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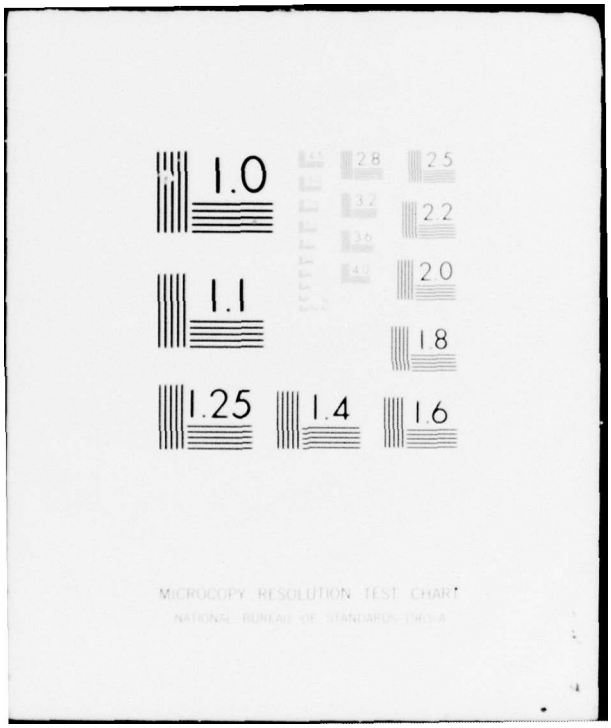
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ALIGNMENT OF GALACTIC DUST

A theory has been proposed by Dr. T. Gold, Cavendish Laboratory, Cambridge, which accounts for the alignment of interstellar dust by its dynamical interaction with interstellar gas rather than by a magnetic field. This interaction, a type of double streaming, is capable of producing the alignment of the elongated dust particles which results in the polarization of starlight observed by Hiltner and Hall.

The experiments of Hiltner and Hall show that light from space-reddened stars can be polarized up to 12%, and the correlation between reddening and polarization suggests that the agent producing the reddening is also responsible for the polarization. Further, they observe (i) a correlation of direction of polarization over large regions of space and (ii) at low galactic latitudes the electric vector tends to lie in the galactic plane. The magnitude of polarization is erratic.

All theories to explain these observations are in agreement that the polarization is caused by elongated interstellar dust particles which are aligned. The main problem has been to produce a satisfactory theory for the mechanism of alignment.

Gold assumes that the alignment is due to random inelastic impacts between elongated dust particles and intragalactic gas. He uses the relative velocity of the particles

and the gas to define a direction in space and can show that gas and dust interpenetrate $\sim 10^{20}$ cm before the relative velocity is appreciably reduced. The preferred direction of relative velocity is principally perpendicular to the plane of the galactic disc, hence so is the direction of alignment of galactic dust.

He has worked out this hypothesis by considering in detail a model which uses a mathematically thin dust particle, i.e., one which has zero moment of inertia about its long axis. He has shown that if the streaming between dust particles and gas is rapid compared with thermal velocities, appreciable alignment results, ideally up to

$$\frac{\sum \text{components } /\!/ \text{ rel. vel}}{\sum \text{components } \perp \text{ rel. vel}} = \frac{\pi}{2},$$

but only a fraction of the effect is necessary in order to account for the 5% difference in the extinction coefficients in the two planes.

A real dust particle has finite thickness, but with the use of Poinsot's theorem Gold can show that this does not change the situation appreciably.

A NEW MODEL FOR GLOBULAR STELLAR CLUSTERS

At a recent meeting of the Royal Astronomical Society in London, Dr. G.L. Camm, University of Manchester, gave an account of a new attempt to calculate the density - radius relationship of globular stellar clusters.

The cluster of stars is considered to behave as a gas, spherical symmetry is assumed, and an equation set up for the gravitational potential V in terms of the velocity distribution and mass distribution of the gas.

$$\text{In general } \frac{d^2V}{dr^2} + \frac{2}{r}\frac{dV}{dr} = f(v,r)$$

The case $f(v,r) = -e^V$ corresponds to the isothermal gas with no star streaming, i.e., with isotropic velocity distribution. $f(v,r) = \frac{-e^V}{1+\alpha r^2}$ is the model considered by Eddington giving

radial star streaming. $f(v,r) = -v^n$ is the polytropic case with no star streaming.

The new model uses $f(v,r) = \frac{-v^n}{1 \pm \alpha r^2}$ and is a modification of the polytropic form which has both radial and transverse star streaming.

With $n \sim 5$, solution of the equation leads to results which are in very close agreement over a large range of radius with the observed variation of light-intensity (assumed to be proportional to the number of stars) as a function of radius of the cluster.

FAST COUNTING CIRCUIT

G. A. Howells of the Electronic Division, Atomic Energy Research Establishment, Harwell, has developed an extremely fast scale of ten pulse counting circuit. The scaler has a mean dead time of about 0.25 μsec and a maximum counting rate for random inputs of 4×10^5 pulses per second. Principal components of the unit are a discriminator, a scale of five and a normal scale of two. The discriminator is capable of responding to pulses of durations as short as 0.05 μsec. Its dead time, which is essentially the dead time for the entire scaler, is determined by a delay line. The scale of five is based on the energy storage principle and stability of the five energy levels is achieved by employing a multistage feedback circuit having five stable states. The scaler is stated by Howells to be considerably less complicated than a conventional scale of ten would be if it were modified to have the same resolving time by use of limiting diodes on grids and plates.

The circuit is described in detail in A.E.R.E. Report EL/R 728 written by Howells and entitled "A Fast Scale of Ten (Scaler - Type 1070A)". It can be obtained from the Sales Division, His Majesty's Stationery Office, York House, Kingsway, London, W.C. 2, at a price of five shillings (approx. $0.70), plus postage. In ordering, Code Number 76-674-0-1 should be quoted.

SHOCK WAVES IN WATER

Professor W. Lochte-Holtgreven (University of Kiel) recently presented the results of a detailed investigation concerning the electrical explosion of wires in water. The experimental arrangement consisted of a 0.5 microfarad condenser charged

to 30 kV and short-circuited through copper wires varying in length from 5 to 30 cm and in diameter from 0.05 to 0.2 mm. The resulting phenomena were observed by means of oscillographic records of voltage and current, rotating mirror camera pictures of the luminescence, and schlieren photographs of the shock waves radiated into the surrounding water.

The following time sequence was observed for the entire process, permitting one to distinguish four phases:

Phase 1: The wire is heated rapidly and evaporated, as yet without noticeable volume changes. Fusion and evaporation take place at considerable overheating, boiling being delayed and the resulting heat of evaporation being a multiple of the one customarily observed. Evaporation is completed in about 10^{-5} seconds.

Phase 2: The metal vapor at high compression ceases to be conducting, showing that the vapor atoms are neutral and not ionized. The consequent sudden interruption of the current leads to high induction voltages reaching values in his apparatus five times larger than the original condenser potential.

Phase 3: The subsequent expansion of the compressed metal vapor is accompanied by the radiation of two strong shock waves into the surrounding water, leading ultimately to an overexpansion of the metal vapor.

Phase 4: The final phase consists of an oscillating arc discharge through the attenuated metal vapor in which the remainder and by far largest part of the energy stored in the condenser is dissipated. This oscillating arc discharge begins about 10^{-4} sec after initiation.

No data concerning time separation and relative strength of the two shocks were given. The set-up was tested in detail with the hope of perfecting it for use in laboratory experimentation on shocks in water, furnishing data of similarly fundamental character as those obtained from shock tubes for air. The fact that two are generated shocks was claimed not to interfere with such observations.

Of particular interest is the ease with which shock waves of various shapes can be obtained simply by appropriately bending the wire to be exploded. On the debit side of the ledger is the fact that the waves generated are cylindrically symmetric rather than plane.

NEGATIVE HYDROGEN IONS

At a conference on molecular spectroscopy held last summer in Basle (Switzerland), Lochte-Holtgreven reported that he had succeeded in observing in the laboratory the radiation resulting from the capture of electrons by neutral hydrogen atoms which is believed to be responsible for practically all the visible light coming from the sun (see ESN, 5, 14, 172 (1951)). Recently he reported detailed calculations leading to the construction of curves of constant relative abundance of H^- to H in a pressure-temperature plane. These computations show that H^- radiation should be observed, with somewhat greater ease than in previous experiments, in the luminosity accompanying the propagation of very strong shock waves in hydrogen. He suggested therefore that shock tube experiments be made with hydrogen and that the resulting luminescence be investigated spectrographically. To reach shock waves of sufficient strength it would presumably be necessary to employ some kind of focusing arrangement.

Professor Lochte-Holtgreven's papers were read in the course of a recent meeting on combustion, detonation, and shock waves held principally to acquaint wider circles with the basic work of the Laboratoire de Recherches Techniques de Saint-Louis of the Direction des Etudes et Fabrications d'Armement.

Further details about the meeting will be found in ONRL-130-51 available from the Technical Information Office, Code 250, Office of Naval Research, Washington 25, D.C.

SOLUTIONS AND INTERMOLECULAR FORCES

The two day Discussion on Solutions and Intermolecular Forces held recently at the University of Brussels was devoted mainly to the presentation of work in progress at that University. The close coordination of the experimental program with the theoretical researches of Professor Prigogine and his collaborators is noteworthy.

The main topics discussed were liquid mixtures, gas mixtures, and surface tension problems, and the results presented in this last session are of particular interest. Some of the papers are briefly discussed below. Further details can be found in Technical Report ONRL-6-52 available from the Technical Information Office, Code 250, Office of Naval Research, Washington 25, D.C.

Liquid Mixtures

The cellular model for the liquid state recently developed by Mathot and Prigogine (J. Chem. Phys. in press) was applied to binary mixtures. In this model a square well potential function is used and spherical molecules with an isotropic field of force are assumed. For appropriate liquids this model can predict the physical properties about as well as the Lennard-Jones model.

Mathot presented results for binary mixtures of tetramethylmethane with carbon tetrachloride, cyclohexane, and benzene. While the agreement between the experimental and calculated values of excess free energy and excess volume is not very good, the positive free energy and negative volume deviations are qualitatively correctly predicted. For example, it was found to predict correctly the variation in the excess volume of mixing in the series $CCl_4 + C(CH_3)_4$, $CCl_4 + ClC(CH_3)_3$ and $CCl_4 + Cl_2C(CH_3)_2$, and the change in sign of the excess volume when mixing CCl_4 with Cl_3CCH_3.

Surface Tension of Liquid Argon

Mme. Saraga has found that the observed and calculated surface entropies, S^s, and surface energies ε^s, can be brought into reasonable agreement for liquid argon using the cellular model and assuming a surface structure containing about 20 - 30% unoccupied cells. The experimental and calculated values for liquid argon at 85°K are summarized in the Table where

$$S^s = -\left(\frac{\partial \sigma}{\partial T}\right)_p \quad \text{and} \quad \varepsilon^s = \sigma - T\left(\frac{\partial \sigma}{\partial T}\right)_p .$$

The last line lists values calculated on a simple cellular model without vacancies.

	σ	S^s	ε^s
Experimental	13.2	0.26	35.3
Calculated (with holes)	10.4	0.32	37.3
Calculated (filled lattice)	12	0.16	25.8

The large changes produced in the calculated quantities by means of such simple considerations are interesting.

Surface Tension of Binary Mixtures

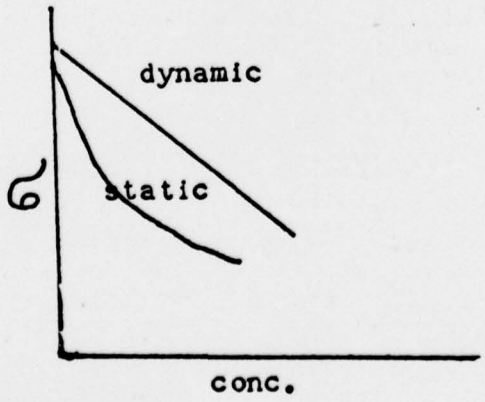
J. Maréchal has investigated the surface tension of binary mixtures composed of molecules of different sizes. The calculations indicate that the surface tension of mixtures of different sized but otherwise similar molecules, which can be approximated as monomer plus dimer, monomer plus trimer, etc. is a linear function of their volume fractions (cf. Prigogine, J. Chim. Phys., 47, 33, 807 (1950)). This interesting result was found to be closely obeyed in experiments performed on mixtures of benzene with diphenyl, tolane (diphenylacetylene) and dibenzyl.

Dynamic Surface Tension of Solutions

Dr. Defay and Mme. Roba found that the dynamic surface tension of regular solutions shows an almost linear concentration dependence, in agreement with theoretical predictions (Prigogine and Defay, J. Chim. Phys., 46, 367, (1949)) and in marked contrast to the static surface tensions.

The carefully designed apparatus of Piccardi (Florence) is used with some minor improvements (cf. Ann. di Chimica, 41, 1 (1951)). In this apparatus the surface tension of a solution whose surface is continually renewed by a flow method is determined by means of the well known ring technique. This is modified so as to avoid the actual rupturing of the surface during the measurement. The results are found to be entirely reproducible.

The results obtained on aqueous sebacic acid solutions (concentrations 0.1 - 0.4 g./l) are schematically summarized in the Figure. The contrast between the dynamic and static surface tenstions is striking.



Gas Mixtures

McGlashan briefly reviewed his work with Professor Guggenheim (Reading, England) which has led to a new method for the calculation of the second virial coefficient of binary gas mixtures from the properties of the pure gases (cf. ESN, 4,322 (1950)).

McGlashan also discussed his recent work on the usefulness of the second virial coefficient, B, as a guide to the intermolecular potential. He stated that in the neighborhood of the critical temperature B is not sensitive to the intermolecular potential; at temperatures far below the critical point neither the potential function of Lennard-Jones, nor that of Keesom, nor the square well model, is satisfactory.

The third virial coefficient C would be useful in the study of intermolecular forces in the gas phase; below the temperature region $T/T_{cr.} = 0.8 - 0.9$ the distinction between Lennard-Jones and the square well potential should be quite marked.

CHEMILUMINESCENT DECOMPOSITION OF ALKYL NITRITES

Results obtained by P. Grey (Cambridge) indicate that previously suggested mechnisms postulating the formation of alkoxy radicals in the decomposition of alkyl nitrites are essentially correct. The most convincing evidence is the essentially identical behavior of mixtures of nitrites with NO_2, and of nitrates with NO.

The experimental work dealt mostly with nitrites, as the relatively unreactive products make these more convenient to study than the corresponding nitrates. Methyl nitrite and ethyl nitrite, between 290 - 400°C decompose with a blue chemiluminescence. This luminescence has a short induction period at the lowest temperatures for methyl nitrite but not for ethyl nitrite. The decomposition can be expressed by the reaction:

$$CH_3ONO \longrightarrow 1/2\ CH_2O + 1/2\ CH_3OH + NO$$

In addition a small amount of carbon monoxide and probably other products are also formed. The corresponding nitrates show a more complex behavior; they can decompose with chemiluminescence or explode, depending on the experimental conditions.

The primary fission of both the nitrites and the nitrates probably involves the production of the alkoxy radical. It was shown in this work that the pressure limits of chemiluminescent decomposition and of explosive reaction are very

similar in the two mixtures:

$$CH_3ONO + NO_2$$

$$CH_3ONO_2 + NO$$

According to the primary fission suggested above this is due to the fact that both of these mixtures contain the same molecular species after the primary step. These are:

$$CH_3O + NO + NO_2$$

From the heats of formation of the nitrites and nitrates, and the energies of activation of their decomposition reactions the following values were derived for the heats of formation of the alkoxy radicals:

$$\Delta H_f(CH_3O) \quad 0 \pm 2 \text{ Kcal/mole}$$

$$\Delta H_f(C_2H_5O) \quad -9 \pm 2 \text{ Kcal/mole.}$$

The luminescent decomposition of alkyl peroxides, observed by Edgerton, even under extreme dilution, confirms these views. It is hoped to obtain absorption spectra of the alkoxy radicals during the decomposition of alkyl nitrites.

THE RELATION OF SALICYLATES AND CORTISONE

Professor J. Roskam, Department of Internal Medicine, University of Liege, impressed with the similarity of the clinical effect of salicylates, ACTH, and cortisone, has investigated the urinary excretion of adrenal hormones in cases of rheumatoid arthritis and rheumatic fever during treatment with salicylates. He found no consistent change in the excretion of 17-ketosteroids, but a definite increase in reducing steroids was observed. In another experiment twelve normal volunteers were given 4 to 6 grams of sodium salicylate by mouth which led to an increase in urinary uric acid-creatinine ratio within two hours. In agreement with Meade and Smith (1951) no change in the number of circulating eosinophils was found during the first four hours. However, a significant decrease in their number occurred from the fourth to sixth hours.

Dr. H. van Cauwenberge of the same department found that the injection of salicylates into intact rats caused a decrease in adrenal ascorbic acid and cholesterol, and a fall in the number of blood eosinophils, thus simulating the effect

of ACTH. This effect was thought not to be due to the action of the sodium ion. Injection of sodium salicylate into hypophysectomized rats had no effect on adrenal content of ascorbic acid, cholesterol, or on the number of circulating eosinophils. The blood plasma-salicylate concentration was 51 milligrams per cent at the second hour following the injection which is about the therapeutic level. Therefore it is concluded that salicylates produce their effect on the adrenal and the circulating blood by stimulating the release of ACTH by the pituitary and of cortical steroids by the adrenal.

Professor Roskam has studied two cases of keratoconjunctivitis sicca (Gougerot-Sjogrens syndrome). Neither case responded to the injection of epinephrine or of sodium salicylate by a decrease in the number of blood eosinophils. A positive reaction, however, was obtained in response to a test injection of ACTH. These data suggest that Sjogren's syndrome involves an impairment of the hypothalamic-pituitary function.

QUANTITATIVE DETERMINATION OF THE COMPONENTS OF ORGANS

There has always been a need for a method by which the physiological state of the thyroid gland could be determined. Such a technique would be useful both in experimental and pathological studies. In the past, these methods have involved the weight of the gland, which does not distinguish between colloid, epithelial and connective tissue, or of measurements of the epithelial height which emphasize only that component of the gland.

Professor U.U. Uoitila of the University of Helsinki has devised a rather simple technique for evaluating the structural state of the thyroid which can, with little modification, be applied to other tissues. His method consists of projecting the histological section of the tissue at considerable magnification onto a large sheet of paper on which a series of straight lines is drawn. These lines will pass at random through various follicles, masses of colloid, epithelium, or stromal tissue. The total length of the segments of the lines which pass through different structural components is marked and measured. The proportion of the total length of the lines which intersect a given component is proportional to the area of that tissue in a section or the quantity of that component in the organ. The reliability of this method has been tested in Professor Uoitila's laboratory and the number of sections and the spacing of the lines needed for an analysis have been determined. The variability

of the measurements also is a factor in determining the number of measurements required. In addition to studies on the thyroid gland this method has been applied to investigations of the pathology of other organs.

EFFECT OF THERMAL STRESS ON THE HUMAN ADRENAL GLAND

Abundant experimental evidence exists that heat and cold stimulate the adrenal-pituitary system in animals. A. Pekkarinen and O. Kinnunen, Department of Medical Chemistry, University of Helsinki, have searched for evidence that the stress of an ordinary Finnish bath is adequate to evoke overaction of the adrenal gland in humans. A Finnish steam bath produces marked sweating and slight loss of body weight in 15 to 30 minutes. This appears to be evidence of a slight "stress" according to the concept of Selye. The quantity of 17-ketosteroids excreted and the number of circulating eosinophils was determined in 13 experiments on 6 healthy non-pregnant women 20 - 30 years of age. Urine was collected at 30 hours prior to the bath and for three days thereafter at intervals of 4 hours. The eosinophil counts were made daily at 2 p.m. two days prior to the bath, 4 hours after, and for the succeeding few days.

The 17-ketosteroids were excreted at the rate of 0.42 milligrams per hour during the control period. This rate rose to 0.65 milligrams per hour 4 hours after the bath and decreased slowly to 0.55 milligrams per hour in 24 hours, returning to normal in 48 hours. The number of circulating eosinophils decreased 18 per cent 4 hours after bathing. There was, however, a slight leucocytosis induced by the bath and when this is taken into consideration the eosinophil count decreased 27 per cent relative to the other leucocytes. A normal number of eosinophils was found 24 hours after the bath.

These data lead the authors to conclude that the stress occasioned by a Finnish steam bath is sufficient to stimulate mildly the adrenal-situitary system in humans. It must be noted, however, that the subjects used in these experiments were accustomed, or perhaps adapted, to the stress of these baths.

NEW INSTITUTE FOR RESEARCH IN ELECTRONICS

The Research Laboratory of Electronics, a new institute for research in all phases of electronics, was inaugurated in Gothenburg, Sweden, in June, 1951. This

institute forms a part of the Chalmers Institute of Technology and is under the direction of Prof. O.E.H. Rydbeck.

Research at the institute will be concentrated on the study of linear electron accelerators, the ionosphere, solar noise, radar reflections from meteor trails, radio-astronomy electronic analog computers (particularly for the solution of integral equations), and microwave generators including traveling wave tubes and double stream electron wave tubes. A large number of publications on these subjects have appeared in the Transactions of the Chalmers Institute of Technology.

The newly constructed laboratories have excellent facilities for the construction of all types of electronic tubes and instruments. The building and individual laboratories are completely shielded electrically, including doors and windows.

A field station for ionosphere research and radio-astronomy is being set up at Råö, near Gothenburg, and will be equipped with four German war surplus (Würzberg) radar mirrors suitable for interferometer measurements of cosmic noise.

MONOGRAPH ON SUPERCONDUCTIVITY

A second and completely rewritten edition of the monograph on Superconductivity by D. Shoenberg will appear in the series of Cambridge Monographs in Physics. The manuscript is in the hands of the publishers and the book should appear sometime in 1952. Cambridge Univ Press

TECHNICAL REPORTS OF ONRL

The following reports have been forwarded to ONR, Washington, since the last issue of ESN. Copies may be obtained from the Technical Information Office, Code 250. Office of Naval Research, Washington 25, D.C.

ONRL-113-51 "Acoustical Research in European Laboratories" by C.M. Harris

ONRL-2-52 "The Fifth Annual Meeting of the Experimental Psychology Group" by H.A. Imus

ONRL-4-52 "Nuclear Research at the Nobel Institute for Physics by J.K. Beling

ONRL-7-52 "Research in Visual Psysiology" by H.A. Imus

PERSONAL NEWS ITEMS

The Gold Medal of the Royal Astronomical Society for 1951 was awarded to Dr. John Jackson, C.B.E., F.R.S., for his work on stellar parallaxes and proper motions. Dr. Jackson retired in July 1951 from the post of His Majesty's Astronomer at the Royal Observatory, Cape of Good Hope, South Africa.

Professor C.W. Allen has taken up the newly created Perren Chair of Astronomy in the University of London and will also be Director of the Mill Hill Observatory near London. He was formerly at the Commonwealth Observatory, where his research was mainly concerned with spectra of galactic nebulae.

Professor Z. Kopal, formerly of the Harvard Observatory, has recently been appointed Professor of Astronomy at the University of Manchester. His appointment strengthens the astrophysical trend in the University which is already supporting the large radio-astronomy program at Jodrell Bank under Professor A.C.B. Lovell, investigations on geomagnetism, and various lines of theoretical astrophysics. An experimental astronomy program will begin shortly at Manchester when the installation of an 18 inch reflector at Jodrell Bank is completed. It will be used with a photoelectric spectrometer.

Dr. C.F. Tipper, Senior Lecturer in Mechanical Engineering at Cambridge University will work for several months, starting March 1952, in the Mechanics Division of the Naval Research Laboratory. Dr. Tipper has been active in the field of brittle fracture of steel.

Prof. G.C. McVittie, Professor of Astronomy at Queen Mary College, University of London, has been appointed Professor of Astronomy at the University of Illinois. He will probably leave for the U.S. this summer.

FORTHCOMING EVENTS

The following list of forthcoming events in Europe for 1952 is compiled according to information available as of 1 February 1952:

Date	Meeting	Place
6-8 Mar.	First General Assembly, International Mathematical Union	Rome
7 Mar.	Meeting on "The Mechanical Properties and Mechanical Testing of Polymers"	London

Date	Meeting	Place
24-26 Mar.	Conference on Cationic Polymerization	Keele, Staffordshire
25-27 Mar.	Institute of Metals Annual General Meeting. Symposium on "Equipment for the Thermal Treatment of Non-Ferrous Metals and Alloys"	London
24-27 Mar.	Ergonomics Society Symposium on Fatigue	Cranfield, Bucks, Eng.
25-27 Mar.	CIBA Foundation Colloquium on Endocrinology "Bio-assay of Hypophyseal and Steroid Hormones"	London
27-31 Mar.	British Psychological Society	Oxford
3-8 April	Physical Society Exhibition	London
8-10 April	Faraday Society, General Discussion "Radiation Chemistry"	Leeds
15-18 April	Third International Congress of the International Academy of Legal and Social Medicine	Berne
15-17 April	Society for General Microbiology, Symposium on Nature of Virus Multiplication	Oxford or London
15-18 April	Joint Anniversary Meetings of The Chemical Society and The Royal Institute of Chemistry	Dublin
20-25 April	Third European Congress of the National Societies of Gastro-enterology	Bologna
22-24 April	Society of Chemical Industry Conference on Adhesion	Leeds
29 April	Sixth International Hydrographic Conference	Monte Carlo
18-25 May	Exhibition and Conference on Chemical Apparatus	Frankfurt-am-Main
22-25 May	German Bunsen Society, Annual Meeting, Main Subjects Photochemistry and Photography	Lindau a. Bodensee

Date	Meeting	Place
29 May - 9 June	Fourteenth International Convention on the Generation and Transmission of Electrical Energy at Very High Voltages	Paris
3-7 June	Joint Meeting of the French Society of Chemical Physics and the Thermodynamic Section of the International Union of Physics	Paris
4-10 June	Fourth International Mechanical Engineering Congress - Progress in the Field of Raw Materials Used in the Mechanical Engineering Industry	Stockholm
9-11 June	Symposium on "Macromolecules and Radiation"	Strasbourg
9-13 June	International Symposium on the Reactivity of Solids	Gothenburg
10-13 June	Conference and Exhibition on "Instruments and Measurements"	Stockholm
18-20 June	Fifteenth Congress of the Organization for the Advancement of Spectrographic Methods	Paris
30 June - 2 July	The CIBA Foundation, Conference on Endocrine Inter-relationships in Carbohydrate Metabolism	London
7-10 July	Second International Congress of Physiopathology of Animal Reproduction and Artificial Insemination	Copenhagen
7-10 July	The CIBA Foundation Conference on "Synthesis and Metabolism of Adrenal Cortical Steroids"	London
14-19 July	International Congress of Physical Medicine	London
8-11 July	British Congress of Obstetrics and Gynaecology	Leeds
19-26 July	International Dental Congress	London
19-25 July	Seventh International Congress of Radiobiology	Copenhagen

Date	Meeting	Place
21-26 July	International Congress of Dermatology and Syphilology	London
21-27 July	Second International Congress of Biochemistry	Paris
25 July - 1 Aug.	International Union of Biological Sciences - Conference on Bacteriophage	Paris
4 Aug.	International Congress on Analytical Chemistry	Oxford
6-8 Aug.	General Discussion on the Physical Chemistry of the Proteins	Cambridge
3-10 Sept.	British Association for Advancement of Science, Annual Meeting	Belfast
8-12 Sept.	ICSU Joint Commission on Radiobiology	Stockholm
15-20 Sept.	Cement and Concrete Association Symposium on the Chemistry of Cement	London
23-24 Sept.	Council of the Institution of Mining and Metallurgy	London
25-27 Sept.	Conference on The Biology and Productivity of Hot and Cold Deserts	London
29 Sept. - 4 Oct.	Fourth International Heat Congress (Fuels, Steam, High Temperatures, Motors, Laboratory Devices)	Paris

Prepared by the Scientific Staff
Submitted by Dr. S.R. Aspinall
Deputy Scientific Director

Philip D. Lohmann

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Assistant Naval Attache for Research

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