

Once more I find myself under a deadline - even tighter than usual - in getting out this issue of Celophais. I want to get something in the mailing, if only to keep the string going one more, but I'm afraid this will be a rather skimpy issue. Work has kept piling up, especially as I'm trying to get things ready for a meeting in Sweden in July. I'm not giving a paper, but I do have to be ready to answer questions as to the current status on the thermochemical data for all the chemical compounds. Then there was a little meeting recently, in which I did have to give a paper - maybe I'll reproduce it here, later, just for the edification of those of you - all 2 - who wonder what I do for a living.

This conference, by the way, was a most interesting one - for one thing, it was by invitation only, and when word got around there were inquiries and applications that couldn't be accepted. As it was, the meeting taxed the capacity of the National Academy of Sciences' room. Entitled "National Research Council and Office of Critical Tables Conference on Critical Tables of Thermodynamic Data, it was an attempt to survey the needs and resources and present status of the problem, which is of great importance to a large section of industry and military research and development, as well as general scientific progress. It included people like me who are compiling the tables, people from the university and industrial labs who are generating basic data, and people from industry and DOD who want the tables, and finally and most important, people from DOD, AEC, and industry who are putting up the money. Some of the industrial people were rather high brass - vice presidents of a couple of oil companies, for two I remember. It even dragged one Bureau Mines man from Berkeley - a fellow who hasn't been cast in at least 15 years.

The program started off with a review of the history and philosophy of the critical tables, the progress in the field in the last 10 years, and then a review of the current programs at NBS, Bureau of Mines, JANAF tables, API (American Petroleum Institute Research project 44, a cooperative program by the major oil companies that has been going for about 20 years) and others. After lunch, it became more specific, with remarks on the needs of science in general, of technology, and in specific areas, ceramics, chemicals, minerals, nuclear energy, space, petroleum, etc. Then came a session on scope of the tables - property coverage, substance coverage, quality considerations - that was me - format, storage, dissemination, data retrieval, associated measurement programs, primary data publication. By then we needed the coffee break. Next came the financial considerations, with discussion on the support of compilation programs by industry, by operating groups in government, by funding groups in government (those agencies like ARPA that do nothing but pass out money for the use of those doing the work).

Next came a cocktail social hour, followed by dinner in the Academy basement dining room. (I wish we could get that dinner for the Discon at the price - to us. It was on the Academy) (Roast beef, and good too) That evening we split into 5 groups to formulate summary statements and resolutions to pass on and give people going after support some ammunition. Some of the "task group" titles are quite official sounding: Statement of National Needs; Creation and Publication, Retrieval and Evaluation of Primary Data, and Dissemination of Tables; Scope of Needed Program; Organization and Coordination of Operating Groups; Responsibility for Financial support. About 10 PM, the groups finally finished, leaving the chairmen to polish the statements. And so home.

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A Weltschmerz Publication

The next morning a rather bleary-eyed group reconvened, to listen to and comment on the results of the preceeding evening's task groups. One or two points were the subject of considerable discussion, and a few statements were modified as the result of suggestions from the floor. In general, the modifications were in the upwards direction - more needs, more substances, etc. Finally, about 11 - the time listed in the agenda, the meeting broke up, with a feeling that the groundwork had been laid for getting some action. It was a most hectic, but still enjoyable time - a chance to talk with a group of friends and find out what was going on, and a place to make new friends. It was unusual for such a meeting in that it kept almost to the program times - speakers had been primed as to the time for a talk and plenty of time for short comments from the floor was allowed. And the chairman kept things from going too far behind, and took up slack where he could.

Another point worth noting was that everyone agreed that the present effort should be increased - the only question seemed to be whether by two, four, ten, or 50 times. Everyone also agreed that money wasn't the real obstacle; if trained people willing and able to do the job could be found, the money could be dug up. It was pointed out that critical data evaluation and compilation isn't a glamorous field, and that the people best capable of doing the job prefer to go into the glamour fields like nuclear magnetic resonance spectroscopy (as of now) or compounds of the inert gases.

As I mentioned, I had to speak. As a result, I had an invitation to speak at a dedication dinner for a new data center building at Purdue in the fall. I begged off that one, as I am not in the soup-and-fish set, yet, but did accept for a seminar talk on the general subject. So, I'll practice on you, with a brief version of the talk at the conference, and the basis for the talk this fall.

Quality Considerations in Critical Tables.

The position as to the quality of thermodynamic tables is, basically, simple; we want tables of the highest quality. But, having said that, the problem remains in defining the elements that make high quality tables. With this, we enter a subjective region; certain criteria are obvious, others are subtle, or depend upon imperables.

Let us consider those capable of quantitative statement. Tables should be internally consistent, and, if possible, consistent with other tables with which they may be used. This internal consistency ranges from making sure fundamental relations such as $F = H - TS$ are satisfied, through the use of the same auxiliary data, to the recognition of possible differences in definitions or units. Examples of such problems are thermodynamic tables in which the value of N on the physical atomic mass scale was used with chemical atomic masses, and in which organic heats of formation based on carbon in the form of diamond have been combined with values based on graphite, giving erroneous heats of reaction. This type of error is more apt to occur in "collected" tables, where someone assembles tables from various sources, and issues the compilation without examining it critically. Unfortunately, these compilations are published and accepted.

Detection of such errors is possible, although time-consuming, once their existence is suspected. More serious are those subject to no quantitative measure.

In preparing a critical table various types of input data must be used. These range from quantities directly measured for the substance or property of interest - these are usually considered as the "input" data - to the theoretical calculations and correlations covering a group of properties or compounds. The quality of a table rests, basically, on the quality of the available input data. It is not generally realized, though, except by workers in the field, that a table can be of higher quality than the available "input" data for that table. An experienced

compiler can use his knowledge of the field to augment the basic "input" data. The breadth of his experience enables him to view the whole subject and to see aspects that may not occur to someone preoccupied with a small part of the problem. This will lead to more data, diversified in nature, and including the correlation and theoretical calculation, which can fill gaps in the "input" data - or may even replace it. This leads to a better final product.

Of course, the reverse can happen - the final table is poorer than the raw "input" data. This is more probable in the case of a casual table-maker, who needs values it incorporate into his own experimental results. Unacquainted with the pitfalls abounding in this jungle of data, he picks values from here and there, never realizing the inconsistencies and uncertainties he is introducing into his results. His results are published, and offer another tempting trap for some later compiler.

This is the era, I feel, of the "quick-and-dirty" tables, the "gray" tables, some of which should have been printed in India ink on black paper, or with an ink that fades in three months. These are not critical tables, and properly they are not intended to be critical tables. They are designed for immediate use in a particular situation - and for this purpose they are satisfactory and fill a need. Unfortunately, in these days of high-speed computers, it is too easy to prepare tables of thermodynamic properties, precise to eight figures; in many cases - much too many - these tables, uncritical though they are, become a part of the permanent literature - and are being used as critical tables. We must guard against this.

Of equal or greater importance in determining the quality of a table - in fact, probably the single factor of maximum importance - is the subjective judgment of the compiler. This is also based upon his experience, but cannot be as easily communicated to others. After working for some time on such tables a person develops a feeling for the data. He becomes familiar with experimenters and experimental methods, learns what types of data are probably more reliable, which laboratories consistently report high-quality data. Such experience enters into his decisions as to which set of data is the "best", which value is to be preferred, which calculation path is most reliable. It warns of data that seem "out-of-line" and indicates when correlated or estimated values are better than the directly measured quantities. This subjective judgment introduces a bias in the selection of data; it is the training and experience of the compiler that make this bias one which improves the quality of the final product.

I know of no method of measuring such subjective judgment. It takes time to develop this - time to become familiar with the field and the data, time to investigate the various methods of expanding the "input" data. In addition, and I feel this is important, it takes time to remove the feeling that compiling critical tables is less basic scientific research than laboratory experimentation. The best quality critical tables are prepared by people who have a feeling of pride in their work, who have a desire to do such work. When more highly-qualified, experienced people are interested in the field, more high-quality critical tables will be prepared.

End of talk. The reference to gray tables refers to one interim compilation, the JANAF Thermochemical tables; in which the tables the compilers have taken from some other source, which is named, and where they have not as yet examined themselves the basic data and the calculations, are printed on gray paper; after the compilers have made their own evaluation of the situation, the table is reissued on white paper. This indicates a table - maybe no better, and often the same table - which the compilers are willing to stand behind. It may have errors, it may be based on erroneous assumptions or faulty data, but at least the compilers have looked at the table as best they can, and are willing to take the responsibility for the selection of the "input" data.

This is the issue of Celephais with no trip report, with no nostalgia over the rail trip through the snowy mountains or over the endless plains. So, for the benefit of Bob Tucker, and maybe one or two others, here's a part of a Matt Weinstock column from the Los Angeles Times of 12 April.

"My spies, of course, are everywhere. Thus it is with Sherlock Holmesian satisfaction that it can be reported that the mystery of the ghost train whistles in the Alhambra area has been solved.

"Sidney C. Fryrear first heard the whistle near where the Sierra Vista station used to be, on Huntington Dr., past which the long abandoned Pacific Electric line used to run.

"Then Don Duke, a railroad historian, traced the sound to a passing pickup truck with a woodhandled cord in the cabin and a tank in the back.

"The train whistle man turns out to be Jeff Strouse, 54, of 117 Palatine Dr., Alhambra. A neighbor, Martin Gordon, told on him.

"Strouse, a Southern Pacific engineer-fireman on the L.A.-to-Indio and L.A.-to-Colton runs, carrying freight, loves train whistles and everything else about trains. He has a basement full of relics to prove it.

"As for the whistles, he explains, 'I just like to keep the sound alive.' The P.E. whistle on the pickup truck with the air compressor, kept at 150 lbs, is his favorite.

"'Want to hear it?' he asked. I did and the soft, melodic sound of the big red cars as they used to approach a crossing came over the phone.

"'Listen to this one,' he said enthusiastically, and the shrill, piercing scream of a locomotive steam whistle tested my ear drums. It's rigged up in his garage.

"'Or maybe you'll like this one better,' he said, 'it's a Mallet horn. Remember the locomotives with the cabin up front of the boiler? It's off one of them.' It was a kind of honk.

"I asked if it was true that when he's coming from work and is about five miles away he blows the whistle on the truck so his wife will know when to have dinner ready.

"'Well, something like that,' he admitted. He added that she also blows the Mallet to let their son, 15, and daughter, 11, know when it's time to come in from play.

"You'll never guess where the Strouse family was going this week. Yep, to Disneyland -- so he could ride the trains there."

And wouldn't I like that horn off the cab forward from the SP. And, it probably wasn't a Mallet -- only the first group of cab forwards were Mallets, and they were simplified back in the 30s. So, if it came off one of the recent jobs -- the ones from 1920s and 1930s, or the wartime group, it was never on a Mallet. But I'd still like it, and the PE whistle, too. What a device to open a convention meeting with.

It Happened in England, or notes from the local press on the goings-on overseas.

Newport Pagnell, England.-- Brian Owens was fined \$28 Wednesday for kissing a woman passenger as he drove his automobile at 60 miles an hour with one hand on the steering wheel.

[What's so unusual about doing that? Any Saturday evening...]

London.-- A man was reported on the Westminster Bridge Wednesday holding a water divining twig over the Thames.

"He got a positive reaction," said the Daily Telegraph.

Recently I've been browsing through some old Detective Fiction Weeklys which I'd gotten for the "Lester Leith" stories of Earl Stanley Gardner that were running then - one of several series characters he had going before Perry Mason came along. Anyway, I was fascinated by the cipher section that ran week after week for years - at least 7 that I know of. One of my pet types is the division, where the letters represent the numbers from 0 to 9. Here are a couple for you who have some spare time. The keyword of the first runs 0 to 9.

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O N D ) C O U N D E G ( K N N N
      C B O U
        O A A D
          R R A C
            O B U B
              R R A C
                R R N G
                  R R A C
                    U C

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The keyword for the second, which is supposed to be somewhat harder, runs from 1 through 9 to 0.

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P C E ) E C R U I L I N ( I P L C B
      E L I U
        R U N I
          R R U L
            E L R L
              E E A E
                P E U I
                  P N B L
                    R A R N
                      R A R N

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These can be worked - I did them in about 10 minutes for the first and a little more for the second. It requires some logical thought in eliminating as well as assigning values. Have fun. Answers next time, if I remember.

Books

I've been browsing this last weekend - when I should have been doing this, I suppose - through two most interesting volumes. And most expensive. They are art books - Art, I should say - with magnificent photographs, many in full color. The subject is rather specialized, but very interesting. These are "Eros Kalos" and "Roma Amor", both by Jean Mercade (I believe). The first is, and I quote from the blurb, "devoted to love in ancient Greece. Said the Paris L'Express on December 13: 'The erotic illustrations are daring and beautiful...and convince us that in this domain, the human race hasn't invented a thing in a thousand years.'" The book is 13.5x10"; 172 pages, 87 beautiful full-colored reproductions and 80 with black-and-white photographs. The photography is nothing short of marvelous, considering the probably state of the originals - vases, water jars, lamps, statuary, plates, all from ancient Greece. The text is also fascinating, giving as it does the background into which these objects and scenes fitted. Of course, the pictures are erotic, but they are not pornographic, in the usual sense, and certainly not obscene. Although, I must admit that similar pictures, in today's setting, would be so classified, and probably rightly so. And yet, the thing that impressed me most about the book was the beauty of the objects.

Roma A mor is similar, but devoted to the "scandalous" collection of the hidden museum of Naples. It includes some of the murals, etc, from Pompeii, that are always talked about in whispers. Here they are, in a similar book, of the same size and as lavishly illustrated. The difference in the two works is mainly caused by the different types of objects. The Greek were small objects, with the vivid colors and strong outlines. The roman works are murals, mosaics, or small statues. The colors tend to be gentler, and to have faded somewhat. But the action is as unusual, or more so, and is concerned less with the gods and demi-gods of Greece than with the human men and women who are pictured engaged in various pleasant diversions. In spite of the less vivid illustrations - they tend to take more study to get the full impact - I can recommend this book as highly.

There is only one trouble. Art books are expensive. So are erotic books. As these are both, they are quite expensive. They list at \$35.00 each; they can be had at a reduction of 20% - until the supply is exhausted. [And Eros Kalos was published in England at \$45.00....]

More Nostalgia. this seems to have developed into a nostalgia issue of C. So, there is an item dedicated to Dean Grennoll and Ted White, and a few others of the old timers. From a recent DC paper:

THE SHADOW LAUGHS, RIDES AGAIN

by Jerry Doolittle, Staff Reporter.

The organ music swells, its eerie threnody filling the great, mouldering mansion. And it fades away, to a thread of melody, and then to nothing. "Who knows what evil lurks in the hearts of men?" a voice asks with mournful menace. "The Shadow knows."

The Shadow, who heads forces of law and order, is in reality man-about-town Lamont Cranston. And he is back with us.

The Shadow--the real, original Shadow--will be broadcast on WMAL radio at midnight Saturday and again on Sunday at 5 p.m. for at least the next 22 weeks.

Actor Arthur R. Vinson, who was The Shadow during the program's hey day, died in Mexico Feb. 26, but a New York entrepreneur has gathered recordings of the original broadcasts.

The Shadow chilled a generation of youngsters in the 1940s, as you remember, with his power to cloud men's minds so as to make himself invisible.

WMAL program director Harold Green doubts whether Cranston's educated accent and sepulchral laugh would have quite the same paralyzing effect on today's children.

"I think it would just be a laugh to most of them," he said, "but we're getting a big response from older fans."

The stuff that used to strike terror into our cornball souls went like this yesterday.

Cranston and Margo Lane discover the body of a hired man, his throat torn out, in the potting shed of a lonely mansion. Wolves howl in the background...

Peter Hamilton, master of the mansion of the same name, knows more than he is telling, for in his library is a well-worn volume called, "A Study in Lycanthropy." As the shadow knows, lycanthropy is the practice of werewolfery. Werewolfism?

Suspicion attaches briefly to George Hamilton, Peter's sickly son, whose clothes have turned up bloody after the killing of three local dogs and the hired hand.

But the key to the ghastly riddle is found only in an abandoned mine nearby, which Margo is reluctant to enter. She is, after all, only a girl.

But she is right, for she is almost fed to a wolf who is the only friend of yet a nother hired hand. Just in time, The Shadow shows up, emits his marrow-freezing laugh, and turns invisible.

But Jonas, the hired hand, is as crafty as he is crazy. He turns out the light, rendering everybody invisible, and lets slip the wolf.

The Shadow retaliates by training a flashlight on Jonas, and the wolf, a fickle beast, goes for the only target he can see. Jonas is saved for the electric chair only by the intervention of the Shadow, who guns down the animal.

"So there was no werewolf at all," Margo says, almost regretfully.

"That's the way it is with all superstitions, Margo," Cranston replies. "No matter what they are, once you hold them up to the light of logic, they vanish into the air."

Maybe. But, on the other hand, that's what we thought had happened to The Shadow.

Random Thoughts on Street Lights. Which may sound like a rather odd title for this, but it fits in with the nostalgia running through all pages.

Some time ago, while driving back from a WSFA meeting, I noticed that right on the edge of the District (of Columbia, of course) there was a short stretch of rather odd street lights, especially in this day and age of the megawatt lighting bill. Washington has been noted for its distinctive street lights, which were supposedly designed by some famous artist or sculptor. They are nice - the ones downtown and in the older residential areas - a single or three bulb cast iron column, decorated in the turn of the century style of curling leaves and graceful green iron brackets. Impressive, but not too tall, and hence not capable of casting the light needed for today's traffic and street hazards, live and inanimate. So, these standards are being replaced on the main streets and all downtown with tall, reasonably graceful standards carrying mercury lamps. More light, but the screams from the Fine Arts Commission about the changes and the loss of beauty in the city.

But this isn't what I saw out near the boundary. These were different even from the usual residential light, a tall pole - usually a power pole, with a bracket holding a lamp and with a glass diffusing bowl. They cast a diffuse glow, that gives a fair light over a reasonable area. But these I saw were even simpler, and reminded me of the small town. These were just a bare 150 or 300 watt (probably the latter) bulb, with an enameled reflector above it. The light is cast mostly downwards, and does little at a distance. The effect is of the solitary beacon in the midst of the night.

These old-fashioned lights started me to thinking about the characteristics of towns I had known in the past - small, medium and large. The best remembered were those of home - the ones I grew up with. Downtown there were the iron standards, plain tubes, with either one or three large, frosted globes at the top. With them spaced three or four to a block, they gave almost enough light - as long as the store windows were lit up. Further up State and Court Streets, towards the Court House, Post Office, and Capitol, with the University grounds alongside, they made pockets of light in the darkness, with shadowy areas between, partially lit by the lamp across the street - the lamps were staggered. In those days, no one thought anything of walking home through these shadows, even after the last show. Nowadays, there is agitation for better lights.

The residential lighting was the single frosted bowl, hung on a long bracket from a power pole at an intersection, projecting far enough out to illuminate the four streets for a little ways - except that there were always lots of trees along the curbs, and the sidewalks were always shaded. Still, I grew up in this type of lighting, and remember it fondly. It does make the standard I've judged others by.

Visiting smaller towns, I was always struck by the lights - which were always so old-fashioned to my eyes. They were the single open bulb, with the flat reflector. I can see them twinkling in the dark, looking like bright stars in the distance. So, every time I see this type of light, it takes me back to the prewar days, when we would be visiting relatives in small towns (after all, Salem was a big city, with 30000 people). These were usually in spring or summer, and the combination of soft summer breezes, cool after a warm day, with the distant street lights, the quiet of the small town, after the noise of the city - no street cars, for example - and the clear, bright sky, with the stars visible almost like in the country, well away from the city lights.

Several times, while travelling by train, I've been sitting up late in the evening, probably in the unlighted dome, as the train goes through the rural country. As we flash through the small towns, I've glimpsed street lights of the same type, shining bravely in the darkness, serving more as a reminder that all is well - in a small town there are no street prowlers to frighten you - and that really this is just to guide you home from the church social.

After all, there's nothing quite like strolling slowly home, through the cool, limpid dark, with the infrequent street lights serving just to avoid the obstacles, with a young miss snuggling close. The darkness has a friendly quality; it isn't something that conceals unknown terrors, it just serves to cloak you from the interested gaze of the world, and gives you a sense of being alone with that special someone.

Nostalgia, anyone?

And so ends a rather unusual issue of Celephais. No trip report, no reviews of the preceding mailing, no comments. Just some idle rambling thoughts.

Bill
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