Till a cowardly weakling invented a spear,  
And the king went down 'mid great surprise,  
To a thoughtful fellow just half his size.

Back in the early Renaissance,  
Trapped in the wilds of Northern France,  
An English robber-army lay,  
Exhausted at the break of day,  
Trapped by odds of many-to-one,  
Doubtful of seeing the evening sun,  
Perhaps they shivered in their rows,  
At the menacing ranks of armoured foes,  
Perhaps they turned a trifle pale,  
At sparkle of advancing mail,  
And who can blame proud France's king,  
For feeling sure of everything,

---

For feeling sure of victory,  
With all his heavy cavalry.  
With all his men both brave and strong,  
Prepared to shout the battle-song.  
But one thing plainer than his nose,  
He failed to reckon, I suppose,  
For when the hard-fought fray was done,  
Emerg'd the Yew-wood bow, (Mark One)  
Which held by a careful man, could shoot,  
A nasty hole in an iron suit.  
A most unpleasant day for France,  
Due to touching faith in iron pants.  
It surely would have paid them, buddy,  
To give progress a little study.  
And even to-day, some take it slow,  
(For we're all as far as we're going to go.)  
And we're sort of happy with what we've got,  
Settled into some pleasant spot,  
And we see no point and I fear we'd rather  
Not get worked in a learning-lather.  
For meters we zero and valves we free,  
Are just the same as they used to be,  
And they who study and they who play,  
Are equally far along the way.  
For life is pleasant, and life is sweet,  
'Till the said day dawns, when we're obsolete.

—H. Hobbs.

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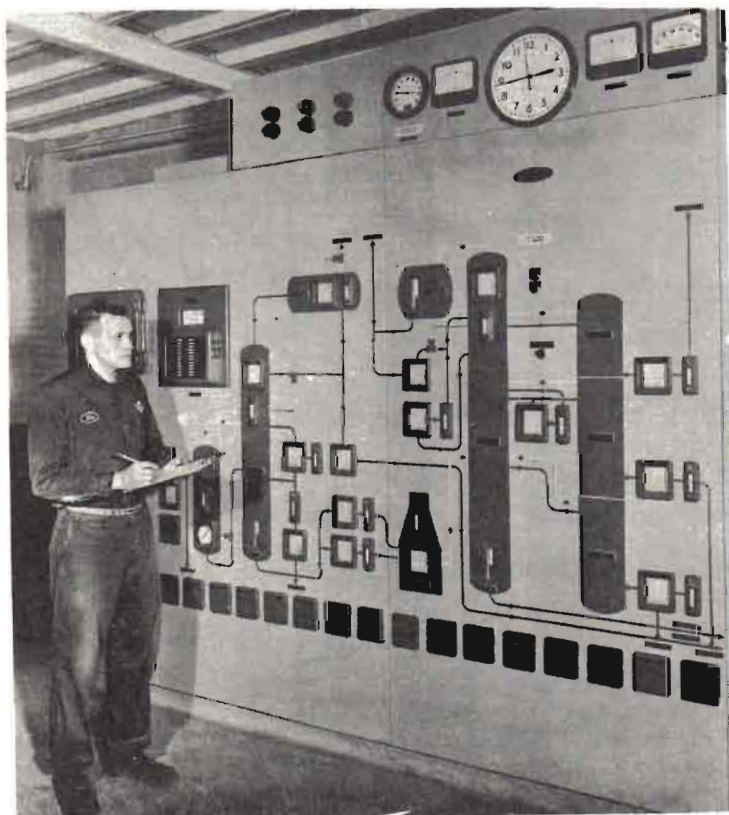
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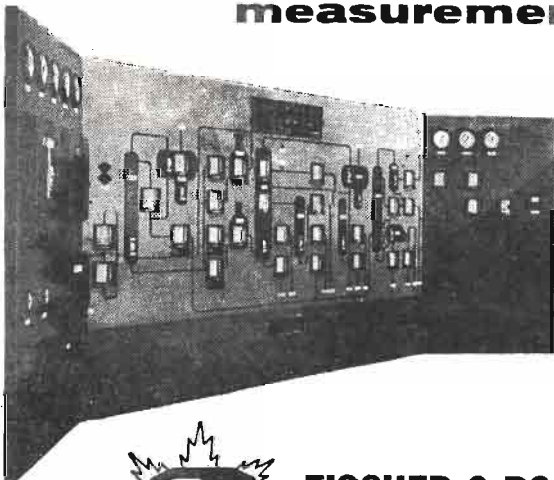
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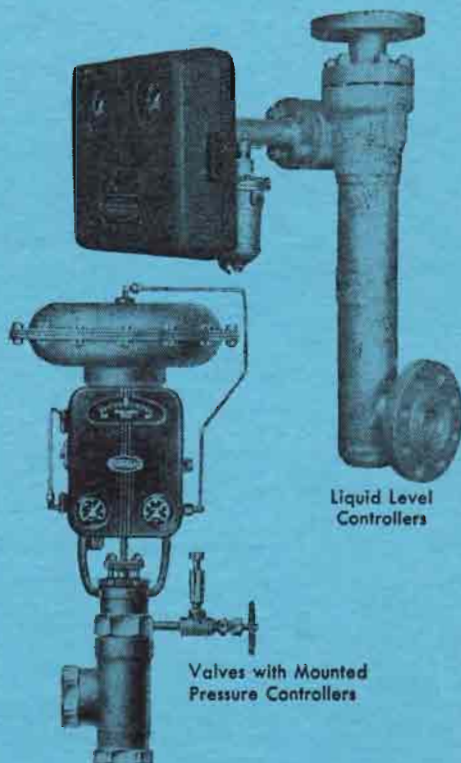
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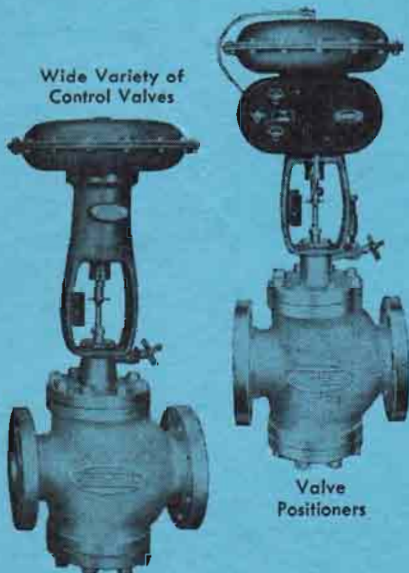
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