Thar's Gold in Them Bills

When a citizen has been wronged or thinks that he has been wronged by the Government, he may not, in certain cases, resort to the courts for redress; he must instead appeal to Congress, which may pass a bill authorizing the Treasury to pay a specified amount or which may refer the matter to the Court of Claims for determination of the facts and a recommendation about what damages, if any, should be allowed to the plaintiff.

A case in point—and it is one in which we have had a continuing interest because of the way it pits scientific evidence against commercial interests—is that of the battery additive AD-X2. This case originated when the Federal Trade Commission and the Post Office Department asked the National Bureau of Standards to test the additive in 1952. The Bureau reported that AD-X2 had "no beneficial effect on the properties or performances of batteries," and the Post Office promptly barred the use of the mails for the promotion of the product. This order was suspended a few days later at the request of Senator Thye, chairman of the Senate Small Business Committee; on 24 March 1953, the Assistant Secretary of Commerce asked for the resignation of Allen V. Astin, director of the Bureau of Standards; Astin's resignation was accepted on 31 March. Thanks to vigorous reaction by scientists and the press, Secretary of Commerce Weeks reversed the decision and on 17 April asked Astin to serve till late summer or early fall; on 21 August he announced that Astin would be kept on as permanent director of the Bureau.

Despite the fact that the Bureau's findings were approved by a committee of the National Academy of Sciences that was especially appointed to appraise them, the Federal Trade Commission, acting on the basis of the testimony of users, dismissed the charges of false advertising against the manufacturer of AD-X2, Pioneers, Inc., of Oakland, California.

This put the company back in business but left it with a grievance. Accordingly, Representative John J. Allen, Jr., of California, introduced a bill (H.R. 3875) "for the relief of Pioneers, Incorporated, and Jess. M. Ritchie, individually." The bill left the amount of damages unspecified, but by virtue of a resolution introduced by Allen (H. Res. 167) it was referred to the Court of Claims with the request that the court should make "such findings of fact and conclusions thereon as shall be sufficient to inform the Congress of the nature and character of the demand . . . and the amount, if any, legally or equitably due from the United States to the claimant."

The petition of Pioneers, Inc., to the Court of Claims is directed against the Department of Commerce and the Bureau of Standards and asks compensation for losses sustained in the amount of $2,369,064.52. The Government will respond to the petition on or before 24 January 1958. It is probable that the court will hold hearings and that a good deal of familiar ground will be reworked.

Meanwhile, any observer of the political scene may ponder the following facts, which are not in dispute: Representative Allen, who introduced the bill and the resolution, was defeated when he ran for reelection last month; this month President Eisenhower announced his intention of appointing Allen to the post of Undersecretary of Commerce early next year. If the appointment is confirmed, Allen will doubtless follow the progress of the AD-X2 case with especial interest, for he will be in a sense in the unusual position of being simultaneously plaintiff and defendant.—G.DuS.
ARE YOU OVERLOOKING SOME OF THE MOST CRITICAL CHALLENGES IN THE MATERIALS FIELD?

Listen in on this interview with Dr. A. E. Focke, Manager Materials Development at General Electric's Aircraft Nuclear Propulsion Dept., Cincinnati, Ohio

Q. Dr. Focke, I have heard it said that the Aircraft Nuclear Propulsion Program adds a new dimension to materials technology. Do you agree?

A. Strictly speaking, Mr. Walsh, rector development for any application may be said to do this, since materials must be selected for their nuclear as well as their physical properties.

For some applications we look for high neutron absorption cross sections; for others, low capture cross sections.

For example, the material selected for the moderator must be capable of slowing down the neutrons produced by fission to thermal energy, about 1/40 ev from their original energy of several million ev with a minimum loss of neutrons by parasitic capture. Control rods on the other hand, must have high capture cross section for neutrons.

In practically all material applications for the nuclear power plant for aircraft which we are developing here, however, we have a high temperature problem of dimensions unique in materials technology.

Q. Why is that, Dr. Focke? Aren’t these problems similar to those already solved for marine nuclear propulsion?

A. In the ANP program weight and size are severely limiting factors. Here we are dealing with a small, high density reactor a small fraction of the size and weight of the submarine reactor. To jam high energy into small volume requires the development of high temperatures. Generally the higher the reactor exit-air temperature, the better the overall performance of the power plant.

The crux of the problem here is the fact that common materials desired for some parts of the reactor for nuclear considerations, cannot operate at the maximum temperature of the over-all system.

These charts, prepared for a recent paper will give you a better conception of the materials problem. Fig. 1 summarizes the general requirements. Figs. 2, 3 and 4 review a few of the basic physical properties of each of 11 metals selected for discussion.

Q. Can a materials man work effectively at ANP without previous training in nuclearies?

A. Certainly. All the orthodox skills of the metallurgist, ceramist or chemical engineer are called into play here. The Aircraft Nuclear Propulsion Department will provide necessary training and information in nucleonics.

Q. What you’ve just told me, Dr. Focke, I certainly can discern the challenge to the materials man that you have here. I suppose you are working with alloys of some of the more exotic metals so much discussed in the latest technical literature?

A. Security limitations forbid my naming specific materials on which we are concentrating our investigations at this time. We have, however, made considerable progress, though a great deal of work remains to be done before our first high performance nuclear power aircraft makes its maiden flight.

One of our principal problems is to be sure we have people with the required technical competence and specific abilities to function effectively.

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**FIG. 1**

![图表](image1.png)

**FIG. 2**

![图表](image2.png)

**FIG. 3**

![图表](image3.png)

**FIG. 4**

![图表](image4.png)

Some characteristics of 11 metals in relation to possible application in Nuclear Power Plant for Aircraft—prepared by Dr. A. E. Focke, Manager, Materials Development.

**A FEW OPENINGS IN OTHER AREAS OF THE PROGRAM FOR: NUCLEAR ENGINEERS • THERMODYNAMICISTS • MATHEMATICIANS**
Meetings
Chicago Academy of Sciences

It is significant of the rapid growth of our country that the Chicago Academy of Sciences, at the time of its founding in 1857, should have been known as "the first museum of the West." It is strange, indeed, to reflect that only 100 years ago Chicago was a sprawling pioneer community and that the academy was the first scholarly institution on the scene. Washington's Smithsonian had been founded only 11 years earlier, and through the years a traditional bond has existed between the two. Robert Kennicott, first director of the academy, was a young protégé of Spencer Fullerton Baird, assistant secretary of the Smithsonian in those days. It was the young Kennicott whose scientific reports on Russian Alaska, as leader of the Overland Telegraph Expedition, made the United States aware of the value of this vast territory. When the project to link Europe to North America via Bering Strait was terminated by the successful laying of the Atlantic cable, the scientific results of the Kennicott expeditions were the only tangible results of the giant undertaking. But they influenced our Government to purchase Alaska.

Early sites of the academy were twice destroyed by fire, the last time by the great Chicago fire of 1871. The present building in Lincoln Park was built in 1893 at a cost of $100,000, through the generosity of Matthew Laffin, who contributed $75,000, and the commissioners of Lincoln Park, who contributed $25,000. The academy has received major bequests from several other sources-$100,000 from W. Moses Wilner, $140,225 from Melissa Dickinson, $150,000 from Albert Dickinson, and $26,843 from Elsie S. Sandquist.

Founded for the "increase and diffusion of scientific knowledge," the academy has steadfastly pursued this goal. But science has its vogues, even as the world of fashion. In 1857 science was acquisitive. It was a time for discovery and classification of animals and plants, and in the early academy Transactions such work was published and broadcast to the scientific world. So, too, in its present Bulletin, Special Publications, and Natural History Miscellanea, the academy has ranged the whole field of science to continue the "increase and diffusion" of such knowledge. In an old institution like this you may read history off the library shelves or herbarium sheets. Here is a copy of Dana's System of Mineralogy, published in 1868; here a collection of plants made west of the 100th meridian by Palmer and Wolf in 1868.

Now the vogue is changing. The need for taxonomy is still as acute as ever in entomology and invertebrate classification but less urgent for higher vertebrates. There is time to investigate the biological interrelationships of animals and plants in studies of ecology and parasitology. Joseph Camin, staff aecologist, has a three-year grant from the National Institutes of Health to study mite-borne diseases and the genetics of the ability of mites to transmit blood diseases of vertebrates. The academy director concerns himself with bird physiology and the influence of the ice age on bird speciation and present migration routes.

But the academy feels most strongly its responsibility to diffuse knowledge to the public. At a time when science education is actually unpopular in the schools and scientists are regarded variously as unfeeling ascetics and dangerous crackpots, our role should be to correct misconceptions. Obviously, students come by such ideas via their teachers, and the need for good science teachers is therefore as great as that for well-informed students. Badly needed, too, is a respect for scholarly accomplishment to replace the present passion for mediocrity among students and even professional men. To
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The present officers of the Chicago Academy of Sciences, elected at the 101st annual meeting, which was held 16 Apr. 1958, are as follows: President, Leslie B. Arey, professor of anatomy, Northwestern University Medical School; secre-

WILLIAM J. BEECHER
Chicago Academy of Sciences,
Chicago, Illinois

Forthcoming Events
January
26-29. Institute of the Aeronautical Sciences, 27th annual, New York, N. Y. (IAS, 2 E. 64 St., New York 21.)
26-30. Writing and Publication in Industry, conf. and workshops, Brooklyn 1, N.Y. (T. L. Donahue, Writing and Publication Conf., Polytechnic Inst. of Brooklyn, 333 Jay St., Brooklyn 1.)
29-31. Western Soc. for Clinical Research, 12th annual, Carmel-by-the-Sea, Calif. (W. N. Valentine, Office of the Secretary, Univ. of California Medical Center, Department of Medicine, Los Angeles 24.)

February
6-7. American College of Radiology, Chicago, Ill. (W. C. Stronach, 20 N. Wacker Dr., Chicago.)
14. Short Range Navigation Aids, Montreal, Canada. (Intern. Civil Aviation Organization, Maison de laviation internationale, Montreal.)

(A See issue of December for comprehensive list)

A checklist of CB translations of 1958 Soviet scientific journals . . .

**Biology and Medicine**

- **Bulletin of Experimental Biology and Medicine** (Bul'leten' Eksperimental'noi Biologii i Meditsiny) . . . 12 issues, $20.00
- **Biochemistry** (Biokhimija) . . . 6 issues, $20.00
- **Pharmacology and Toxicology** (Farmakologii i Toksikologii) . . . 6 issues, $25.00

**Chemistry, Pure and Applied**

- **Journal of Analytical Chemistry** (Zhurnal Analiticheskoi Khimii) . . . 6 issues, $80.00
- **Journal of General Chemistry** (Zhurnal Obshchei Khimii) . . . 12 issues, $90.00
- **Bulletin of the Academy of Sciences, USSR, Division of Chemical Science** (Izvestiia Akademii Nauk SSR, Otdelenie Khimicheskikh Nauk) . . . 12 issues, $45.00
- **Physical Chemistry Section, Proceedings of the Academy of Sciences, USSR (Doklady)** . . . 6 issues, $160.00
- **Journal of Applied Chemistry** (Zhurnal Prikladnoi Khimii) . . . 12 issues, $60.00
- **Chemistry Sections, Proceedings of the Academy of Sciences, USSR (Doklady)**
  - **Chemical Technology** . . . 6 issues, $25.00
  - **Chemistry** . . . 6 issues, $110.00
  - **Geochemistry** . . . 6 issues, $25.00
  (All three sections may be purchased as a unit for $135.00)

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**Physics**

- **Soviet Journal of Atomic Energy** (Atomnaiia Energii) . . . 12 issues, $75.00
- **Colloid Journal** (Kolloidnyi Zhurnal) . . . 6 issues, $80.00

**Miscellaneous**

- **Geological Sciences Sections, Proceedings of the Academy of Sciences, USSR (Doklady)** . . . 6 issues, $200.00
- **Cement (Tsentm)** . . . 6 issues, $60.00
- **Metallurgist (Metallurg)** . . . 12 issues, $95.00

**A New Translation from Czechoslovak**

- **The Czechoslovak Journal of Physics** (Translation of Russian, German and French articles) . . . 6 issues, $50.00

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Equipment

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Science does not assume responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 1634.

**Function Generator** employs conventional diode-breakpoint circuitry, but setup is accomplished by inserting a punched card into the front of the function generator and closing an actuating door over the card. Twenty segments are provided. The breakpoints are set with respect to the forcing function by means of plug-in resistor assemblies. The slope of the curve at a particular breakpoint is adjusted by the binary-coded information punched into the card. Repeatability of settings is ±0.02 percent. (Mid Century Instrument Corp., Dept. 534)

**Electronic Switch** accepts four independent signals and sequentially converts them to a single input to an oscilloscope. Switching rate is 500 kcy/sec, permitting 2 μsec per switch position. The unit consists of a free-running oscillator, an electronic counter, a diode gating matrix, and level-mixing cathode followers. (Newton Co., Dept. 544)

**Pressure Transducers** of the diaphragm-variable reluctance type are offered with pressure ranges from 0 to 5 through 0 to 3000 lb/in.² and from ±2 through ±300 lb/in.². Sensitivity to shock and vibration is 0.001 to 0.03 percent/grav. Rise time is 75 to 150 μsec. (Ultradyne Inc., Dept. 545)

**Recorder Amplifier** is designed to drive high-frequency galvanometers. The unit is a dual-channel, chopper-stabilized amplifier and is capable of delivering up to 200 ma at 0 to ±10 v d-c or a-c (peak) in each channel. Gain is adjustable from 0.1 to 2.0 (Data Control Systems Inc., Dept. 546)

**Scintillation Well Counter** provides 2 in. of lead shielding in a sectionalized unit 7 in. in diameter by 12 1/4 in. high. The scintillation probe is equipped with a 2- by 2-in. NaI crystal and has a well for samples 1 in. in diameter. Removal of the shield plug elevates the probe unit to the top of the shield for sample changing. (Nuclear-Electronics Corp., Dept. 548)

**Sodium Detector** combines a gamma radiation detector with a transistorized radio for civil defense applications. Range of detection is background to 100 r/hr. An ionization chamber is used as the detector. Power is provided by a mercury battery. Indication is provided by a logarithmic-scale meter. (Riggs Nuclronics Corp., Dept. 552)

**Flowmeters** of turbine type measure gas flow from 0.03 to 30,000 ft/min. Each model of the series measures over a 10-to-1 range. Accuracy is ±0.5 percent of reading. The smaller meters in the series use magnets imbedded in the spinning rotor to induce pulses in an external pick-up coil. Larger sizes use reluctance-type pick-ups. In either type, the output drives totalizers, counters, rate indicators, recorders, and control devices. (Potter Aeronautical Corp., Dept. 554)

**Chromatograph Conversion Kit** permits existing chromatographic instruments to be used in catalytic-combustion detection. The kit consists of a detector assembly, a bridge circuit, and a power supply. The detector assembly contains two catalytic combustion cells, one a reference cell. The cell block is made of stainless steel. All ports are 1/8-in. pipe tap. Output from the bridge is suitable for input to standard potentiometer-type recorders with 5- to 10-mm range and 1- to 2.5-sec full-scale speed. (Davis Emergency Equipment Co. and Greenbrier Instruments, Dept. 560)

**Photometer** is direct reading in density from 0 to 4. Accuracy is ±0.02 density units over the entire range. The multipler-phototube probe of the instrument is designed for use as a hand-held detector. Two attachments, a reflection head and a transmission attachment, are available. (Macbeth Corporation, Dept. 551)

**Controlled-Air Source** provides air flows from 1 to 18 ft³/min over a range of pressures from near vacuum to 20 lb/in.². Wet-bulb temperatures ranging from 0⁰ to 100⁰F and dry-bulb temperatures from 0⁰ to 150⁰ are controlled to ±1⁰F. Operation is on 115 v a-c. (Mira Corporation, Dept. 553)

**Environmental Test Chamber** permits testing in the temperature range −100⁰ to +800⁰F. Temperature control is accurate within ±2⁰F. Interior working dimensions are 18 by 18 by 18 in. Insulation is 7-in. thick Fiberglas. A multipane window is optional. (Associated Testing Laboratories, Dept. 556)

**Flaw Detector** locates defects in conductive materials. The instrument consists of an indicating unit, and an inspection probe. The latter is part of an anti-resonant bridge. As the probe passes over a crack or metallurgical difference, an unbalance occurs which is indicated by deflection of a meter. Compensation is provided to permit testing of semirough surfaces so that oxide layers or pits up to a thickness of 0.02 in. will not affect accuracy. (Magnaflux Corporation, Dept. 558)

**Joshua Stern**

National Bureau of Standards