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Death-rates and Causes of Death in Alcohol Addicts.

On the whole no increased mortality could be established in the material of alcoholics; the observed number of deaths does not come up to the expected number as calculated, if correction for civil status is used, but the material showed a tendency towards higher mortality figures for lower middle age, and lower values for the highest age-groups, than is the case in the material used for comparison. (Author's abstr.)

The Genetic Prognosis of Epilepsy.

Determination of the empiric genetic prognosis of epilepsy gave the following results:

Epilepsy was found to occur in 4 per cent. of the children and siblings and in 3 per cent. of the parents of cryptogenic epileptics. Oligophrenia occurred in 3 per cent. of the children and in about 1 per cent. of the siblings. The criminality among the children and siblings was one and a half times as high as that among the average population.

In symptomatic epilepsy about 1 per cent. of the siblings were affected with epilepsy and 1 per cent. with oligophrenia.

The relative fertility among patients with cryptogenic epilepsy was about 60 per cent. of the average, and was lower among males than females.

* A number of abstracts in this section are reproduced from *Chemical Abstracts*. To the Editors of this Journal we extend our grateful thanks.

https://doi.org/10.1192/bjp.98.412.492 Published online by Cambridge University Press

The author concludes that owing to the comparatively favourable genetic prognosis, cryptogenic epilepsy does not afford a eugenic indication for induced abortion or sterilization of the patient. (Author's abstr.)

Turn-over of the Ether-soluble Plasma Phosphatides in Schizophrenia.

This study has shown an increase of the specific activity of the ether-soluble lipid P in schizophrenia, which would seem to indicate a disturbed intermediate metabolism of the ether-soluble plasma phosphatides in schizophrenia. (Author's abstr.)

Sex Steroid Therapy in Psychiatric Disorders. The Therapeutic Effect of Testosterone and Estradiol on Hospitalized Psychotics; Clinical Findings.

1. The administration of high-level, combined testosterone-estradiol therapy was followed by improvement in 23 (58 per cent.) and by convalescent status (++++ improvement) in 12 (30 per cent.) of a series of 40 hospitalized psychotics—in the main, schizophrenic, manic-depressive and involutional psychoses.

2. Improvement was attained by 74 per cent. (14 of 19) and convalescent status by 53 per cent. (10 of 19) of patients hospitalized for 6 months or less. No patient with a cumulative hospital stay in excess of 615 days for all admissions attained convalescent status.

3. Six of 7 patients (86 per cent.) of those between 16 and 25 years of age achieved convalescent status on therapy. The next responsive age category was the over 50 age-group with 4 of 17 patients (24 per cent.) attaining maximum improvement. In this series only 2 of 16 (13 per cent.) patients between the ages of 26 and 50 attained convalescent status.

4. According to pavilion of residence, the convalescent status rate was 47 per cent (9 of 19) for *reception* and 14 per cent. (3 of 21) for *continued treatment* pavilion. The latter rate is comparable to that previously achieved in the *continued treatment-assaultive* pavilion with histamine biochemotherapy and in a control E.C.T. series.

5. Combined sex steroid therapy was effective in 21 per cent. (4 of 19) of patients who had previously failed to attain convalescent status with E.C.T.

6. In 7 of 8 female patients attaining convalescent status, side-effects of the sex steroid therapy were noted.

7. Utilizing the Exton-Rose two-dose procedure, a diabetic-like glucose tolerance curve was found in 7 of 10 female (70 per cent.) and 4 of 5 male (80 per cent.) patients.

8. Combined high sex steroid administration was associated with a marked increase in eosinophile counts.

9. A preliminary correlation is noted between attainment of convalescent status and of higher eosinophile levels during or after testosterone-estradiol therapy as indicated in the DEC ratio of peak post-treatment to peak pre-treatment level.

10. The lymphocyte-neutrophil ratio changes revealed that a shift towards higher ratios (indicative of relatively reduced adrenocortical activity) was found to occur following combined sex steroid therapy, with the greatest percentage change—in the authors' index of the L/N ratio percentage change—exhibited by patients attaining ++++ improvement and convalescent status. (Authors' abstr.)

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Experimental Schizophrenia-like Symptoms.

1. The effects of minute amounts of d-lysergic acid diethylamide tartrate (L.S.D.) on normal subjects, with an age range of 19–48 years, and some psychotic patients of the schizophrenic, depressive and paranoic type are reported.

2. Psychotic phenomena and alterations of the autonomic nervous system were observed. The psychotic phenomena were predominantly schizophrenia-like symptoms that were manifested in disturbances of thought and speech; changes in affect and mood; perception; production of hallucinations and delusions; depersonalization and changes in behaviour. The basic intelligence was not reduced.

3. Electroencephalographic examinations at the height of the L.S.D. reaction revealed only slight changes, principally increased alpha rhythm, except in one case where there occurred a slowing of about 2 cycles per second.

4. Rorschach tests showed abnormalities principally of the schizophrenic or paranoic type. Concrete-abstract thinking tests also, on the whole, showed responses similar to those obtained in schizophrenic patients.

5. No scientific theory for the origination of the natural psychotic phenomena or psychoses is being advanced, but the belief is expressed that experimental psychiatry progresses in the right direction. (Authors' abstr.)

Effects of Mescaline and Lysergic Acid (d-L.S.D.-25).

The effects of mescaline and lysergic acid were studied in schizophrenic patients. It was found that physiological changes were produced in these patients and that their mental symptomatology was markedly aggravated. The observations made with the above-mentioned drugs on normal individuals were compared with those seen in schizophrenic patients. Mescaline and lysergic acid are drugs that disorganize the psychic integration of a person. This disorganization is much more apparent in schizophrenics than in normals. The diagnostic, prognostic and therapeutic use of these drugs is also discussed. (Authors' abstr.)

Effect of Drugs; Theoretical Considerations from a Psychological Viewpoint.

This paper discusses theoretical points of drug-induced abnormal mental states. The reaction of three different drugs, sodium amytal, pervitin and mescaline, on the same individual is described and the differences noted. The relationship of personality type to drug reaction is evaluated and the normalizing and disorganizing effect of certain drugs on mental patients is discussed. (Authors' abstr.)

Mechanisms of Action of Drugs that Modify Personality Function.

An attempt has been made to examine critically what is known concerning the mechanisms through which drugs modify personality function, in terms of subjective experience, overt performance, and neurophysiology. A study of available data and the techniques

https://doi.org/10.1192/bjp.98.412.492 Published online by Cambridge University Press

by which they have been acquired leads to several important general conclusions: (1) Not only is there a considerable degree of incommensurability between " subjective " and " objective " data, but also between data in either category that are acquired with different techniques. (2) The " organism " can never be separated from its " environment " and the two can be described only in terms of mutual interaction. (3) A " stimulus " cannot be defined in terms of its own properties alone, since its capacity to evoke responses is determined in part by antecedent events, and by particular experimental arrangements.

These conclusions can be reconciled with a monistic theory of " mind " and " body." However, it may be questioned whether concepts such as " psyche " and " soma," or their equivalents and derivatives, have not outlived their usefulness, and impede progress in psychiatry more than they foster it. An approach more consistent with the facts, which appears to be more useful in research, is one that may be called " instrumental relativity." Its salient features may be stated as follows: In psychiatry, we are concerned with the prediction and alteration of changes in the organism-environment complex at the symbolic level of functional integration. Such changes may be described in terms of various parameters, such as those of language, performance, physics and chemistry. Each group of parameters constitutes a " frame of reference " for the measurements that are made. The data so acquired may be " explained " in terms of operational constructs (" properties," " functions," " mechanisms," " theories," " laws ") that are peculiar to each frame of reference. However, as the data discussed in this paper indicate, any " mechanism " (or other operational construct) in a given frame of reference can be dissociated from all other " mechanisms " in any other frame of reference, and furthermore, the rates of change of operational constructs may vary considerably in different frames of reference. It follows therefore that perfect correlations can never be made between the data acquired with one technique and those with another, although they may be related. This is true even when, because of semantic confusion, we use the same word to describe different operational constructs—e.g., stimulation, depression, inhibition, facilitation, stress, homeostasis, energy, level of integration, etc. Also, cause-and-effect relationships between successive changes in the organism-environment complex can be inferred with confidence only with respect to such changes as are described in a given frame of reference. The use of terms such as psychosomatic in a cause-effect sense is semantically unjustified and is fraught with serious sources of error.

Hence there is little justification for the despair of the neurophysiologist who felt that, as far as " mind " was concerned, the head might just as well be stuffed with cotton-wool. Although complete equivalence of what are currently termed " mental " and " material " mechanisms can never be attained, the goal of psychiatric research must be the elucidation of mechanisms, or combinations of mechanisms, in multiple frames of reference at the symbolic level of functional integration, between which correlations can be demonstrated in increasingly high degrees of probability. We must be prepared to adopt new techniques for acquiring data, and to revise our operational constructs, including dynamic formulations and classifications of psychiatric disorders, if by so doing prediction and treatment are facilitated. Such flexibility in research at non-symbolic levels has been the foundation for progress in other medical fields, and promises also to have great value for psychiatry.

(Author's abstr.)

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Dynamic Concepts of Migraine; A Character Study of One Hundred Patients.

The character patterns of 65 women and 35 men with migraine were studied according to the principles of the psychoanalytic concepts of character formation. The persons of the group consistently possessed traits that indicated a marked narcissism, as well as a strongly developed aggressive instinct. Lack of demonstration of affection or strictness of training by the parents frustrated these needs, resulting in ambivalences and the development of an ultramoral and rigid superego. In all the patients the migraine attack began when hostilities accumulated beyond the individual's capacity for tolerance of frustration. Migraine is considered a vegetative neurosis, the physiologic vasomotor manifestation of suppressed or repressed hostility initially directed specifically toward the family and later to frustrations in general. (Author's abstr.)

Fatalities in Insulin Therapy of the Psychoses; Analysis of Eight Cases.

Eight fatal cases of insulin therapy in psychiatric practice are presented. Factors which may contribute to the fatal outcome are discussed.

The following considerations may be of value in anticipating adverse reactions: (1) a history of such atypical responsitivity to medication as respiratory collapse or syncope; (2) factors adversely affecting the physiological systems regulating insulin-glucose relationships, such as malnutrition, avitaminosis, use of certain drugs, autonomic imbalance, and excessive fear of treatment; (3) undue resistiveness to insulin as manifested by high dose requirements or the occurrence of relatively few comas. This may be accompanied by overactivity of the sympathetic nervous system, excessive fear of treatment, and a tendency to sudden cardiorespiratory complications; (4) undue sensitivity to insulin as manifested by (*a*) low or rapidly decreasing dose requirements; (*b*) unusually deep coma; (*c*) difficulty in termination of coma; (*d*) a tendency to " after-shock," and (*e*) probably, the presence of low vital signs. (Authors' abstr.)

Changes in Phosphatase Activity of Serum and Urine after Shock Therapy.

Alkaline and acid phosphatase activities of serum and acid phosphatase activity of urine all are in the normal range in patients with schizophrenic, manic-depressive, or involutional psychoses, or with severe neuroses; serum acid phosphatase activity appears to be low in the normal range.

Single electroshock treatments do not affect serum alkaline or acid phosphatase activities. A course of electroshock or ambulatory insulin treatment commonly results in lowering of phosphatase activities. (Authors' abstr.)

Blood Glutathione Level in Mental Disease Before and After Treatment.

The blood glutathione level is in or below the lower normal range in untreated patients with manic-depressive, involutional or schizophrenic psychoses; some patients with severe neurosis show the same change.

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After courses of electroshock or ambulatory insulin treatments that result in improvement, the blood glutathione level rises to, or toward, the normal if initially low; little or no change occurs if the initial concentration of blood glutathione is not low.
(Authors' abstr.)

Results of Treatment of Schizophrenia in a State Hospital; Changing Trends since Advent of Electroshock Therapy.

The results of treatment in 112 female schizophrenic patients admitted during the year 1 July, 1946, to 30 June, 1947, were compared, after a follow-up period of 13 months to 3 years, with the results in 119 female patients admitted during 1934 and 1935. Of the 112 patients admitted in 1946–1947, 75 received one or more courses of electroconvulsive therapy.

The over-all results were significantly better in the 1946–1947 period, 60 per cent. of the patients being improved or much improved, as compared with 22·5 per cent. of the patients admitted during 1934 and 1935. This difference was due to superior results obtained in those members of the 1946–1947 group who received electroshock therapy; 75 per cent. of these patients were improved or much improved, as compared with 30 per cent. of the untreated patients in the same series.

A study was made of the following variables which were found to influence the outcome significantly: subtype of schizophrenia, age on admission, type of onset and duration of illness prior to hospitalization. Also, cases were matched from the two periods under review in order to determine whether or not a combination of the foregoing factors might be responsible for the differences in the results of treatment.

An analysis of the data suggested that the more successful results observed in the group receiving electro-shock therapy were due in large part to the shock treatment itself, but contributing to its success was a preponderance of favourable prognostic factors which were present in the members of this group.

The observations suggested that in the past 10 or 15 years the community has become more aware of the importance of early hospitalization and treatment for schizophrenic patients.
(Authors' abstr.)

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Intraventricular Medication in Catatonic Stupor (Preliminary Communication).

Some of the available evidence for the nature of the disorder underlying catatonic stupor is discussed and arguments are presented for the clinical trials carried out.

The clinical effects of injections of each of four drugs into the lateral cerebral ventricles in cases of schizophrenia are described. The drugs used were: (1) cholinesterase, (2) procaine, (3) pentamethonium iodide, and (4) flaxedil.

Three cases were treated. In the first case all four drugs were used; in the second case cholinesterase, pentamethonium iodide and flaxedil. The effect aimed at was to relieve the condition of catatonic stupor. This effect was achieved to a varying extent in all three cases, and was most marked with cholinesterase in Case 1, and pentamethonium iodide in the three cases. (Author's abstr.)

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Theta and Beta Rhythm in the Electroencephalograms of Normal Adults.

1. Low voltage theta activity was detected in 64 per cent. of a group of 161 young normal adults and in 24 per cent. of 50 mentally normal seniles, the difference between the two groups being significant at the 1 per cent. level. This decrease of theta incidence with increasing age was discussed in relation to maturation processes. Evidence was further presented to indicate that theta activity in the senile group represented a different phenomenon from that encountered in the younger group.

2. Variations in theta activity during either visual and/or mental tasks or during slight changes in temper were observed in 26 per cent. of the subjects showing theta rhythm in the younger group. Two classes of activity were differentiated, those harmonically related to alpha frequencies and those not. Observations on theta variation appeared to accord with Walter's findings in respect of theta rhythm and emotional level. Incidence of theta rhythm was significantly greater among females than males.

3. Low voltage beta activity was observed in 53 per cent. of the younger group and 62 per cent. of the senile group, the difference not being significant. Amplitudes were significantly greater in the older group however.

4. Fifty-one per cent. of those with beta activity in the younger group showed variation of beta rhythm with either visual and/or mental activation. Evidence was presented to suggest that beta activity may in part at least represent accelerated rhythms resultant on scansion of cortical projection and association areas. A highly significant relationship between beta incidence and alpha type was found to support this hypothesis, although the study needs repetition with the aid of automatic frequency analysis before certainty can be established.

5. A significantly greater incidence of beta activity was found in the females as compared with the males of the younger group, whilst in the senile group a significantly greater incidence was found in a group of Europeans as compared with a group of Africans. These findings were briefly discussed in relation to cultural influences on the E.E.G.

(Author's abstr.)

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Nonconvulsive Electrostimulation and the Pituitary-Adrenocortical System.

(1) Eosinophil counts were done on 25 non-fasting patients in a state mental hospital. The initial counts ranged from 34 to 640, 81 per cent. being in the range of 60 to 250.
(2) Electrostimulation with and without pentothal anesthesia produced a marked eosinopenia, generally three hours after treatment.
(3) After pentothal anesthesia alone, a slight transient drop of eosinophils was observed.
(4) Controls showed no consistent drop.
(5) Nonspecific stress was eliminated as cause of the eosinopenia.
(6) It is assumed that the electric current stimulates the pituitary-adrenocortical system by direct action on the hypothalamic area. (Authors' abstr.)

Homeostatic Studies in Patients with So-called Psychosomatic Disease (Peptic Ulcer).

Forty male patients with a so-called psychosomatic disorder, peptic ulcer, were investigated from the standpoint of the efficiency of their autonomic regulatory apparatus by means of the cold pressor test. The responses of the patients to this test differed signifi-

https://doi.org/10.1192/bjp.98.412.492 Published online by Cambridge University Press

cantly from those found in normal patients and two distinct groups of hyper-reactors and hyporeactors could be distinguished. It is suggested that the symptomatology in the so-called psychosomatic disorders may result from a disturbed autonomic regulatory mechanism as well as from the impact of abnormal personality and emotional constellations.

For determining the presence of actual fluctuations during the period of investigation beyond those due to chance, the formula for analysis of variance as described by Snedecor was used. The difference between the means of two single months or seasons was compared by the " t " test. (Authors' abstr.)

Changes in Nervous Tissues and Study of Living Organisms in Mental Disease.

Abnormal changes in cytochemical processes in nerve-cells occur as a constant feature of dementia praecox. Seventy biopsies are reported. The metabolic disturbances caused by inclusion bodies are exhibited prominently by the nucleus and cytoplasm.

(1) An early stage involves the presence of inclusion bodies in the cytoplasm with increase of desoxyribonucleic acids in the nucleus.

(2) This continues into a stage in which the nucleus becomes inflated with a great quantity of nuclear sap. The cytoplasm is stretched, and impoverished in Nissl substance.

(3) Naked nuclei occur in profusion when the cytoplasm breaks away from the nucleus. These are the outstanding changes in dementia praecox.

(4) Pycnosis is another change affecting fewer cells, usually those closer to the surface of the cortex. The linin reticulum of the nucleus develops into a dense network (possibly histone) gradually excluding the nuclear sap, until the nucleus becomes homogeneous and shrunken. The cytoplasm shrinks and loses its capacity for repair, but retains its cytochrome and probably respiration.

(5) Collagen-like changes in some cases affect the pycnotic nuclei. This substance oozes out into the cytoplasm as droplets. The glia and vascular tissues also show an increase of collagen.

(6) Neurofibrillar damage is usual. The neurofibrils in the nerve-cells are congealed or destroyed in the region of cytoplasm occupied by inclusion bodies. The axons of radial bundles show distortions of calibre.

(7) Gliosis is another feature of abnormal metabolism. It is shown by growth of sclerosing fibers around astroglia cells in the cortex, and by proliferation of oligoglia nuclei and sclerosing fibres in the white matter.

(8) Proliferation of mesoglia and microglia nuclei around blood-vessels is a common feature. The entire configuration of changes is consistent in most cases.

(9) The presence of a pelomorphic organism is described as a causal factor common to all these changes ; and this has been demonstrated by the use of dark phase microscopy which shows the vital activities of the organism. (Authors' abstr.)

Thought Processes as Related to Brain Metabolism in Certain Abnormal Conditions.

1. Any defect in the biochemical processes of the brain, especially those concerned with energy transformation, may make itself known by alterations in cerebral function, including personality changes which may be neurotic or psychotic in character.

2. Our most secure metabolic evidence is observed in association with a failure in the first level concerned with the mobilization of energy ; namely, the oxidation of glucose, and may be seen in the clinical changes of hypoglycemia, anoxia or avitaminosis.

3. The second level involves a faulty storage of energy in the energy-rich phosphate bonds, so that the energy made available by oxidation cannot be applied to useful purposes but is merely dissipated as heat. Such a defect may be a factor in the production of narcosis.

4. Even if cerebral function is adequately supported, mentation may nevertheless be warped at a still higher level ; for example the synthesis of acetylcholine may proceed normally, at the expense of energy from phosphate bonds, but the physiological effects of that neurohormone may be blocked by atropine and with excessive doses of that drug delirium may ensue.

5. The production of psychotic reactions with ACTH and cortisone invites further study. These hormones disturb enzymatic reactions by altering the electrolyte and water patterns of the body, thus changing the physico-chemical environment in which the various enzymes must operate. It is also possible that cortisone may affect cerebral enzymatic processes directly. In any event the total energy exchange of the brain as measured by cerebral metabolic rate does not seem to be altered by ACTH or cortisone.

6. The structural changes in the brain associated with some psychoses afford a beachhead for further attack.

7. Finally it must be admitted that the so-called " functional " psychoses have hitherto resisted all efforts to disclose convincing organic clues. But with the observation that minute amounts of psychochemical agents may evoke a temporary psychosis, it seems possible to determine whether or not these psychoses are also results of a faulty biochemistry. (Author's abstr.)

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Life Situations, Emotions and Neurocirculatory Asthenia. (*Anxiety Neurosis, Neurasthenia, Effort Syndrome.*)

1. Neurocirculatory asthenia (anxiety neurosis, neurasthenia, effort syndrome) is a chronic disorder which runs in families. It is probably a fairly common disorder.

2. Various names have been used for the disorder.

3. The cause of the disorder is unknown.

4. The symptoms of patients, according to their stories, are brought on by muscular work, other sicknesses, emotion-provoking situations, pregnancy, heat and cold, military service, and no obvious factors. The truth of such correlations has never been verified adequately by anyone.

5. Quantitative and objective abnormalities have been demonstrated, in response to various stimuli and stresses, in patients' pulses, minute respiratory volumes, ventilatory efficiency, blood lactate concentration, work performances, oxygen consumptions, wincing and withdrawal reactions, among others.

6. Stimuli and stresses which produce abnormalities of responses or unusual responses at lower stimulus levels include: pain, cold, muscular effort, carbon dioxide, noise, flash, and "anticipation."

7. These experiments give no crucial or final evidence as to the cause of the disorder or its relationship to more complicated or natural life situations.

8. The twenty-four hour amount of urinary excretion of 17-ketosteroids was the same in patients as it was in comparable control subjects. Since this has been considered by some to be an "index of stress," this finding suggests either that excretion of 17-ketosteroids is not a reliable or complete indicator of "stress," or that the disorder does not call forth the same "stress mechanisms" as do some other illnesses.

https://doi.org/10.1192/bjp.98.412.492 Published online by Cambridge University Press

9. A crucial causal relationship of this disorder to life situations and emotion-provoking situations has neither been proven nor disproven.

10. No techniques have been developed as yet for use in this field which permit conclusive observations concerning the exact relationships, if any, of life situations and emotion-provoking situations to this disorder, or which allow for a definite statement as to whether an illness is or is not on a " psychogenic " basis.

11. This disorder does not lead to a high mortality rate.

12. Although these patients had " anxiety " as a characteristic phenomenon, they did not develop, as judged by a twenty-year follow-up study, to any unusual extent diseases such as hypertension, peptic ulcer, asthma, ulcerative colitis or thyrotoxicosis, which some authors have speculated are caused by " anxiety."

13. As judged by published therapeutic results, patients with this disorder do as well with simple reassurance and the passage of time as do apparently similar cases managed by prolonged psychotherapy, psychoanalysis, electric convulsion procedure, ergotamine tartrate and adrenal denervation.

14. The cause and specific treatment of this disorder are as yet unknown.

(Authors' abstr.)

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A New Adjuvant in Postalcoholic Psychomotor Agitation.

A definite need exists for a drug to relieve the symptom of psychomotor agitation frequently observed in alcoholic patients in the period of recovery after a bout of intoxication.

Dimethylane (2,2-diisopropyl-4-hydroxymethyl-1, 3-dioxolane) has been shown to reduce markedly the time required for control of this symptom. The drug provoked no toxic effects in the therapeutic dosages administered. (Authors' abstr.)

The Occupational Performance of Thirty Alcoholic Men.

The findings of this study indicate a wide range of occupational behavior among the 30 alcoholic patients interviewed, but a preponderance of certain common traits.

The common traits observed in this group of patients were : (1) a capacity to visualize vocational goals along with incapacity for sustained effort in vocational performance ; (2) a preference for work experiences that entail creative energy, independence, contact with the public, excitement and movement ; and (3) frequent changes in employment that, for the most part, could be attributed to restlessness and inebriety.

The small size of the sample and the mode of its selection preclude the generalization of the findings of this study to the total male alcoholic population or to any well-defined segment of it. It is interesting to note, however, that the common traits in occupational behavior of these alcoholic patients, aside from being traceable in part directly to the problems created by their drinking, seem to reflect underlying emotional patterns of tension and need for release which have been postulated as characteristic of the personality of alcoholics.

(Author's abstr.)

https://doi.org/10.1192/bjp.98.412.492 Published online by Cambridge University Press

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https://doi.org/10.1192/bjp.98.412.492 Published online by Cambridge University Press

1. Biochemistry, Pathology, etc.

Changes in Acetylcholine Content of the Brain during Exposure to Cold. *Milch, Lawrence J., Midkiff, Harney F., Matthews, Priscilla, and Chinn, Herman I.* (*Air Force School of Aviation Med., Randolph Field, Texas*). [*Proc. Soc. Exptl. Biol. Med.*, **77**, 659–61 (1951).]

Adult male rats were exposed to a temperature of −12° for 2 hours. The average body temperature decreased to 15° but none died from the cold. The free and total acetylcholine concentrations of the brain tissue were significantly increased by the treatment. L. E. GILSON (Chem. Abstr.).

The Role of Acetylcholine in the Central Nervous System. *Feldberg, W.* (*Natl. Inst. for Med. Research, London*). [*Brit. Med. Bull.*, **6**, 312–21 (1950).]

The role of acetylcholine (I) as a central synaptic transmitter is reviewed. There are many observations which can be accounted for conveniently and satisfactorily only by the (I) theory even though (I) is probably not the universal central synaptic transmitter. A. DIETZ (Chem. Abstr.).

Preparation of Soluble Cholinesterases from Mammalian Heart and Brain. *Ord, Margery G., and Thompson, R. H. S.* (*Guy's Hosp. Med. School, London*). [*Biochem. J.*, **49**, 191–9 (1951).]

Rat heart has been chosen as the source of pseudocholinesterase (splits actively benzoylcholine) and rat brain for true cholinesterase. The former enzyme preparation was purified 30 times, the latter 10 times. The heart preparation was found to consist largely of an unknown esterase which differs from both the true or pseudocholinesterase. The heart cholinesterase active against benzoylcholine is not affected by brief tryptic digestion but the brain cholinesterase is inactivated. Various surface-active agents were used to bring the brain cholinesterase into solution. The solubilizing effect is probably due to their action on lipoprotein complexes containing the cholinesterase. It is suggested that perhaps the brain cholinesterase is a lipoprotein. S. MOGULIS (Chem. Abstr.).

The Urea Nitrogen Content of the Cerebrospinal Fluid. *Lickint, Fritz* (*Stadtkrankenhous, Dresden-Neustadt, Ger.*). [*Arch. Psychiat. Nervenkrankh.*, **186**, 194–7 (1951).]

In 23 almost normal persons the urea N concentration in cerebrospinal fluid (C.S.F.) ranged from 7·4 to 16 mgm. per 100 ml. These values were 71 to 90 per cent. of the corresponding concentrations in blood serum. Urea N was determined in C.S.F. in 172 diseased persons. In brain concussion, neurosyphilis, encephalitis, epilepsy and eclampsia most of the concentrations were normal, in hydrocephalus most were low; in meningitis and kidney disease large increases were found. The residual N (I) concentration of C.S.F. varied with the urea N concentration.

The Residual Nitrogen of Cerebrospinal Fluid (*with Particular Attention to its Relation to Other Nitrogen-containing Constituents*). [*Ibid.*, 198–203.]

In 13 normal subjects the (I) concentration of C.S.F. ranged from 12 to 19 mgm. per 100 ml. and was about 42 per cent. below the corresponding concentration in the blood sernm. (I) was determined in 139 diseased persons. In hydrocephalus, brain concussion, encephalitis, eclampsia and neurosyphilis most of the concentrations were normal; in meningitis both normal and high concentrations were found; in kidney disease large increases occurred. The determination of creatinine, uric acid, amino acids, xanthoprotein or indican cannot be substituted for determination of (I) because these substances vary independently. WARREN M. SPERRY (Chem. Abstr.).

Shifting of Cations in the Cerebrospinal Fluid as a Cause of Pruritus. *Koenigstein, Hans* (*Hebrew Univ., Jerusalem*). [*J. Investigative Dermatol.*, **17**, 99–123 (1951).]

Cisternal injection of 1–2 mgm. of KCl into cats or rabbits produces scratching attacks, and the severity of the attack parallels the concentration of K ion. The effect is accompanied by an approximate doubling of the concentration of K ion in the cerebrospinal fluid. Injection of morphine, picrotoxin, NH_4Cl, pilocarpine or caffeine in sufficient quantities to produce scratching attacks is in 60 per cent. of the cases accompanied by a rise (sometimes of more than 100 per cent.) in K ion content of the cerebrospinal fluid; the increase in the blood serum is much less and appears at a slower rate. Cations resembling K ion are, except for Na ion, likewise pruriginous in effect. Addition of small amounts

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