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گزارش پژوهشهای اعضا، آموزشی

دانشگاه پهلوی

سال تحصیلی ۵۲ - ۵۳

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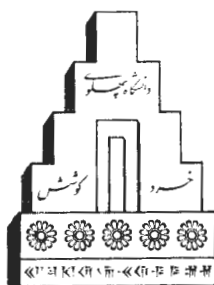
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انتشارات دانشگاه پهلوی

# گزارش پژوهشهای اعضای آموزشی

## دانشگاه پهلوی

سال تحصیلی ۵۲ - ۵۳

تنظیم از : دکتر محمود وصال

با همکاری روزنامه خبرهای دانشگاه پهلوی

۲۸ خرداد ۱۳۵۳

این کتاب در ۲۰۰۰ نسخه در خردادماه ۱۳۵۳  
در چاپخانه دانشگاه پهلوی افست شده است

تحقیق و تتبع یکی از هدفهای مهم دانشگاههاست زیرا مؤسسات آموزش-  
عالی بدون توجه به این مهم هرگز نخواهند توانست رسالت بزرگ خود را در  
اعتلاء سطح فرهنگ و معارف انسانی انجام دهند. پژوهش عامل تحرك جوامع  
علمی است و ترقیات مادی و معنوی انسان عصر ما عموماً مدیون و مرهون تتبعات  
خردمندانی است که صرفاً به تدریس دانشهای خویش اکتفا نکرده و کوشیده‌اند  
تا چشم اندازهای تازه دانش و کمال را بر روی انسان بگشایند و سهمی در پیشبرد  
معارف بشری به عهده داشته باشند.

از آنجا که در دانشگاه پهلوی از بدو تأسیس به کیفیت بیشتر از کمیت توجه  
شده است طبعاً برنامه‌های تحقیقاتی در این دانشگاه از موقعیت و مقام ممتازی  
برخوردار بوده است و اعضاء آموزشی دانشگاه با درك این واقعیت، به انتشار  
تحقیقاتی ارزنده در نشریات ایرانی و خارجی مبادرت ورزیده‌اند که از سال گذشته در  
اولین مجموعه «گزارش پژوهشهای اعضاء آموزشی دانشگاه پهلوی» منتشر گردید.  
و اکنون نیز این مجموعه که منعکس کننده کوششهای انتشاراتی اعضاء آموزشی  
دانشگاه پهلوی در سال تحصیلی ۵۲-۵۳ می‌باشد در برابر خوانندگان ارجمند قرار  
دارد و مبین رشد محسوسی است که در کار تحقیق در دانشگاه پهلوی صورت گرفته  
است.

امیدوارم انتشار این مجموعه به سهم خود راهگشای کوششهای باز هم گسترده‌تر  
اعضاء آموزشی دانشگاه پهلوی در آینده باشد.

رئیس دانشگاه پهلوی  
دکتر فرهنگ مهر



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دانشکده ادبیات و علوم

COLLEGE OF ARTS AND SCIENCES

دانشکده ادبیات و علوم  
COLLEGE OF ARTS AND SCIENCES  
بخش تاریخ  
DEPARTMENT OF HISTORY

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سوم، ص ۲۱-۱، ۱۳۵۲.

خلاصه مقاله

در شهریورماه سال ۱۳۵۰ پرونده آموزشی ۸۲۵ نفر دانشجویانی که از طریق مسابقات ورودی دانشگاه پهلوی بدین موسسه تربیتی راه یافته بودند مورد بررسی قرار گرفت. نتایج این بررسی معلوم میدارد که ضرائب همبستگی بین نمرات کنکور دانشگاه بیشتر است. میانگین نمرات دانشجویان دختر هم در ششم متوسطه و هم در دانشگاه از دانشجویان پسر زیاد تر میباشد، اما در کنکور، پسران بر دختران برتری دارند. دانشجویان رشته های علوم پزشکی و مهندسی از لحاظ نمره ششم متوسطه و کنکور بر دیگر دانشجویان برتری داشته اند. در مورد نمرات دانشگاه، دانشجویان دو گروه علوم مهندسی و علوم اجتماعی و انسانی دارای رتبه مساوی و دانشجویان علوم پزشکی، علوم کشاورزی، و علوم طبیعی و ریاضی به ترتیب حائز رتبه های سوم تا پنجم شده اند.

- ۲- حسینی، علی اکبر، مقایسه دو گروه از دانشجویان موفق و ناموفق  
در دانشگاه پهلوی، مجله روانشناسی آذرماه ۱۳۵۲.

## خلاصه مقاله

در شهریورماه سال ۱۳۵۲ ضمن بررسی به وضع تحصیلی کلیه دانشجویان دانشگاه پهلوی فهرستی از دانشجویانی که معدل کل آنان از ۳ به بالا بود و همچنین همه کسانی که معدل دانشگاهی آنان از ۲ کمتر بود تهیه گردید . دسته اول "گروه موفق" و دسته دوم "گروه ناموفق" نامیده شدند . مقایسه این دو گروه بایکدیگر نشان میدهد که معدل هفتم متوسطه گروه موفق از گروه ناموفق زیادتر است و این تفاوت در حدیک در هزار معنی دار میباشد . گروه ناموفق نسبت به گروه موفق از تجانس و تشابه بیشتری برخوردار است . میانگین نمرات متوسطه و دانشگاه دختران در هر دو گروه از پسران زیادتر است ولی پراکندگی نمرات آنان از پسران کمتر میباشد . بیشترین تعداد درغریک از دو گروه موفق و ناموفق به ترتیب دیلم متوسطه خود را از دوشهر شیراز و تهران گرفته اند . تغییر رشته در میان گروه موفق به مراتب کمتر از گروه ناموفق است و کسانی که پس از اتمام تحصیلات دبیرستانی بلافاصله وارد دانشگاه میشوند دانشجویان موفق تری خواهند بود . در گروه موفق طبقات متوسط و در گروه ناموفق طبقات پائین ، بالاترین درصد را داشته اند .

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- ۲- رستگار، منصور، طبیعت در شعر حافظ - در " مجموعه مقالات درباره  
زندگی و شعر حافظ " - ص ۲۵۴-۲۱۹، شهریور ۱۳۵۲
- ۳- رستگار، منصور، خانواده در شاهنامه - بهار ایران - از شماره  
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۱۰- نورانی وصال، عبد الوهاب - مثنوی سرائی در دوره معاصر،

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ماه ۱۳۵۲.

۳- فرزاد، مسعود - حافظ : گزارشی از نیمه راه - از انتشارات دانشگاه

پهلوی - مهرماه ۱۳۵۲.

۴- مروید، جعفر - فارسی امروز برای دانشجویان خارجی - از انتشارات

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## بخش ریاضیات و آمار

### DEPARTMENT OF MATHEMATICS AND STATISTICS

#### مقالات بزیان خارجی

1. Fattahi, A., On generalizations of Sylow tower groups, Pacific J. Math. 45, 453-478, 1973.

#### ABSTRACT

In this paper two different generalizations of Sylow tower groups are studied. In Chapter I the notion of a  $k$ -tower group is introduced and a bound on the nilpotence length (Fitting height) of an arbitrary finite solvable group is found. In the same chapter a different proof to a theorem of Baer is given; and the list of all minimal-not-Sylow tower groups is obtained.

Further results are obtained on a different generalization of Sylow tower groups, called Generalized Sylow Tower Groups (GSTG) by J. Derr. It is shown that the class of all GSTG's of a fixed complexion form a saturated formation, and a structure theorem for all such groups is given.

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3. Hadidi, N., Busy period of Poisson queues with state dependent service rates, Hung. Math. Period. 11, 1974.



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LANGUAGES

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DEPARTMENT OF GEOLOGY

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ABSTRACT

Since May 1966, OBS 3, an ocean-bottom geophysical station located 220 km south of the Mendocino fracture zone at a depth of 3903 meters and PTA, a supporting land station at Point Arena, California, have been operating continuously. During a 5-year period OBS 3 recorded over 650 local earthquakes with suboceanic epicenters, about 200 of which were also recorded by PTA. Earthquakes recorded by OBS 3 have clear P, S, and T phases; those recorded by PTA have clear P and S phases but generally do not have clear T phases. The 200 earthquakes recorded by both stations were located on the basis of S-P time intervals at OBS 3 and at PTA. Readings from the Berkeley network of seismographic stations were also used when possible.

Most of the submarine earthquakes located are related to the Mendocino and Gorda escarpments. Earthquakes do not occur beyond the intersection of the Mendocino fracture zone and the Gorda Ridge. The entire Gorda Basin is seismically active, implying that it is presently undergoing internal deformation.

In an attempt to confirm a possible subduction zone in the vicinity of the coast and north of the Mendocino fracture zone, five earthquakes were relocated, two of which were probably subcrustal. One earthquake (August 23, 1962) had a focal depth of 59.4 km, which is confirmed by the time intervals of the pP-P and sP-P phases. The second (September 4, 1962) had a depth of 45 km, but because of the earthquake's small magnitude, its depth could not be confirmed. These subcrustal earthquakes do indicate a possible active subduction zone close to the coast north of the Mendocino fracture zone. The submarine aftershock sequence of June 26, 1968 indicates that (1)  $b = 0.5 \pm 0.1$  (This is slightly smaller than other b values given for the adjacent continental region.); (2) the magnitude versus the length of the fault for this sequence is approximately similar to that of other recent sequences in California; (3) the composite fault-plane solution for all of the aftershocks is similar to that of the main shock and gives a fault trend of N41 °E.

DEPARTMENT OF BIOLOGY

مقالات بزرگان خارجی

1. Bokhari, M.H., Variation and taxonomic importance of anatomical characters in Limonium, Notes Roy. Bot. Garden Edinburgh 32, 275-290, 1973.

ABSTRACT

Anatomical characters of vegetative parts of Limonium are investigated. A range of variation in endomorphic characters is surveyed and their taxonomic importance is evaluated. Some anatomical features which are reported here provide taxonomic characters that may be of great value in understanding and classifying this difficult genus. This work has revealed that we have a fresh set of endomorphic characters which can be reasonably used to supplement those commonly employed in classification. No attempt is made to reclassify this genus, but in the light of available endomorphic and exomorphic characters, some suggestions are made for improving its infrageneric classification.

2. Burt, B. L., and M.H. Bokhari, Studies in the Gesneriaceae of the old World. XXXVI: Foliar sclereids in New Guinea and Pacific Cyrtandra, Notes Roy. Bot. Garden Edinburgh 32, 397-402 1973.

## ABSTRACT

The occurrence of foliar sclereids in Cyrtandra is summarised for five areas, from New Guinea to Hawaii; in a few "species" variation in sclereids indicates a need for taxonomic revision. East of Borneo there is a decrease in the proportion of species which possess foliar sclereids, and in the complexity both of sclereid-pattern and sclereid-structure. A possible correlation between plant habit, leaf size and presence of complex sclereid-patterns is indicated.

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## ABSTRACT

The quantity of sodium transported to the shoots of intact barley plants was stimulated by 0.5 mM ouabain when the sodium chloride level of the bathing medium was below 100 mM. At sodium chloride concentrations of 100 mM or more this ouabain-stimulated sodium transport was not observed. Equiosmotic mannitol, equimolar potassium chloride or equivalent calcium chloride solutions did not affect the ouabain-stimulated sodium transport from a basic medium containing 10 mM sodium chloride. It is suggested that under the present experimental conditions the increased sodium uptake by the root cells at sodium chloride concentrations of 100 mM or more masks the extrusion process.

DEPARTMENT OF CHEMISTRY

مقالات بسزبان خارجی

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ABSTRACT

Isotropic nuclear magnetic resonance shifts and linewidths for  $[\text{Fe}(\text{C}_5\text{H}_5)_2]^+\text{PF}_6^-$  and  $[\text{Fe}(\text{C}_5\text{H}_4\text{CH}_3)_2]^+\text{PF}_6^-$  have been measured at different temperatures between 202 and 324°K. Room temperature solution magnetic moments for various ferricenium salts were also measured. Theoretical expressions for magnetic susceptibilities and ESR g values are deduced which unlike previous calculations, do not involve any a priori assumptions regarding the separation between  ${}^2\text{E}_{2g}$  and  ${}^2\text{A}_{1g}$  levels. These expressions, along with the expressions of Kurland and McGarvey, for dipolar and contact shifts are used to provide a consistent interpretation of the existing ESR g values and magnetic susceptibilities as well as our NMR and magnetic moment results. It is found that the dipolar term contributes about 55% to the observed resonance shift for the methyl protons but only about 25% to the ring proton shifts. The calculated values of the coupling constants  $[A_H = 0.168 \pm 0.005$  gauss for  $\text{Fe}(\text{C}_5\text{H}_5)_2^+$  and  $A_H = 0.161 \pm 0.015$  gauss and  $A_{CH_3} = 0.095 \pm 0.007$  gauss for  $\text{Fe}(\text{C}_5\text{H}_4\text{CH}_3)_2^+]$  are interpreted in terms of a predominant direct delocalization mechanism involving mainly in-plane ring orbitals. This interpretation is supported by extended Huckel calculations. Parameters resulting from the present investigation show that for  $\text{Fe}(\text{C}_5\text{H}_5)_2^+$  the  ${}^2\text{A}_{1g}$  level is below the  ${}^2\text{E}_{2g}$  by about  $200\text{ cm}^{-1}$ , which contradicts recent optical spectra analyses. The possibility

that the former is not a pure electronic level but a vibronic one of symmetry  $A_{1g}$ , resulting from Jahn-Teller induced vibrational coupling with  ${}^2E_{2g}$ , is suggested and discussed.

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### ABSTRACT

Several ladder and partial ladder polymers have been synthesized by self-condensation reactions of 1, 2, 4, 5, -tetraaminobenzene, 3, 3', 4, 4'-tetraaminodiphenylether, 3, 3'-diaminobenzidine and 3, 3', tetraaminodiphenyl sulfone in polyphosphoric acid. These products are highly colored and have good thermal stability. Polyquinoxaline or dihydrophenazine or a mixture of these two recurring units seem to form these compounds. These compounds are slightly soluble in methanesulfonic acid and concentrated sulfuric acid and have inherent viscosities in the 0.2-0.4 range. Also, new ladder and partial ladder aromatic heteropolymers have been obtained from 1, 2, 5, 6-tetraaminoanthraquinone with 2, 3, 7, 8-tetrachloro-1, 4, 6, 9-tetraazaanthracene, 2, 2', 3, 3'-tetrachloro-6, 6'-diquinoxaline. 2, 2', 3, 3'-tetrachloro-6, 6'-diquinoxalylether and 2, 2', 3, 3'-tetrachloro-6, 6'-diquinoxalyl sulfone. In these cases polycondensation was carried out both in solution and in melt. Their inherent viscosities were in the range of 0.1-0.44. These polymers were also highly colored, have good thermal stability, and were soluble in methanesulfonic acid and concentrated sulfuric acid.

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#### ABSTRACT

Bromoisotenulin crystallises in the monoclinic space group  $P2_1$   $a = 8.732(3)$ ,  $b = 23.094(6)$ ,  $c = 10.237(5)$  Å,  $\beta = 121.27(10)^\circ$ ,  $Z = 4$ , with two independent molecules in the asymmetric unit. Two sets of data were collected: photographic, 2300 reflections, and diffractometer, 1700 reflections. The structure was solved by Patterson and heavy-atom methods, and the diffractometer data refined by full-matrix least-squares to  $R$  0.075. The results confirm the structure (IV) suggested by Herz et al. and supply the unknown stereochemistry and absolute configuration. The carbon skeleton is biogenetically abnormal, a methyl group having migrated from C(4) to C(5). Both five-membered rings are trans-fused to the seven-membered ring. Attention is drawn to an error in the published stereochemistry of the related compound, bromomexicanin E.



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### ABSTRACT

The structure of caryophyllene chlorohydrin (V) has been determined by a three-dimensional X-ray diffraction study. Crystals are trigonal,  $a = 13.12$ ,  $c = 7.11$  Å, space group  $P3_1$ , with one molecule in the asymmetric unit. Anisotropic least-squares refinement, based on 1150 visually estimated intensities, has reduced R to 0.112. The molecule is geometrically analogous to norcaryophyllene alcohol. Its constitution and absolute stereochemistry provide evidence for a novel transannular cyclisation.

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## ABSTRACT

The direct-atomization technique of atomic absorption spectrometry was applied to the determination of copper, lead, cadmium and manganese in a sample of pulp and four types of paper. Samples of 1-20 mg were ashed and atomized in a graphite furnace, the determinations being based on the standard addition technique. The method is simple, rapid and sensitive, and no reagents are added to the samples.

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## ABSTRACT

The complex formation of gallium (III) with 8-hydroxy-7-iodoquinoline-5-sulphonic acid (ferron)(L) was studied by potentiometry; and the dissociation constants of the ligand were redetermined. A new computer program made it possible to make allowance for a considerable number of equilibria. In the pH range 2-10, the main species were as follows (the logarithm of the absolute stability constants at  $25.0 \pm 0.1^\circ$  for ionic strength 0.1 M are given in parentheses): GaHL (11.3), GaL (14.7), Ga(OH)<sub>2</sub>L (32.3), GaL<sub>2</sub> (23.9), GaOHL<sub>2</sub> (31.0) and GaL<sub>3</sub> (29.6). For 1:1, 1:2 and 1:3 mixtures of metal with ferron, the mole fractions of the various complexes as a function of pH were calculated; the effect of pH on the conditional constants of the species GaL, GaL<sub>2</sub> and GaL<sub>3</sub> was also established.

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بخش عمران ملی

DEPARTMENT OF NATIONAL  
DEVELOPMENT

مقالات بزرگان خارجی

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ABSTRACT

Institutional inbreeding has traditionally been viewed as a manifestation of academic particularism and parochialism. More recently, McGee and Berelson have hypothesized that, under certain circumstances, inbreeding may reflect universalistic patterns of recruitment and may aid a department's efforts to secure the services of noninbred scholars. This paper examines data for 1,165 U.S. academic scientists in an attempt to test the hypotheses of McGee and Berelson. Small but consistently negative relationships between being inbred and measures of scholarly productivity are found; inbred scientists at high-prestige departments appear to be no more productive than scientists at departments of lesser eminence. In addition, evidence consistent with McGee's claim that inbred scientists are discriminated against in the allocation of departmental rewards is presented. Some implications of these results for the question of the nature and future of institutional inbreeding are suggested.

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### کتاب بزیان فارسی

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تیره عمله فارسیدان از انتشارات بخش عمران ملی  
دانشگاه پهلوی اسفند ماه ۱۳۵۲

## بخش فیزیک

### DEPARTMENT OF PHYSICS

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#### ABSTRACT

Measurements of the  $^{43}\text{Ca}(\text{d}, \text{t})$  and  $^{41}\text{K}(^3\text{He}, \text{d})$  reactions have been carried out at incident energies of 20 and 23 MeV, respectively, with an energy resolution of 9-14 KeV full width at half maximum. Single-particle strength distributions have been studied up to an excitation energy of 6.24 MeV in  $^{42}\text{Ca}$ . About 75% of the total  $l = 3$  pickup strength is observed in the even-parity

states up to the  $6^+$  state at 3.188 MeV. The other 25% is distributed over 10 states between 3.2 and 6.2 MeV. The  $l = 2$  pickup transitions should populate four  $T = 1$  states of the  $[(1f7/2)^3 \times 1d3/2^{-1}]$  multiplet with  $J^\pi = (2, 3, 4, 5)^-$ . The strength is found to be spread over at least 20 states, however, and many transitions show considerable  $l = 0$  admixture. The stripping measurements also show extensive fragmentation of the  $l = 3$  strength leading to the negative-parity states of  $^{42}\text{Ca}$ , and large differences are observed between the strength distributions observed in stripping and pickup to these states. The particle transfer measurements were supplemented by high-resolution measurements of the  $^{42}\text{Ca}(\alpha, \alpha')$  reaction at 28.5 MeV which provided definite spin-parity assignments to many natural parity states in  $^{42}\text{Ca}$ .

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### ABSTRACT

Measurements of the  $^{49}\text{Ti}(d, t)^{48}\text{Ti}$  reaction have been carried out at 18 MeV with an energy resolution of about 10 KeV. Single-particle strength distributions for  $l = 0, 2$ , and 3 have been obtained up to excitation energy of 7 MeV in  $^{48}\text{Ti}$ . About 85% of the  $l = 3$  strength is found in states below 3.6 MeV, and the total  $l = 3$  strength is consistent with the sum rule limit for  $1f7/2$  transfer to  $T = 2$  states. About three quarters of the sum rule limit for the  $l = 2$  strength (assumed be  $1d3/2$ ) and half the limit for the  $l = 0, 2s1/2$  strength is observed, with lower limits for the centroid energies of 5.36 and 5.17 MeV for the  $1d3/2$  and  $2s1/2$  hole, respectively. Measurements of inelastic scattering on  $^{48}\text{Ti}$  have also been carried out at an incident energy of 28.5 MeV with a resolution of 18 KeV. These

measurements provide many new spin-parity assignments for natural parity states in  $^{48}\text{Ti}$ . In combination with the pickup measurements, they provide identification for the centroids of the  $J^\pi = (2, 3, 4, 5)^-$  states of the  $(f_{7/2}^9 \times d_{3/2}^{-1})$  multiplet.

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#### ABSTRACT

We describe the use of a  $10 \times 10 \times 15 \text{ Cm}^3$  lead-glass Cherenkov counter as a detector of photons with energies as low as 10 MeV. A procedure for calibrating the efficiency of the counter without the use of tagged photons is presented. Using electron-beam measurements and a Monte Carlo calculation, we find that a normally-incident photon is detected with an efficiency of 62% at 15 MeV and 87% at 25 MeV.

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دانشکده پزشکی

COLLEGE OF MEDICINE

دانشکده پزشکی

COLLEGE OF MEDICINE

بخش آسیب شناسی

DEPARTMENT OF PATHOLOGY

مقالات بزرگان خارجی

1. Dutz, W., Azadeh, B., Kohout, E., and K. Vessal,  
Infantile enteritis as cause of thymolymphatic  
atrophy, Z. Kinderheilk. 115, 155-161, 1973.

#### ABSTRACT

The thymic weight of 115 infants under the age of 1 year was determined at autopsy. Marked thymic atrophy was found in 37 cases, and was associated with absence of perifollicular lymphocytes (T cells) in the mesenteric lymph nodes in 22 cases. Moderate to severe villous atrophy of the intestinal mucosa was found in 26 of these infants. All infants with intestinal atrophy revealed a clinical history of severe repeated gastroenteritis and malnutrition.

Fifty-three infants of an orphanage below the age of 1 year were screened for thymic atrophy with serial monthly X-rays. The disappearance of the thymic shadow was directly related to the frequency and severity of diarrhoea and gastroenteritis.

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## ABSTRACT

Two types of *Pneumocystis carinii* infections must be distinguished:

1. Interstitial plasmacell pneumonia, which occurs only in premature or in marasmic infants between the 10th and 24th week of life. It is most frequently associated with severe diarrhoea, atrophy of the bowel mucosa and IgG levels of below 200 mg%. *Pneumocystis carinii* organisms spread rapidly throughout the alveoli of all pulmonary lobes in these debilitated infants. The capsular antigen of the *Pneumocystis carinii* cysts elicits a massive plasmacell infiltration of the alveolar septa, which is accompanied by immunoglobulin production of IgM type. This reaction occurs within 24 to 48 hrs and leads frequently to death. Morphometric counts on 65 cases showed that up to 78% of the entire lung space was formed by septa distended with plasmacells and proplasmacells. The organisms disappear from the alveoli within 2 to 3 days due to the hosts IgM antibody response. The cellular infiltrate persists and may in itself cause suffocation. Complete clearing of the interstitial infiltrate takes 6-8 weeks. This sudden massive infiltration of the entire lung does not occur in all cases. *Pneumocystis carinii* organisms occur frequently in the subpleural posterior alveoli, eliciting a minor focal interstitial plasmacell response, which remains clinically undetected.

2. Hypoergic *Pneumocystosis* may occur at any age and is associated with congenital immunodeficiency diseases, diseases of the reticulo-endothelial system and immunosuppressive therapy leading to IgG deficiency. No host response to the organism occurs under these circumstances. Morphometric counts on 51 human lungs showed no interstitial inflammatory infiltrate. The septa may occasionally be distended by neoplastic infiltrates of reticulo-endothelial type as for instance in plasmacell myeloma, lymphoma or leukaemia, which is the cause rather than the result of the *Pneumocystosis*.

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### DEPARTMENT OF PEDIATRICS

#### مقاله بزرگان خارجی

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#### ABSTRACT

The symptomatology and the course of tetanus were analyzed in 42 cases in South Iran. The prognosis and mortality rates were compared with those of reports from diverse geographical areas.

## بخش آموزش پزشکی

### DEPARTMENT OF MEDICAL EDUCATION

#### مقالات بزرگان خارجی

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#### ABSTRACT

We report here a case in which the patient developed pancytopenia after receiving large doses of penicillin. The pancytopenia seemed to be due to a blockade of the release of mature cells from the bone marrow-a process that might be termed "post-maturation arrest." This is the first time that such a hypothesis for the cause of the anaemia in these circumstances has been advanced.

DEPARTMENT OF BIOCHEMISTRY

مقالات بزرگان خارجی

1. Faradji, B., Vessal, M., and M.A. Ghalambor,  
Partial Purification and properties of ovine  
liver hydatid cyst fluid and healthy ovine liver  
phosphoglucose isomerases, Clin. Chim. Acta,  
1974, (in press).

ABSTRACT

Echinococcosis is a disease prevalent both in man and animals with no effective therapeutic measures established against it so far, except for surgical removal of the cyst in humans. Attempts have been made to compare the properties of certain enzymes present in the parasite with those of the corresponding host in the hope of discovering inhibitors that would inhibit the parasite enzyme(s) selectively. In the present report certain properties of phosphoglucose isomerase of the ovine liver cyst fluid have been compared with those of the healthy ovine liver. The enzymes from both sources purified by the same procedure exhibited the following properties: (1) identical pH optimum (8.5), (2) no detectable inhibition in the presence of phosphate ion up to 4.1 mM, (3) marked differences in the  $K_m$  value, 8.7 mM and 10.7 mM for the parasite and host enzymes respectively, and (4) higher thermostability of the parasite enzyme as compared with the host enzyme.



2. Ghalambor, M.A., Warren, C.D., and R.W. Jeanloz, Biosynthesis of a  $P^1$ -2-acetamido-2-deoxy-D-glucosyl  $P^2$ -polyisoprenyl pyrophosphate by calf pancreas microsomes, Biochem. Biophys. Res. Com. 56, 407-414, 1974.

#### ABSTRACT

Incubation of UDP- $[^{14}C]$ -N-acetylglucosamine with calf pancreas microsomes in the presence of  $Mn^{++}$  and potassium thiocyanate gave a labeled glycolipid, tentatively identified as  $P^1$ -2-acetamido-2-deoxy-D-glucosyl  $P^2$ -dolichyl pyrophosphate on the basis of co-chromatography with synthetic  $P^1$ -2-acetamido-2-deoxy- $\alpha$ -D-glucopyranosyl  $P^2$ -dolichyl pyrophosphate, similar chemical and enzymic hydrolyses of the biosynthetic and synthetic compounds, and stimulation of the biosynthesis by addition to the incubation mixture of dolichyl phosphate or a crude lipid fraction extracted from microsomes.

3. Reinhold, J.G., Hedayati, H., Lahimgarzadeh, A., and K. Nasr, Zinc, calcium, phosphorus, and nitrogen balances of Iranian villagers following a change from phytate-rich to phytate-poor diets, Ecol. Food Nutr. 2, 157-162, 1973.

#### ABSTRACT

Metabolic balances of zinc, calcium, phosphorus and nitrogen were measured in 13 villagers resident in the Shiraz region of Iran for the purpose of surveying the state of mineral nutrition of a population that sub-

sists on diets containing large amounts of phytate. Strikingly high retentions of zinc, calcium and phosphorus occurred during the latter six days of nine day periods during which a nutritious diet containing an abundance of these elements in available form was fed. Nitrogen, by contrast, was not retained. The results support the belief that severe depletion of mineral elements exists in the villagers studied. This is attributed to the action of phytate in decreasing the availability of these elements. Destruction of phytate in the gut apparently is not sufficient to overcome the effects of the high phytate intakes.

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and H. Hedayati, Effects of purified phytate and  
phytate-rich bread upon metabolism of zinc,  
calcium, phosphorous, and nitrogen. in man,  
Lancet, 283-288, Feb. 10, 1973.

#### ABSTRACT

Three young men were given approximately 2.5g. of phytic acid daily, first as purified sodium phytate together with leavened flat wheat bread for 28 days, then for 32 days as tanok, the phytate-rich unleavened wholemeal flat wheat bread that is the staple food of many Iranian villagers. Purified phytate administration was accompanied by increased losses of zinc in faeces which varied in degree when compared with outputs during a control period which preceded the high phytate intakes. Calcium balances became negative in one, significantly less positive in one, and were unchanged in one of the subjects. Phytate in the form of tanok led to negative zinc balances and strongly negative calcium balances in all. Urinary phosphate excretion decreased while tanok was the source of phytate, a change attributed to decreased phytate destruction in the gut probably due to an inhibitor present

in the bread. Negative calcium balances persisted after 60 days of phytate consumption, and the claim that the effects of phytate are ameliorated after a few weeks with return to positive calcium balances was not confirmed. Plasma-zinc and serum-iron concentrations fell shortly after phytate consumption began, but later rose while phytate ingestion continued. However, plasma-calcium and serum-phosphorus fell and remained below normal. The results suggest that high-phytate intakes can cause the disturbances of zinc and calcium metabolism prevalent among Iranian villagers. They are applicable also to other populations who eat a lot of unleavened wholemeal bread.

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### ABSTRACT

Treatment of mouse L 929 cells in cell culture with mouse interferon, prior to infection with reovirus type 3, decreased the amount of virus progeny formed. In infected, interferon-treated cells less reovirus specified double-stranded RNA (ds reoRNA) and single-stranded RNA accumulated than in infected control cells and the rate of ds reoRNA accumulation was inversely related to the concentration of interferon with which the cells were treated prior to infection. Since ds reoRNA can be conveniently assayed, this forms the basis of a fast and simple assay for interferons.

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### ABSTRACT

Homogenates of Chlorella pyrenoidosa (strain 7-11-05) contain an organic, low molecular weight ( $<1000$ ), heat stable, acid-soluble, Norit A adsorbable compound required for the in vitro stability of transcarbamylase. Dilution of these homogenates or removal of the stabilizer by either ultrafiltration, gel filtration, ammonium sulfate precipitation, or sucrose density gradient centrifugation resulted in the rapid first order decay of enzyme activity even at 0-30°. The apparent feedback inhibitor, UMP, was the only nucleotide effective as an in vitro stabilizer within physiological concentrations. Although carbamyl phosphate could stabilize the enzyme in vitro, it was eliminated as the possible endogenous stabilizer because carbamyl phosphate is heat labile. The other substrate, aspartate, was ineffective as a stabilizer,

In cell cycle studies with synchronous cells of Chlorella, the pattern of aspartate transcarbamylase was observed to parallel the periodic DNA pattern except for a period of gradual enzyme accumulation immediately prior to the step increase in DNA level. Prior to the period of gradual enzyme accumulation, the enzyme level remained constant with a steady state existing between enzyme synthesis and breakdown. The structural gene of the enzyme appeared to be continuously transcribed and the enzyme continuously synthesized so that the enzyme increased from one steady state level to

another during the period of gene replication. The gradual increase in activity prior to the step increase in DNA is proposed to be caused by the accumulation of an endogenous stabilizer (e.g. UMP) which reduces the rate of enzyme degradation. This inference is supported by the accumulation of total nucleotide-P and of an endogenous inhibitor of enzyme activity, and by the decreased rate of breakdown of the enzyme in vivo and also in cell homogenates from this period of the cell cycle.

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#### ABSTRACT

D-Glucosamine-6-P N-acetyltransferase (EC 2.3.1.4) from mung bean seeds (Phaseolus aureus) was purified 313-fold by protamine sulfate and isoelectric precipitation, ammonium sulfate and acetone fractionation, and CM Sephadex column chromatography. The partially purified enzyme was highly specific for D-glucosamine-6-P. Neither D-glucosamine nor D-galactosamine could replace this substrate. The partially purified enzyme preparation was inhibited up to 50% by  $2 \times 10^{-2}$  M EDTA, indicating the requirement of a divalent cation. Among divalent metal ions tested,  $Mg^{2+}$  was required for maximum activity of the enzyme.  $Mn^{2+}$  and  $Zn^{2+}$  were inhibitory, while  $CO_3^{2-}$  had no effect on the enzyme activity. The pH optimum of the enzyme in sodium acetate and sodium citrate buffers was found to be 5.2. The effect of  $Mg^{2+}$  on the enzyme in sodium acetate and sodium citrate buffers was particularly noticeable in the range of optimum pH.  $K_m$  values of  $15.1 \times 10^{-4}$  M and  $7.1 \times 10^{-4}$  M were obtained for D-glucosamine-6-P and acetyl CoA, respectively. The enzyme

was completely inhibited by  $1 \times 10^{-4}$  M p-hydroxymercuribenzoate, and this inhibition was partially reversed by L-cysteine; indicating the presence of sulfhydryl groups at or near the active site of the enzyme.

## بخش پزشکی اجتماعی

### DEPARTMENT OF COMMUNITY MEDICINE

#### مقالات بزرگان خارجی

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#### ABSTRACT

IRAN, and oil-producing, relatively wealthy country in the Middle East, has a population of approximately 31 million (1973) and an estimated population growth-rate of 3.2%. About 60% of the population lives in villages of less than 5000. Of the 40% who live in urban areas, 10% live in Tehran, the capital, and another 15% live in cities of more than 100,000 population. While Iran has the potential to develop a high level medical technology, distribution of medical services is, and will continue to be, a problem.

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DEPARTMENT OF ANATOMY

مقالات بزرگان رجی

1. Etemadi, A.A., Cervical, thoracic and lumbar posterior primary rami in man, Pahlavi Med. J. 4, 239-272, 1973.

ABSTRACT

Dissection of the deep and superficial parts of the cutaneous branches of human posterior primary rami of spinal nerves have been carried out on one or both sides of ten subjects, and have been compared with studies by previous workers. The results show:

1. The first cervical ramus does not innervate the skin directly, but normally communicates with the second, although there is no evidence to show that this communication carries afferent fibres. The second, third and fourth cervical rami normally supply the skin directly; they may also communicate with each other to form the posterior cervical plexus, although this is not necessarily true for every subject. One or more of the medial branches of the fifth, sixth, seventh and eighth rami may supply the skin directly in a given individual, and may communicate with one another as a downward continuation of the deep cervical plexus.

2. The upper thoracic posterior primary rami supply the skin directly through their medial branches, the upper ones anastomosing freely. The first ramus has a smaller branch than those below it. The lower thoracic rami supply the skin directly through their lateral branches, the lower members of this part of series having rich anastomoses between themselves. The areas of skin supplied by the thoracic nerves have



increasing obliquity as one passes downwards, T12 supplying the buttock, an obliquity which matches and explains certain clinical observations.

3. The upper one, two or three lumbar nerves also supply the skin over the buttock.

4. The cutaneous branches of the thoracic and lumbar series all follow sinuous courses during passage through the back muscles. Measurements of these angulations show that the most superficial curve is acute in the upper thorax, and fairly abrupt in the lower thorax. It is suggested that acute angulation may pose a physical hazard to the integrity of the nerves.

5. The lower thoracic cutaneous branches descend for a considerable distance during passage of the back muscles, overlapping those two to four nerves below them, so that operative section of the back muscles at a single vertebral level can cause extensive neurological damage.

2. Tomasch, J., Cell frequencies in the abducens nucleus of man, Confinia Neurologica 35, 257-262. 1973.

#### ABSTRACT

A survey of cell counts carried out in the past on cell frequencies in the abducens nucleus of man. The suggestion is made that, in order to account for wide differences among figures produced by recent workers, more attention be given to individual cell morphology.

DEPARTMENT OF SURGERY

مقالات بزرگان خارجی

1. Amir-Jahed, A.K., Zabihi, T., and M. Kohanim,  
Transthoracic retrohepatic approach for anterior  
fusion of thoracic and lumbar vertebrae, Pahlavi  
Med. J. 5, 86-93, 1974.

ABSTRACT

In search for a universally applicable approach to the surgical treatment of Pott's disease by anterior spinal fusion we have used a right thoracotomy in 40 patients of a total of 44 cases of cervical thoracic and lumbar tuberculosis treated surgically during the last ten years. The approach is adequate for exposing all lesions located between C7 and L4 and presents advantages over a left thoracic and a transabdominal transperitoneal or retroperitoneal access. The resected rib suffices as a graft to gain a solid fusion in practically all instances. There has been no operative mortality and the method may be used in all age groups. We consider this approach safe and applicable to all cases of spinal tuberculosis of C7 to L4 inclusive.

2. Kazemi, B., Tahernia, A. C., and K. Zandian,  
Motor nerve conduction in diphtheria and diphtheritic myocarditis, Arch. Neurol. 29, 104-106, 1973.

### ABSTRACT

Motor nerve conduction velocity was studied in 30 children with diphtheria, 11 of whom had myocardial involvement. Simultaneous serum transaminase activity determinations, 12 lead standard electrocardiography tracings, and motor nerve conduction velocity studies were performed to detect early involvement of the myocardium and peripheral motor nerves. All patients with either diphtheria or diphtheritic myocarditis showed delayed conduction velocity of median, ulnar, and common peroneal nerves. The individual nerve conduction velocities, as well as mean determinations, were delayed as compared with those of the control, but delayed nerve conduction velocity was more pronounced in patients with diphtheritic myocarditis with conduction system disturbances than in those with isolated diphtheria, although the degree of clinical peripheral nerve involvement was the same.

3. Zabihi, T., Kohanim, M., and A.K. Amir-Jahed,  
A modified girdlestone operation in the treatment of complications of fractures of femoral neck, J. Bone & Joint Surgery 55, 129-136, 1973.

### ABSTRACT

Fourteen patients in whom other treatment of fracture of the femoral neck had failed had excision of the femoral head and neck one to four months after fracture. The results in these patients compared favorably with those achieved by Austin Moore arthroplasty, observed in fourteen fresh fracture patients. After follow-up of eighteen months to five years all Girdlestone patients but one, a paraplegic, walked painlessly, but with variable support, and their condition did not deteriorate. The Austin Moore patients, followed for the same period, initially showed good function but with some pain, but after three years their function was deteriorating.

DEPARTMENT OF OPHTHALOMOLOGY

مقالات بزرگان خارجی

1. Ashrafzadeh, M.T., Schepens, C.L., and P.F. Lee, Vitreous surgery, VII. Corneal protector for subtotal vitrectomy, Arch. Ophthalmol. 89, 138-142, 1973.

ABSTRACT

Vitrectomy through a corneal incision of 270° to 300° presents a great hazard to the cornea which may develop endothelial decompensation followed by corneal edema and opacity. These complications may result from corneal dehydration, mechanical trauma, nutritional deprivation, or a combination of these factors. A chamber-like corneal protector made of latex, which allows continuous infusion of tissue culture medium, has proved useful in monkey eyes to prevent corneal damage during vitreous and retinal surgery performed through a large corneal incision.

2. Ashrafzadeh, M.T., Schepens, C.L., Elzeneiny, I.I., Moura, R., Morse, P., and M.F. Kraushar, Aphakic and phakic retinal detachment, I. Preoperative findings, Arch. Ophthalmol. 89, 476-483, 1973.

## ABSTRACT

A population of rhegmatogenous, non-traumatic, primary retinal detachments of 4,922 patients (5,500 eyes) was used for this investigation. This selected population was divided into two groups: aphakic retinal detachment, composed of 1,240 patients (1,374 eyes) and phakic retinal detachment which included 3,682 patients (4,126 eyes). The preoperative features are delineated and the two groups are compared as to age, sex, right eye versus left eye, bilaterality, type and quadrantal distribution of retinal breaks, type and extent of retinal detachment, fixed retinal folds and massive preretinal retraction, demarcation lines, acquired retinoschisis, myopia, peripheral degeneration, choroidal detachment, glaucoma, vitreous or subhyaloid hemorrhage, uveitis, and macular degeneration. The time lapse between cataract extraction and retinal detachment is examined. The origin of the differences between the two groups is discussed.

3. Khodadoust, A.A., The allograft rejection reaction: the leading cause of late failure of clinical corneal grafts, in: Corneal Graft Failure, Ciba Foundation Symposium 15, 152-167. 1973.

## ABSTRACT

A series of 400 penetrating corneal grafts were followed closely for one to three years to assess the contribution of the allograft rejection reaction to late clouding in clinical keratoplasty. Ninety-one grafts, clear at three weeks postoperatively, developed a rejection process, of which some 25% were seen early enough to salvage with steroid therapy. In half of the cases showing late clouding, the typical patterns of rejection of endothelium and/or stroma pathognomonic of immunological rejection were seen. In addition

there was a clear correlation between the degree of vascularization of the graft bed and the incidence and severity of rejection. It is concluded that the specific allograft rejection reaction is the principal cause of late failure of corneal grafts.

4. Silverstein, A.M., and A.A. Khodadoust, Transplantation immunobiology of the cornea, in: Corneal Graft Failure, Ciba Foundation Symposium 15, 106-125, 1973.

#### ABSTRACT

Transplantation of the cornea presents the immunologist with a set of conditions which are unique in transplant biology, with respect to both donor tissue and recipient bed. These include: (1) the normal avascularity of the cornea; (2) the simplified anatomy of its layered structure; (3) the ability to exclude from the graft certain tissue elements (endothelium from lamellar grafts and epithelium from all grafts); (4) the ability to transplant dead tissue successfully (the stroma); and (5) the special sensitivity of the penetrating graft to any embarrassment of its endothelium. These features are considered in a review of the experimental evidence for the survival of the separate cell layers of the cornea, their antigenicity, and the manner in which they may suffer rejection. The effects of these special features of corneal anatomy and physiology on the afferent arc of host sensitization as well as on the efferent arc of allograft rejection are also examined. Finally, it is pointed out that the typical patterns of epithelial, stromal or endothelial rejection constitute pathognomonic indicators of the specific allograft rejection process.

DEPARTMENT OF MEDICINE

مقالات بزرگان خارجی

1. Amidi, S., Dutz, W., Kohout, E., and H.A.  
Ronaghy, Anthrax in Iran, Tropenmedizin und  
Parasitologie 24, 250-255, 1973.

ABSTRACT

Three hundred and twenty-nine cases of human anthrax were observed in Shiraz, Iran, in the last decade. The frequency of infection in man depends on the prevalence of the disease in livestock, which is increased in years of drought.

Preferred sites of inoculation are free-worn parts of the skin and areas in which small injuries provide portals of entry. Protein malnutrition favors infection.

2. Banihashemi, AG, Kohout, E., Dutz, W., and R.  
Rafii, Abdominal "Mediterranean" lymphoma  
and abnormal proteins alpha chain disease,  
Pahlavi Med. J. 4, 377-388, 1973.

ABSTRACT

This paper represents an attempt to diagnose advanced, and or primary malignant abdominal lymphoma from the abnormalities in protein combined with the clinical picture. It is postulated that elevated and abnormal IgA levels may be helpful in the early diag-

nosis of lymphoma of the intestinal type.

Not all cases of malignant abdominal lymphoma are presenting with heavy chain since only one of twenty-two cases screened had an abnormal heavy chain on immuno diffusion. Immuno selection may further help to identify cases with minimal amounts of alpha chains in the serum or other secretions.

3. Banihashemi, AG, Kohout, E., and H. Hedayatee, Aplastic anemia in Shiraz, an analysis of 50 cases with special reference to etiological agents in Southwest Iran, Blut 26, 20-26, 1973.

#### ABSTRACT

Fifty cases of aplastic anemia with male sex preponderance showed a variety of etiological agents causing the disease, predominantly antibiotics and infections in this area. Mycotoxins should be considered. Bone marrow findings were mostly hypoplastic, but both normal and hyperplasia were seen. Lymphocytosis was common, thrombocytopenia frequent. Enlargement of spleen, liver and lymphnodes remained often unexplained and could be a sequel of multiple silent infections or may be due to other conditions with pancytopenic picture which calls attention to the other etiological possibilities and has been discussed briefly.

4. Borhanmanesh, F., Haghighi, P., Hekmat, K., Rezaizadeh, K., and A. Ghavami,, Viral hepatitis during pregnancy, Gastroenterol. 64, 304-312, 1973.



5. Handjani, A.M., Smith, J.C., Herrmann, J.B.,  
and J.A. Halsted, Serum zinc concentration in  
acute myocardial infarction, Chest 65, 185-187,  
1974.

#### ABSTRACT

The serum zinc concentration was examined in 18 patients, 11 with well documented myocardial infarction and 7 patients with chest pain caused by myocardial ischemia without infarction. The zinc level fell sharply in the myocardial infarction patients within a day of onset, then rose to normal values within seven to ten days. There was no comparable change from normal values in the serum zinc level in seven patients with myocardial ischemia, although two showed borderline values. In two dogs with experimentally induced infarction the serum zinc concentration level also declined markedly in a manner similar to that observed in patients with infarction. It is suggested that under appropriate conditions measurement of serum zinc concentration levels may be a useful aid for differentiation of myocardial ischemia from infarction.

DEPARTMENT OF PHARMACOLOGY

مقالات بزرگان خارجی

1. Dar, M.S. and T. Fakouhi, Studies on some aspects of neuropharmacology of butylurea, Arch. Int. Pharm. Ther. 208, 111, 1974.
2. Sharifi-Hossaini, K., and T. Fakouhi, A comparative study of the anti-arrhythmic and hemodynamic effects of five anti-arrhythmic agents, Pahlavi Med. J. 4, 123-141, 1973.

ABSTRACT

Five commonly used anti-arrhythmic agents were tested to determine their comparative anti-arrhythmic efficacy as well as their hemodynamic properties. Three experimental methods of producing arrhythmias were utilized. Although the experimental agents showed qualitatively similar results, significant differences were noted with regard to their onset of action, duration of their anti-arrhythmic activity and magnitude of their hemodynamic responses.

DEPARTMENT OF PHYSIOLOGY

مقالات بزرگان خارجی

1. Tabatabai, M., Boroomand, K., Gettner, S., and  
I. Nazarian, Respiratory and cardiovascular  
responses resulting from intravenous injection  
of sheep hydatid cyst fluid to dogs, Exptl.  
Parasitol. 34, 12-21, 1973.

ABSTRACT

Effects of intravenous injection of sheep hydatid cyst fluid on respiratory and cardiovascular systems were studied in sodium pentobarbital-anesthetized dogs. Under sterile conditions, the fluid was drawn from the liver and lung hydatid cysts of sheep, and centrifuged for 20 min at 500 g. The supernatant fluid was used as the test solution. In a majority of animals, administration of 5 ml of the cyst fluid caused a sharp fall in arterial blood pressure, with or without respiratory changes. The latter, when present, included temporary cessation of respiration followed by rapid shallow breathing. There was usually an increase in the heart rate as the arterial blood pressure dropped. Atropine, 0.5 mg/Kg body wt, given subcutaneously prior to the cyst fluid administration, did not block the responses. Cardiovascular responses produced by intravenous injection of cyst fluid were similar in dogs with positive pressure breathing and with spontaneous breathing. In 7 out of 10 responsive dogs, pretreatment with the antihistamine, chlorpheniramine, abolished the respiratory and cardiovascular responses.

2. Tabatabai, M., Etemadi, A.A., Cohanin, N., and R. Kadivar, Shock induced in cats by intravenous injection of ovine hydatid cyst fluid, Pahlavi Med. J. 4, 398-416, 1973.

### ABSTRACT

The effect of intravenous injection of ovine hydatid cyst fluid on the cardiovascular and pulmonary system of 45 sodium pentobarbital anesthetized cats was studied.

The arterial blood pressure, central venous pressure, stethogram and electrocardiogram were recorded. 10 to 40 seconds after administration of the hydatid cyst fluid, the arterial blood pressure dropped in 72 percent of the cats. The rest (28%) responded to the cyst fluid in the same manner 48 hours or more later during the second or third trial. 80 percent of the cats developed respiratory reaction in the form of shallow rapid breathing or initial apnea followed by tachypnea in the course of the first trial.

The respiratory responses were concomitant with blood pressure changes.

The central venous pressure often increased as the arterial blood pressure diminished. The heart rate usually increased as the arterial blood pressure dropped, although, sometimes the opposite was observed. Certain electrocardiographic changes such as arrhythmia, inversion of the T-wave and depression of the ST segment appeared in some cats.

All the above alterations were reversible.

The parasympatholytic agent atropine, and the antihistaminic drug chlorpheniramine did not block the responses. Injection of the cyst fluid to cats under controlled ventilation also resulted in blood pressure diminution, indicating that the circulatory response was of primary nature, and not secondary to respiratory changes.

The cardiovascular and respiratory responses described above may represent sensitization reactions to the cyst fluid or may be due to pharmacologic effects of the cyst fluid.

Since the fluid was made scolex-free before injection, we do not think that mechanical blockade of the small vessels plays a role in the pathogenesis of the responses.

3. Tabatabai, M., Etemadi, A.A., Ovassapian, A., Farivar, S., and M.S. Shahid Salles, Simultaneous pneumotachographic and stethographic recording during electrical stimulation of the medullary respiratory centers, with comments on the location of the expiratory center, Pahlavi Med. J. 4, 83-96, 1973.

#### ABSTRACT

The medulla oblongatas of 40 sodium pentobarbital-anesthetized cats were explored by electrical stimulation through unipolar stainless steel electrode while pneumotachogram and stethogram were simultaneously recorded. The arterial blood pressure was measured as well in 20 of the cats.

Pneumotachograph accurately recorded any respiratory rate change and properly reflected variations of air flow rate resulting from medullary stimulation. Stethograph occasionally failed to record deep expirations correctly especially when the latter was associated with non-respiratory body movements.

The inspiratory center was localized in the ventral reticular formation from 1 mm caudal to 3.5 mm rostral to the obex. Two expiratory areas were recognized, one rostral to the obex and dorsal to the inspiratory center; stimulation of this area often caused

expiratory apnea. The other was caudal to the obex; stimulation of this area caused deep sustained expiration, and hence is designated expiratory center proper.

4. Tabatabai, M., Etemadi, A.A., Ovassapian, A., Namakidoust, M. and M.S. Shahid Salles, Determination of the afferent limb of the pressor response to stimulation of the central end of vagosympathetic trunk in dogs, J. Surg. Res. 16, 30-39, 1974.

### ABSTRACT

In 30 anesthetized dogs, the vagosympathetic trunks were severed in the neck. The left cephalic stump was carefully dissected and the vagus nerve and sympathetic trunk were separated all the way to the base of the skull. The sympathetic trunk was further identified by the ocular responses (pupillary dilatation and contraction of the nictitating membrane) to its electrical stimulation.

Only stimulation of the very cephalic portion of the vagus nerve, but not the sympathetic fibers, did raise the arterial blood pressure, and also caused fast and deep breathing.

Atropinization and controlled ventilation did not alter the pressor response. However, phenoxybenzamine, an alpha-adrenergic blocker, abolished the blood pressure rise.

The short latency of the response indicates a neural rather than a humoral mechanism. It is most probable that the afferent vagal fibers make central connections within the brain with the sympathetic vasopressor system.

It is this pathway that mediates the effect of electrical stimulation of the afferent vagal fibers on the arterial system.

5. Tabatabai, M., Gettner, S., Nematollahi, K., and J. Yaganehdoust, Quantitative studies on the intradermal tuberculin reaction in southern Iran, Am. Rev. Resp. Dis. 108, 571-575, 1973.

#### ABSTRACT

One hundred and fifty patients of low socioeconomic conditions with active pulmonary tuberculosis were tested with first, intermediate, and second strength doses of purified protein derivative of tuberculin given intradermally. Those that showed a 5 mm or larger skin induration at 48 hours to these doses constituted 72, 90, and 96.7 per cent of patients, respectively. Patients with a 10 mm or larger skin induration at 48 hours represented 52.6, 76.7, and 92.4 per cent of those tested.

According to the criteria listed in the 1969 edition of Diagnostic Standards and Classifications of Tuberculosis, 23.3 per cent of these patients with active pulmonary tuberculosis could be classified as Mantoux-nonreactive or doubtfully reactive to 5 tuberculin units at 48 hours after the test.

6. Tabatabai, M., Ismaili, M.H., Honari, J., and M. Norooz-Zadeh, Effect of environmental temperature on blood glucose level in rats during food deprivation, IRCS (73-12) 3-7-25, 1973.
7. Tabatabai, M., Kadivar, R., Nikpour, N., and M. Nourooz-Zadeh, Ureteral motility in sheep: frequency, contraction pressure, and effects of aminophylline, IRCS 2, 1234, 1974.

8. Tabatabai, M., Ovassapian, A., Etemadi, A.A., Turner, B., and H. Vazir, Effects of electrolytic lesions of the medullary respiratory centers on respiration in cats, IRCS, (73-9)12-1-13, 1973.
9. Tabatabai, M., Shahid Salles, M.S., Ovassapian, A. and R. Kadivar, Food intake and weight gain during chronic exposure to different environmental conditions, Pahlavi Med. J. 4, 224-238, 1973.

#### ABSTRACT

The effect of the ambient temperature on food intake and weight gain of rats was studied.

Three groups of 10 white male rats of the same age and approximately equal weight were housed in similar cages at three different air temperatures; 18°, 22°, and 32° C. They had free access to food and water around the clock. Their daily food intake and weekly weight change were measured. On the whole, the rats in the high air temperature ate less food and gained less weight as compared to the food consumption and weight gain of rats in the colder temperatures ( $p < 0.005$ ). The differences of food intakes and weight gains of two groups at 18° and 22° C were not significant; the P values were respectively  $>0.5$  and  $0.5 > P > 0.25$ .

The above results confirm that in the homeotherms, food intake increases in cold and decreases in heat. Furthermore, it seems there is a limit to the maximal amount of food rats can take at lower temperatures during chronic exposure.



DEPARTMENT OF OTORHINO-  
LARYNGOLOGY

مقالات بزرگان خارجی

1. Farahmandfar, A. G., Haghighi, L., and B. Sepehri,  
Studies on chronic otitis media in Shiraz, Iran,  
Pahlavi Med. J., 4, 1-14, 1973.

ABSTRACT

Chronic otitis media is still an important and widespread disease in this part of the world. Among 300 patients with chronic otitis media, Staph. aureus, Proteus, Ps. aeruginosa and Staph. albus were frequently the most pyogenic etiological organisms. Shigella in the purulent aural discharge of one patient and Salmonella C<sub>1</sub> in another patient were seen. Sensitivity tests were performed for the organisms, and patients treated accordingly.

Male patients were more often affected than females and unilateral and central types of perforations were more frequent.

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بخش جراحی

DEPARTMENT OF SURGERY

مقالات بزیان خارجی

1. Emadi, M., and E.E. Noakes, The pharmacological control of time of parturition in the ewe, Vet. Record p. 76, 1973.
2. Tirgari, M., and L.C. Vaughan, Clinicopathological aspects of osteoarthritis of the shoulder in dogs, J. Small Anim. Pract. 14, 353-356, 1973.

#### ABSTRACT

Osteoarthritis of the shoulder was discovered in twelve canine cadavers during an extensive survey that was primarily conducted to study stifle arthritis. Clinical, radiographic and pathological aspects of the shoulder arthropathies are described.

The significance of these lesions in the aetiology of shoulder lameness and difficulties associated with their diagnosis are discussed.

DEPARTMENT OF CLINICAL STUDIES

مقالات بهزیان خارجی

1. Toofanian, F., F.W.G. Hill, and D.E. Kidder,  
Bovine small intestinal  $\beta$ -galactosidases, Res.  
Vet. Sci. 15, 128-130, 1973.

ABSTRACT

The  $\beta$ -galactosidase activity of the bovine small intestinal mucosa has been studied over the pH range of 3 to 6.2 using different substrates, and in the presence or absence of the inhibitor p-chloromercuribenzoic acid (pCMB). The results suggest the presence of 3  $\beta$ -galactosidases: a "neutral"  $\beta$ -galactosidase (lactase) with optimum pH of 5.4, an 'acid'  $\beta$ -galactosidase with optimum pH of 4.6, and a 'hetero'  $\beta$ -galactosidase with pH optimum of 5.4.

2. Toofanian, F., Hill, F.W.G., and D.E. Kidder,  
The mucosal disaccharidases in small intestine  
of the calf, Ann. Rech. vétér. 4, 57-69, 1973.

ABSTRACT

The postnatal development and pattern of distribution of the mucosal disaccharidases, lactase, cellobiase, trehalase, maltase, and sucrase have been studied in the young calf, on conventional, or on high lactose content diets from birth up to six months of age. In the newborn calf, lactase had the highest level of activity, followed by cellobiase, trehalase and maltase activities, respectively.

There was an initial fall in lactase and cellobiase activities during the first 4 weeks of life. In the ruminant calves, a further decrease in lactase, cellobiase and trehalase activities occurred at the time of weaning, whereas in the non-ruminants the levels of activity did not significantly change. Maltase activity increased from birth up to 8 weeks and usually remained unchanged thereafter.

Lactase, cellobiase and trehalase activities were highest in the proximal jejunum, rather lower in the duodenum, and decreased distally, with a sharp fall in the ileum. Maltase activity showed a very irregular pattern of distribution, with the lowest levels of activity occurring in the duodenum.

The non-ruminant calves showed higher levels of lactase, cellobiase and trehalase activities and it is concluded that in the calf, by feeding a high-lactose, low-roughage diet, it is possible to influence and maintain higher disaccharidase levels.

3. Toofanian, F., Kidder, D.E., and F.W.G. Hill,  
The amylases of calf small intestine, Brit. Vet.  
J. 130, XIX-XXI, 1974.

#### ABSTRACT

The levels of dextranase, glucoamylase and adsorbed  $\alpha$ -amylase in the mucosa have been measured along the length of the small intestines of non-ruminant and ruminant calves. The levels of dextranase and glucoamylase are very low compared with those found in non-ruminant species.

DEPARTMENT OF PATHOBIOLOGY

مقاله بزرگان خارجی

1. Afshar, A. and H. Kayvanfar, Occurrence of precipitating antibodies to bluetongue virus in sera of farm animals in Iran, Vet. Rec. 94, 233-235, 1974.

ABSTRACT

A total of 2921 sera from farm animals slaughtered at the Shiraz and Tehran abattoirs were examined for the presence of bluetongue virus precipitating antibodies. Antibodies were demonstrated in 115 sera (7.6 per cent) of the sheep, 92 (13.6 per cent) of the goats, 41 (0.6 per cent) of the cattle, four (5.9 per cent) of camels and one (4.5 per cent) of the pigs. The 70 serum samples obtained from water-buffaloes were all negative. Generally, the incidence of sera with antibodies was higher among ovine and caprine serum samples collected from the Tehran slaughter house than those from Shiraz. The results suggest that bluetongue virus occurs among animals in Iran.

دانشکده کشاورزی

COLLEGE OF AGRICULTURE

دانشکده کشاورزی

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بخش آبیاری

DEPARTMENT OF IRRIGATION

مقالات بزرگان خارجی

1. Sionit, N., Ghorashy, S.R. and M. Kheradnam,  
Effect of soil water potential on growth and yield  
of sunflower (Helianthus annuus), J. Agric. Sci.  
Camb. 81, 113-116, 1973.

#### ABSTRACT

The effect of soil water potential of the root media on the vegetative growth, seed and oil yield of sunflower (var. Record) grown in containers under field conditions was investigated.

The weight of shoots and the total leaf area of plants before flowering significantly decreased with decrease in the water potential of the root media. There was a sharp reduction of shoot weight as the potential decreased from -0.32 to -1.25 bars and then a further slow decline as soil water potential dropped to -8.6 bars. There were no significant differences in the 100-seed weights and percentage of oil among the treatments, but the total number of seeds was significantly different.

The data did not indicate the existence of a threshold water potential above which yield was independent of soil water potential, but rather that yield was a continuously decreasing function of soil water potential.



2. Sionit, N., and D.W. Henderson, Changes in stem diameter of herbaceous and woody plants as a measure of internal water balance, Iranian J. Agr. Res. 2, 39-50, 1973.

### ABSTRACT

A high sensitive electronic dendrometer was used in studying the water relations and factors affecting the internal water balance of herbaceous plants. A potato (Solanum tuberosum L.) and a tobacco plant, (Nicotiana tabacum L.) with non-woody stem structure, as well as a privet tree (Ligustrum vulgare L.), with woody-stem structure, showed the following changes in stem diameter: rapid changes in response to light, diurnal variations due to climatic conditions, and long term changes due to soil water conditions.

Shrinkage in stem diameter was observed as soon as lights were turned on. This shrinkage was faster in the afternoon, when other climatic conditions were suitable for high transpiration. A rapid increase in stem diameter and transpiration rate was observed in both herbaceous and woody-stem plants immediately after irrigation. As soil water was depleted the rate of increase in stem diameter and transpiration declined. At low soil water content the stem started to shrink. These variations in stem diameter, due to changes in climatic and soil water conditions, were good indicators of the internal water balance for both herbaceous and woody-stem plants.

3. Sionit, N., Kheradnam, M., and S.R. Ghorashy, Effect of different osmotic potentials of media on germination of three safflower varieties, Physiol. Plant. 29, 272-273, 1973.

## ABSTRACT

The effect of osmotic potentials, 0 to -13.5 atm (-1.37 M Pa), on the germination of three safflower varieties (Carthamus tinctorius L.) was studied at a controlled temperature ( $30 \pm 2^{\circ}\text{C}$ ) using a non-electrolyte substance, polyethylene glycol 6000. The varieties were cv. Ute, cv. Iranian local 3151, and cv. Iranian local 2811. The per cent germination of the three varieties averaged over all osmotic potentials were: 86, 77 and 61 for local 3151, local 2811 and "Ute", respectively. The Ute variety had the highest, and the local 3151 variety had the lowest rate of germination reduction. The variations among the varieties in the percent and rate of germination were due to osmotic effects of the media.

بخش اقتصاد کشاورزی

DEPARTMENT OF AGRICULTURAL  
ECONOMICS

مقاله بزرگان خارجی

1. Soltani, G.R., The effects of farm mechanization on labor utilization and its social implications, Indian J. Agric. Economics, 1974.

1. Eghbal, K., and F. Tabesh, Zweijährige Feldversuche zur Wirkung der Strohdüngung zu Zuckerrüben im Iran, J. landwirt. Forschung 24, 146-154, 1973.

ABSTRACT

An experiment was conducted for two years (1969-1970) at the Pahlavi University, College of Agriculture Experimental Station. In this study effects of straw and nitrogen were investigated on the dry weight yield, percent sugar, and uptake of nitrogen by roots and leaves of sugar beet. The design of the experiment was a poly-factorial as described by Boguslawski (1942, 1958) with four replications. All plots receive 100 kg./ha.  $P_2O_5$  and 100 kg./ha.  $K_2O$  as a split application during the fall and the spring.

Each plot consisted of 9 rows with 55 cm. between rows and each row was 5 m. long. Polygerm sugar beet seeds were over planted on ridges and then thinned so that there was 18 cm. between two plants on the ridge. Plots were irrigated every 10 days during the growing season. During harvest 7 rows were harvested by eliminating half a meter from each end of the plot. All yield data reported have been based on dry weight basis.

Dry wheat straw were cut to approximately 25 cm. Section and were applied at the rate of 5 tons/ha. to the soil. Straw was mixed with soil by disk-plow at the depth of 40 cm. The check plots received no straw. In order to adjust C/N ration, nitrogen was applied at the rate of 50 kg./ha. as Ammonium nitrate at two

different times. In one nitrogen was applied with straw and in another treatment nitrogen was applied in the spring before planting. Therefore, in this experiment we had four treatments. I. straw, no-nitrogen, II. straw with nitrogen applied in the spring, III. no-straw, no-nitrogen and, IV. straw with nitrogen applied simultaneously. Each of the above treatment received five levels of nitrogen. N<sub>1</sub>-0, N<sub>2</sub>-60, N<sub>3</sub>-120, N<sub>4</sub>-160 and N<sub>5</sub>-200 kg/ha. The nitrogen for N<sub>4</sub> and N<sub>5</sub> was applied as split application half of it before planting and the other half as top-dressing.

Results of experiment indicated that application of straw in most cases increased the sugar beet yields as compared with no-straw treated plots. The application of nitrogen with straw increased the dry matter yield of both roots and leaves specially, when nitrogen was applied in the spring.

There was no significant increase in yield when nitrogen rate exceeded 160 kg/ha. Beyond 200 kg/ha, the increase in yield leveled off and followed a straight line. In this experiment, regardless of treatments, there was no depression in yield. The maximum uptake of nitrogen in both years were observed in treatment which received 200 kg/ha. nitrogen. The maximum percent of sugar, 21% was observed in treatments II-N<sub>2</sub> and IV-N<sub>3</sub>. On the average the increase in nitrogen from 0 to 120 kg/ha. increased the percent of sugar slightly. However, application of nitrogen from 120 to 200 kg/ha. reduced the percent of sugar.

2. Kheradnam, M., and S.R. Ghorashy, Salt tolerance of chickpea varieties during germination, Agronomy J. 65, 329, 1973.

#### ABSTRACT

Chickpea (Cicer arietinum L.) is grown extensively in Iran. The accumulation of salts in irrigated soils may reduce the germination, growth, and eventually the yield of this crop. Knowledge of variation in

salt tolerance in chickpeas is important for assigning varieties to fit the soil.

Effects of seven salinity levels (0 to 2% NaCl) on germination of Iranian chickpea varieties, 'Isfahan 11', 'Ardebil 169', 'Ardebil 174', and Ahar 174' were determined under controlled temperature ( $30 \pm 2$  C). Increased salinity reduced the germination of Isfahan 11 significantly, more than Ardebil 174 and Ahar 174. Sodium chloride concentrations greater than 0.5% reduced the germination of all varieties significantly. The general trend in germination reduction with increased salinity was the same for each variety.

3. Mokhtarzadeh, A., R.H. Busch, and W.C. Shuey,  
Evaluation of hard red spring wheat (Triticum aestivum L.) breadmaking quality characteristics by utilizing a minimum standard method, Crop. Sci. 13, 615-618, 1973.

### ABSTRACT

Cultivar responses to environments for test weight, 1000 kernel weight, wheat mineral, and mixing time were determined for seven commercially grown wheat (Triticum aestivum L.) cultivars in 57 Uniform Regional Spring Wheat Nurseries (URSWN) from 1964 through 1967. The analysis was not applicable to small and large kernel sizes or to dough characteristics because of nonlinear responses to environments.

We determined that four minimum standard check cultivars were needed to evaluate wheat for most environments from the 1964 to 1967 data. These minimum standard check cultivars were then used for 1968 and 1969 URSWN data, with a weighted evaluation score for each trait, to evaluate 10 strains and cultivars. This new minimum standard method appeared to offer the following main advantages over the present procedure used to evaluate potential varieties: 1) it consi -

ders the responses of check cultivars to environments; 2) it places quality evaluations on a minimal standard base for a comparison among breeding lines; 3) it provides a statistical test of the mean minimum evaluation scores; and 4) if economic weights of each quality trait were available, it would indicate economic worth of a selection to industry.

4. Poostchi, I., and W.R. Schmehl, Relative total amino acid contents of sugarbeets at harvest as influenced by preharvest application of gibberellic acid and growth retardants, Israel J. Agric. Res. 23 69-73, 1973.

#### ABSTRACT

The effects of GA and three growth retardants (maleic hydrazide, pyrocatechol and oxy vanadium sulfate) applied separately or in combination, preharvest, were studied to determine if such applications can alter the total amino acid content and improve the quality of sugarbeet roots when the crop is supplied with high amounts of nitrogen. The results indicated that amino acid synthesis and accumulation in the tops or roots of sugarbeets did not have a significant effect on the sucrose synthesis and accumulation in the field. However, a combination of GA and growth retardants lowered the amino acid contents of roots and tops significantly.

DEPARTMENT OF HORTICULTURE

مقاله بزرگان خارجی

1. Shaybany, B., and H. Sharifi, Effect of pre-harvest applications of ethephon on leaf abscission, fruit drop and constituents of fruit juice in pomegranates, J. hort. Sci. 48, 293-296, 1973.

ABSTRACT

Five concentrations of ethephon (0, 500, 1000, 1500, 2000 ppm) were applied to Rabbab pomegranate trees 18 days before harvest. With increased ethephon concentrations the percentage soluble solids, pH, vitamin C content and soluble solids to acid ratio of the juice decreased significantly. However, leaf abscission fruit drop and percentage acid of the juice increased. As the soluble solids to acid ratio is the best single chemical criterion of pomegranate ripening, it was concluded that ethephon applications delayed ripening, and that the observed fruit drop was a direct effect of ethephon rather than fruit ripening.

DEPARTMENT OF ANIMAL PRODUCTION

مقالات بزرگان خارجی

1. Makarechian, M., Farid, A., Sefidbakht, N., and M.S. Mostafavi, The influence of breed and weaning age on feedlot performance of Iranian fat-tailed sheep, Iranian J. Agric. Res. 2, 21-29, 1973.

ABSTRACT

Fifty six spring-born ram lamb of three fat-tailed Iranian breeds, Mehraban (M), Karakul (K) and Naeini (N) were randomly allocated to suckling periods of 45, 60 and 75 days to study the effect of suckling period length on feedlot performance. The lambs were creep-fed during the suckling period and were put in individual feeding boxes at weaning and fed ad libitum until 195 days of age.

2. Sefidbakht, N., and H. Movassagh, Effect of season of lambing and suckling on ovarian activity and post-partum conception, Iranian J. Agric. Res. 2, 31-37, 1973.

ABSTRACT

Two experiments were conducted, under seasonal conditions of fall and spring. For the fall trial (trial 1), thirty ewes lambing between November 1 and



November 20 were used. They were randomly divided into four groups and treated as follows: Group 1, nursed their lambs for about 48 hours, and laparotomized at 23 days postpartum to observe ovarian activity. Group 2, nursed their lambs as in group 1, but left to be laparotomized at 44 days postpartum. Group 3, reared their lambs for 60 days and laparotomized on the 23rd day postpartum. Group 4, was similar to group 3 in regard to period of nursing the lambs but left to be laparotomized at 44 days postpartum. Since ovarian observations of groups 1 and 3 showed that almost all ewes in both the early and late weaned groups had ovulated, therefore laparotomy at 44 days postpartum was not performed in groups 2 and 4.

## بخش حفاظت گیاهان

### DEPARTMENT OF PLANT PROTECTION

#### مقالات بسزبان خارجی

1. Abivardi, C., A stylet nematode, Tylenchorhynchus cylindricus Cobb 1913, infesting the common guava, Psidium guajava L., in Iran, Nematologia Medit. 1, 139-140, 1973.
2. Abivardi, C., and M. Sharafteh, A preliminary report on the occurrence of some unreported plant-parasitic nematodes in Southern Iran, Pfl Krankh. 80, 612-614, 1973.
3. Abivardi, C., and M. Sharafteh, The alfalfa stem nematode, Ditylenchus dipsaci (Kühn 1857) Filipjev 1936 as an important threat for cultivation of alfalfa in Iran, Nematologia Medit. 1, 22-27, 1973.

#### ABSTRACT

The alfalfa stem nematode, Ditylenchus dipsaci (Kühn 1857) Filipjev 1936, is reported for the first time from Iran. The damage to a 10-hectar alfalfa farm at the vicinity of Shiraz (Iran) was so severe that no harvest was possible. Although no other infestation has been observed in other areas, it seems likely that infestations may be widespread throughout the country in areas where the plant has been grown for many centuries and a survey is in progress to ascertain the extent of distribution.

4. Izadpanah, K., Effect of certain substances on the infectivity of curly top virus preparations, Phytopath. Z. 77, 38-43, 1973.

#### ABSTRACT

The effect of nucleases and protein degrading agents on the infectivity of curly top-virus extracts was studied. Two-molar urea and 0.5% SDS inactivated the virus. No infectivity was obtained from phenol-treated extracts. Pancreatic ribonuclease and deoxyribonuclease at the rate of 25  $\mu$ g/ml and pronase at the rate of 3 mg/ml did not have appreciable effect on the infectivity in 25-min. exposures. It was also found that high salt concentrations reduce the infectivity while 2-mercaptoethanol prevents oxidation and preserves the infectivity in the extracts. The information obtained herein supports the view that the causal agent of curly top contains protein and is viral in nature.

5. Izadpanah, K., and R. J. Shepherd, Extraction of the curly top agent from segmented petioles of beet, Phytopathol. 63, 1209-1210, 1973.

#### ABSTRACT

A convenient and effective technique for extracting the curly top causal agent consists of immersing 4- to 6-mm segments of recently infected beet petiole and leaf midrib for 24 to 48 hr in 0.01 M sodium citrate containing 0.1 to 0.4% 2-mercaptoethanol. Beet leafhoppers fed upon such extracts transmitted at rates comparable to those reported for leafhoppers fed on conventional phloem exudates from beets.

DEPARTMENT OF SOIL SCIENCE

مقاله بزیان خارجی

1. Hojjati, S.M., Templeton, Jr., W.C., Taylor, T.H., McKean, H.E., and J. Byars, Post fertilization changes in concentration of nitrate nitrogen in Kentucky blue grass and tall fescue herbage, Agronomy J. 65, 880-883, 1973.

ABSTRACT

A continuing deterrent to increased use of N fertilizers on humid-zone grasslands is the possibility of deleterious nutritive effects resulting from ingestion by animals of herbage high in nitrate. Studies were initiated to obtain data on the pattern of  $\text{NO}_3\text{-N}$  accumulation and disappearance in Kentucky bluegrass (Poa pratensis L.) and tall fescue (Festuca arundinacea Schreb.) herbage following spring fertilization with four levels of N.

Identical experiments of split-plot design were conducted on adjacent areas of the two grasses. Ammonium nitrate was applied to supply 50, 100, 150, or 200 kg/ha of N. The N treatments were replicated in time, with a spacing of 3 weeks between replications. Herbage samples were collected at weekly intervals for a period of 6 weeks following fertilization. Dry matter yields and concentration of total N and  $\text{NO}_3\text{-N}$  in the herbage were determined.

The pattern of accumulation and disappearance of  $\text{NO}_3\text{-N}$  appeared to be similar for the two grasses. Accumulation peaks were almost always reached within 14 days following fertilization, after which the values gradually declined. Length of time required for dissipation of the effect of N application on  $\text{NO}_3\text{-N}$  levels was

directly related to quantity of fertilizer used but also appeared to be dependent on the species of grass. In two of the three growth periods, for example, the concentrations of  $\text{NO}_3\text{-N}$  in Kentucky bluegrass receiving 200 kg/ha of N decreased to values below 2,000 ppm within 4 weeks after fertilization. In contrast, tall fescue herbage consistently contained 2,000 ppm or more of  $\text{NO}_3\text{-N}$  6 weeks after fertilization at the 200 kg/ha rate.

Coefficients of variation for ppm of  $\text{NO}_3\text{-N}$  were 22.5% for Kentucky bluegrass and 21.1% for tall fescue; the C.V. for percent total N was 4.4% in bluegrass and 4.3% in fescue. Peak  $\text{NO}_3\text{-N}$  levels and maximum total-N values occurred at essentially the same time.

Some implications of the findings are discussed with respect to utilization of N-fertilized grasslands and the use of herbage  $\text{NO}_3\text{-N}$  levels for predicting response of grasslands to N fertilization.

## کتاب بزرگان خارجی

1. Mahjoory, R., Clay mineralogy, Physicochemical and morphological characteristics of some soils in certain arid regions of Iran, 116 pages, 1974.

بخش صنایع غذایی و تغذیه

DEPARTMENT OF FOOD TECHNOLOGY  
AND NUTRITION

مقالات بزرگان خارجی

1. Maleki, M., The effect of non-enzymatic browning in the presence of different sugars on the rancidity of lipids, Fette Seifen Anstrichm. 75, 103, 1973.
2. Maleki, M., Food consumption and nutritional status of 13 year old village and city school boys in Fars province, Iran, Ecology Food Nutr. 2, 39, 1973.

## بخش ماشین آلات کشاورزی

### DEPARTMENT OF FARM MACHINERY

#### معمالات بزیان خارجی

1. Hakimi, A.H., and A. Erami, Effects of tillage and no-tillage on corn yield and economical feasibility of different practices, Landwirtsch. Forsch. 26, 105-109, 1973.

#### ABSTRACT

It is therefore concluded that for the particular soil and environmental conditions of the experiment site, an optimum tillage program of one chisel plowing followed by one disking and planting is more productive and more economical than the no tillage method or the conventional tillage method widely practiced in the area.

Hakimi, A.H., Erami, A., and S.R. Ghorashy,  
Effect of different tillage methods on growth and  
yield of silage corn, Agronomy J. 65, 509-510  
1973.

#### ABSTRACT

Tillage methods under irrigated soils in arid or semiarid regions have not been studied extensively. Four methods: chisel plow and one disking (T<sub>1</sub>), mold-board plow and two disking (T<sub>2</sub>), rotary tillage only (T<sub>3</sub>), and no tillage (T<sub>4</sub>) were used in the present study.

A full-season corn (Zea Mays L. ) hybrid (Israel variety 'Neveh Yaar 70') suitable for both silage and grain was planted on a calcareous clay soil at the College of Agriculture Experiment Station in Bajegah, Shiraz. Final plant stand was 50,000/ha. Plant height was used as an indicator of plant growth. Whole plants were harvested during the milk stage and fresh weights were determined. Greatest growth occurred with method T<sub>1</sub>. Silage corn yield were 49.7, 46.1, 44.1, and 40.7 mt/ha. for methods T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, and T<sub>4</sub>, respectively.



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بخش مهندسی راه و ساختمان

DEPARTMENT OF CIVIL ENGINEERING

مقالات بزرگان خارجی

1. Farshad, M., On general conservative end loading of pretwisted rods, Int. J. Solids Structures 9, 1361-1371, 1973.

#### ABSTRACT

Treated is a pretwisted rod subjected to combined action of generally nonconservative force and couple applied at the end. The general conservative end loads are obtained through the consideration of an adjoint field and from the study of the bilinear concomitant of the equations of motion. Several special cases of interest are discussed.

2. Farshad, M., Moving shear loads on the surface of an inhomogeneous elastic half space with transition layers, Indian J. Technol. 11, 102-104, 1973.

#### ABSTRACT

The problem of an inhomogeneous elastic half space subjected to a harmonically moving shear load is treated. At a particular stage, the properties of the medium are assumed to vary in the depth coordinate only. It is shown that transition layers may occur, and

that for a given load speed subsonic and supersonic regions may develop simultaneously. The case of a medium with variable density is treated as an example.

3. Farshad, M., Some considerations on Timoshenko bar problem subjected to nonconservative loading, J. Appl. Mech. 1974.

#### ABSTRACT

The problem of a Timoshenko bar subjected to motion dependent distributed and compressive axial end loading, is considered herein. The aim is the elaboration of the definition of follower type loading in media with microstructure and with independent local motions which may be exemplified, to the first order, by a bar having independent lateral translation and rotation.

4. Farshad, M., Variation of eigenvalues and eigenfunctions in continuum mechanics, AIAA J. 1974.

#### ABSTRACT

The effect of variation of design functions on the eigenvalues and eigenfunctions of physical systems governed by a, generally nonself adjoint, set of differential equations is studied. Explicit formulas are obtained which give the first variation of system response in terms of its response in the unperturbed state. The results are then applied to some vibration, stability and optimization problems.

5. Farshad, M., and G. Ahmadi, The effect of boundaries on wave propagation in media with microstructure-Reflection of plane waves at a free plane boundary, Bul. Seismol. Soc. Am. 63, 1507-1514, 1973.

#### ABSTRACT

The problem treated here is that of reflection of plane waves from the free plane boundary of a half-space made of a medium with microstructure. It is shown that an incident ray of either dilatational or distortional type, in general, gives rise to four reflected rays, two of each type. Two of these reflected waves are evanescent and the other two propagate into the medium. Each of these reflected waves have their own phase shifts relative to the incident wave.

6. Farshad, M., and G. Ahmadi, On vibrations of bounded anisotropic inhomogeneous elastic media, Iranian J. Sci. Tech. 1974.

#### ABSTRACT

Treated is the eigenvalue problem associated with the vibrations of an anisotropic inhomogeneous linear elastic body. It is assumed that the material properties have a smooth variation in the medium. Based on this assumption a perturbation scheme is employed and the influence of inhomogeneity on the natural frequencies and mode shapes of vibration are analytically obtained. Illustrative examples are also included.

7. Farshad, M., and I. Tadjbakhsh, Optimum shape of columns with general conservative end loading, JOTA. 11, 413-420, 1973.

#### ABSTRACT

In this paper, the optimal shape of a column with the most general conservative state of loading is determined. The boundary conditions of a column contain, in general, 16 parameters; it is shown that the boundary values of a column with general conservative loading may, at most, depend on nine constants. The influence of these parameters on the optimal shape and corresponding buckling load is also obtained.

8. Habibagahi, K., Temperature effect on consolidation behaviour of over-consolidated soils, Proc. 8th Int. Conf. Soil Mech. & Foundation Engng, Moscow, pp 159-163.

#### ABSTRACT

In order to evaluate the influence of temperature on consolidation test results, following temperature-controlled tests were carried out. Consolidation tests on normally consolidated and overconsolidated samples of (a) an organic soil (organic Paulding) which exhibits appreciable amount of secondary consolidation, and (b) an inorganic soil (inorganic Paulding) which does not undergo significant amount of secondary consolidation. Testing temperature was kept constant for any given pressure increment and changed from one pressure increment to the next.

The test results show that the void ratio-pressure relationship of the inorganic soil was not significantly affected by temperature, while that of the organic soil proved to be sensitive to testing temperature. The maximum previous consolidation pressure,  $P_{max}$ , of the overconsolidated samples of organic soil dropped by 25% with an increase of 25°C in testing temperature. In a similar manner, a decrease of testing temperature by 25°C increased  $P_{max}$  by 25%. An increase in the testing temperature of the overconsolidated samples of the organic soil increased the rate and magnitude of its secondary consolidation thus resulting in a lower void ratio for a given consolidation pressure, or a downward shift of the void ratio-pressure curve. The rate and magnitude of secondary consolidation of the inorganic soil was not affected by the testing temperature.

DEPARTMENT OF ELECTRICAL  
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مقالات بسزبان خارجی

1. Moaveni, M.K., Variations of the optical parameters of red blood cell with wavelength and oxygen saturation, Indian J. Biochem. Biophys. 10, 123-126, 1973.

ABSTRACT

Using the multiple scattering theory and the results of the transmittance and reflectance measurements, the optical parameters of both oxygenated and reduced human red blood cells have been calculated at or near the two wavelengths (0.685 and 0.920 $\mu$ ) usually used in oximeters. It is demonstrated that while absorption cross-section is a strong function of the cell oxygen content and wavelength of the incident radiation, scattering cross-section is fairly independent of both at least in the frequency range of interest.

2. Moaveni, M.K., and A. Razani, A new technique for optical transmission and reflection by blood, Indian J. Biochem. Biophys., March 1974.

ABSTRACT

Invariant imbedding technique is applied to the problem of calculating the optical reflectance and transmittance by a slab with randomly distributed scatterers (whole blood) when monochromatic plane wave is incident obliquely on one of its faces. The anisotropy of the

scattering characteristic for single scatterer has been taken into account by assuming isotropic scattering in the back hemisphere and scattering into forward hemisphere is in the direction of incident wave on the scatterer. Solving the resulting integral equations by iterative technique, approximate analytical expressions are obtained for the reflectance and transmittance. Effect of the incident angle and the angular characteristics of both reflectance and transmittance functions are explicit in the final results.

3. Mokari-Bolhassan, M.E., Computer-aided design of general parameter filters, Int. J. Electronics 34, 689-699, 1973.

#### ABSTRACT

Two different algorithms are presented to design lossless ladder filters. Both methods are developed from a characteristic equation of the filters. The first method defines a performance index  $J$  and, using the special properties of the formulation used, evaluates the gradient of  $J$  with respect to element values. Optimization routines are then used to obtain element values to give the desired response. The second method starts with the characteristic equation and obtains a set of algebraic equations to evaluate the errors in the element values. Using this information, element values are adjusted to obtain the desired filter.



4. Nehrir, M.H., and K. Heuch, A hybrid predictive controller with an adaptive fast model, Int. J. Control 17, 1233-1246, 1973.

### ABSTRACT

A hybrid predictive controller is proposed for control of second-order, or higher-order systems which can be approximated to second order. The proposed controller uses hybrid computation and is suitable for on-line computer controlled problems. A fast time second-order adaptive model of the system is used in which the gain and one of the equivalent time constants of the system is calculated instantaneously. As an example the proposed controller is used for control of the output voltage of a d.c. generating system under load variations. Responses are compared when the controller uses a system model with fixed parameters and when the model is made adaptive.

DEPARTMENT OF CHEMICAL  
ENGINEERING

مقالات به زبان خارجی

1. Davalloo, P., Comparison of van Laar and Wilson equations for Isopropanol-water binary system, J. Chem. Engng. Data 18, 431, 1973
2. Taheri, M., and S.A. Beg, Blast furnace gas cleaning, Metals & Materials Inst. of Metals J., 1973.
3. Taheri, M., and S.A. Beg, The effect of scale-up on the performance of high energy scrubbers, J. Air Pollution Control Association, Nov. 1973.

DEPARTMENT OF MECHANICAL  
ENGINEERING

مقالات بزرگان خارجی

1. Ahmadi, G., and M. Farshad, On the dynamic response of a generally orthotropic plate to random load, Iranian J. Sci. & Tech. 2, 279-288, 1973.

ABSTRACT

The dynamic response of a generally orthotropic plate subjected to random loading is studied. A technique based on a perturbation scheme is developed which yields the statistical properties of the response. As an illustrative example the case of a simply supported plate under a concentrated random load is considered, and the autocorrelation and spectral density function of the displacement field are obtained.

2. Ahmadi, G., and J. Hashemi, The random vibration of a nonuniform cantilever beam with concentrated mass, Veh. Sys. Dyn. 2, 225-233, 1973.

ABSTRACT

The random vibration of a nonuniform cantilever beam with a concentrated mass at its end, is studied as a simple model of the suspension spring of a motor vehicle. The spectral response of the displacement of the concentrated mass is obtained when the beam is subjected to the random motion of the support. The conditions for the validity of the single degree approximation is also discussed.

3. Ahmadi, G., and M. Shahin Poor, Universal stability of magneto-cosserat fluid motions, Istituto Lombardo (Rend. Sc.) 107, 343-352, 1973.
4. Ahmadi, G., and A. Razani, Some optimization problems related to cooling fins, Int. J. Heat Mass Transfer 16, 2369-2375, 1973.

#### ABSTRACT

The problems of minimizing the volume of purely conducting and conducting-convecting fins are solved. Exact solutions are obtained for the corresponding cross sectional areas and the temperature distributions. An approximate solution is also given for a convecting-radiating fin. The results are plotted and discussed.

5. Bahadori, M.N., and F.E. Edlin, Improvement of solar stills by the surface treatment of the glass, Solar Energy 14, 339-352, 1973.

#### ABSTRACT

Glass still glazings are treated with sodium silicate or hydrofluoric acid to make them more wettable. Consequently, the angle of inclination can be reduced to  $1.5^\circ$ . Stills of low glazing height are ammenable to diffusion mass transport which is expressed for the natural parameters of air temperature, wind, and solar energy intensity and for vapor length.

6. Bahadori, M.N., A feasibility study of solar heating in Iran, Solar Energy 15, 3-26, 1973.

#### ABSTRACT

A single-glass, flat-plate solar collector for air heating is analyzed for an optimum tilt angle of  $45^\circ$  for Shiraz ( $29^\circ 36'$  N latitude,  $52^\circ 32'$  E longitude, and elevation of 4500 ft). The absorbed and utilized solar energy, as well as the collector outlet air temperature, the glazing, and the blackened plate temperatures, are determined with respect to the incident solar energy, parametric with collector inlet air temperatures and flow rates and outside air temperature.

A  $10 \text{ ft}^2$  collector and an  $8 \text{ ft}^3$  rock storage are built to experimentally verify the analysis and obtain cost estimates. A  $5000 \text{ ft}^2$  single-story building is considered for solar heating and economic evaluations. Based on an annual interest rate of 8 per cent amortization of the solar heating equipment over 15 yr, electrical energy costs of 3 c/kWh, and fuel costs of \$1.10 per  $10^6$  B.t.u., the optimum collector area which results in minimum annual operating costs (of the solar heating system and the auxiliary heating unit) is determined. A net saving results because solar heating is employed. The feasibility study is extended to eleven other Iranian cities. It is found profitable to employ solar heating in cities with low annual rainfall and relatively cold winters. An effective evaporative cooling is obtained by spraying water over the rock storage during the summer.

7. Razani, A., Boundary extrapolation in heat transfer calculations, Int. J. Heat Mass Transfer 16, 1052-1056, 1973.

8. Satter, M.A., Design and analysis of an oil cushion,  
J. Mech. Engng. 15, 48-52, 1973.

#### ABSTRACT

The dynamic characteristics of an oil cushion, which was originally designed to eliminate impactive excitation to a mechanical lever and thereby achieve noise reduction, have been studied both theoretically and experimentally. The system motion is represented by a second order non-linear differential equation which can be reduced to a first order linear differential equation by changing the variables. An approximate but simple solution to the non-linear equation has also been presented. Theoretical and experimental results have good agreement.

9. Shahin-poor, M., and G. Ahmadi, Decay of the kinetic energy of a first-order cosserat fluid, Istituto Lombardo (Rend. Sc.) 107, 353-356, 1973.
10. Shahin-poor, M., and G. Ahmadi, Decay of the kinetic energy of compressible micropolar fluids, Int. J. Engng. Sci. 11, 885-889, 1973.

#### ABSTRACT

The decay of the kinetic energy of compressible micropolar fluids is analysed employing a linear theory of micropolar fluids. It is found that upon the cessation of the energy transferred to the system, the kinetic energy of the system decays exponentially. The spectral function of the kinetic energy is also found to decay exponentially.

11. Shahinpoor, M., and G. Ahmadi, Uniqueness in elastodynamics of cosserat and micropolar media, Quart. Appl. Math. 257-261, 1973.
12. Sohrabpour, M., and S. R. Bull, An analytical calibration method for in situ neutron capture gamma sondes, Trans. Am. Nucl. Soc. 17, 121-122, 1973.

اسامي پڙوهشگران رانشگاه پهلوي و همکارانشان

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