tattered plates of brown biotite, granular and lozenge-shaped, sand brown sphene, colourless granular zircon, anhedral quartz, granular brick red rutile, prismatic and granular apatite and granular iron ore are the secondary and accessory minerals.

A typical pyroxene syenite has been chemically analysed using spectrophotometer, flame-photometer and E.D.T.A. methods and it is given in Table I together with C.I.P.W. norm.

TABLE I

Chemical analysis			C.I.P.W. norm.	
SiO_2	..	57·99	or	40·59
Al_2O_3	..	16·33	ab	30·26
TiO_2	..	0·24	an	3·06
Fe_2O_3	..	4·76	ne	5·18
FeO	..	2·48	di	13·26
MnO	..	0·01	hy	1·03
CaO	..	4·49	ma	6·96
MgO	..	2·00	il	0·46
Na_2O	..	4·73		
K_2O	..	6·86		
P_2O_5	..	0·04		
H_2O	..	0·65		
		100·58	Analyst: S. M. Appanagoudar	

The chemical analysis shows that the pyroxene syenite is rich in alumina, iron, lime and alkalies. This is reflected in the calculated norm. The alkaline character of the rock is indicated by the abundance of orthoclase and albite and the presence of nepheline in the norm.

The petrographic, mineralogical and X-ray studies like replacement texture, corroded margins, inclusion of one mineral in the other, presence of two generations of alkali and plagioclase felspars and low temperature optics of the plagioclase and microcline suggest the low temperature conditions for the genesis of the pyroxene syenite of Koppal area.

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DIFFERENTIATION OF LYSOZYME ACTIVITY IN THE FAST, SLOW AND CARDIAC MUSCLES OF CHICK

LYSOSOMAL localization of lysozyme is restricted to certain cell types like leucocytes and kidney but not liver[1]. Its occurrence has been demonstrated in the frog muscles[2]. However its intracellular localization in the muscles is not known. Lysosomal enzymes are associated with degradative processes and higher rates of them are often correlated with greater turnover of molecules[1]. Besides these, the lysozyme has pathophysiological significance in acting as anti-bacterial agent.[8] The present study reports the occurrence of the enzyme in the fast, slow and cardiac muscles of chick during development.

The anterior (ALD) and posterior (PLD) latissimus dorsi muscles of wing musculature and the cardiac muscle from embryos of 20 days incubation as well as from 6 months old white leghorn chick were used for the study.

The enzyme is extracted from the muscles according to Jolles[3] and purified by cation-exchange chromatography according to Tallan and Stein[4] using Amberlite XE 64 Columns. The enzyme activity was assayed by the measurement of rate of lysis of dried cell suspension of *Micrococcus lysodiekticus* (purchased from Sigma Chemical Co., St. Louis, Missouri, USA) colorimetrically according to Shugar[5] using Beckman DU_2 spectrophotometer. The protein of the extracts was determined spectrophotometrically according to Layne[6].

TABLE I

Lysozyme activity in chicken muscles

(Kilo-units of specific activity)

	20 days embryo	Adult
ALD ..	0·63±0·12*	12·50±0·52
PLD ..	0·65±0·13	46·20±0·86
Heart ..	0·58±0·12	0·59±0·11

* Mean ± S.D. of 7 observations.
Specific activity unit = 10^{-3} O.D. min^{-1} mg^{-1} protein.

The lysozymal activity units did not vary in the embryonic muscles whereas the adult PLD showed greater activity than the ALD and cardiac muscle recorded very low activity. The cardiac muscle of embryo as well as of the adult showed the same specific activity. These results suggest that to begin with in all the three embryonic muscles the lysozymal activity

is the same but as the skeletal muscles differentiate into the adult types they synthesize more active lysozyme than the heart and among the skeletal muscles the PLD synthesizes more active enzyme than the ALD. Many muscle enzymes are known to differentiate prenatally[7] but the present results indicate that the lysozyme of chicken skeletal muscles differentiates only postnatally. Greater lysozyme activity speaks of well-organised lysosomal activity existing in the muscle. From the point of pathophysiological significance it is suggestive that the adult skeletal muscles need synthesize more lysozyme for their protection whereas the embryonic muscles are well protected by the lysozyme of the egg albumin.

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RESPIRATORY METABOLISM IN *POLYDESMUS GRACILIS* (DIPLOPODA) AS A FUNCTION OF TEMPERATURE AND SEX

THE work on the respiratory metabolism in millipedes has been a comparatively neglected field except for a few investigations[1,2]. The present study on the respiration in the millipede, *Polydesmus gracilis* was undertaken to find out the acclimatory response in relation to temperature and sex.

The oxygen uptake was measured by pressure sensitive manometers described elsewhere[3]. 20% KOH was used as carbon dioxide absorbant. The millipedes were acclimated for 1–2 weeks at 20° C and 4 days at 35° C. The oxygen consumption was measured at acclimated and unacclimated temperatures. While the male millipedes shifted from 20° C acclimation temperature to 35° C died on the following day, the females survived.

The results show that the rate of oxygen uptake at 20° C acclimation is 31% and 41% higher in males and females respectively than when tested at 20° C on transfer from 35° C acclimation. On the other hand the rate of oxygen consumption of 35° C acclimated millipedes is 13% and 38% lower in males and females respectively than those of the 20° C acclimated ones tested at 35° C (Table I and Fig. 1). Similar trends were also observed in

TABLE I

Temperature (°C)		Male Mean and S D	Female Mean and S.D.
Accl.	Test	(ml. O_2/hr./animal)	(ml. O_2/hr./animal)
20	20	0·016 ± ·002	0·029 ± ·009
35	20	0·011 ± ·003	0·017 ± ·001
35	35	0·045 ± ·009	0·061 ± ·004
20	35	0·051 ± ·006	0·084 ± ·004

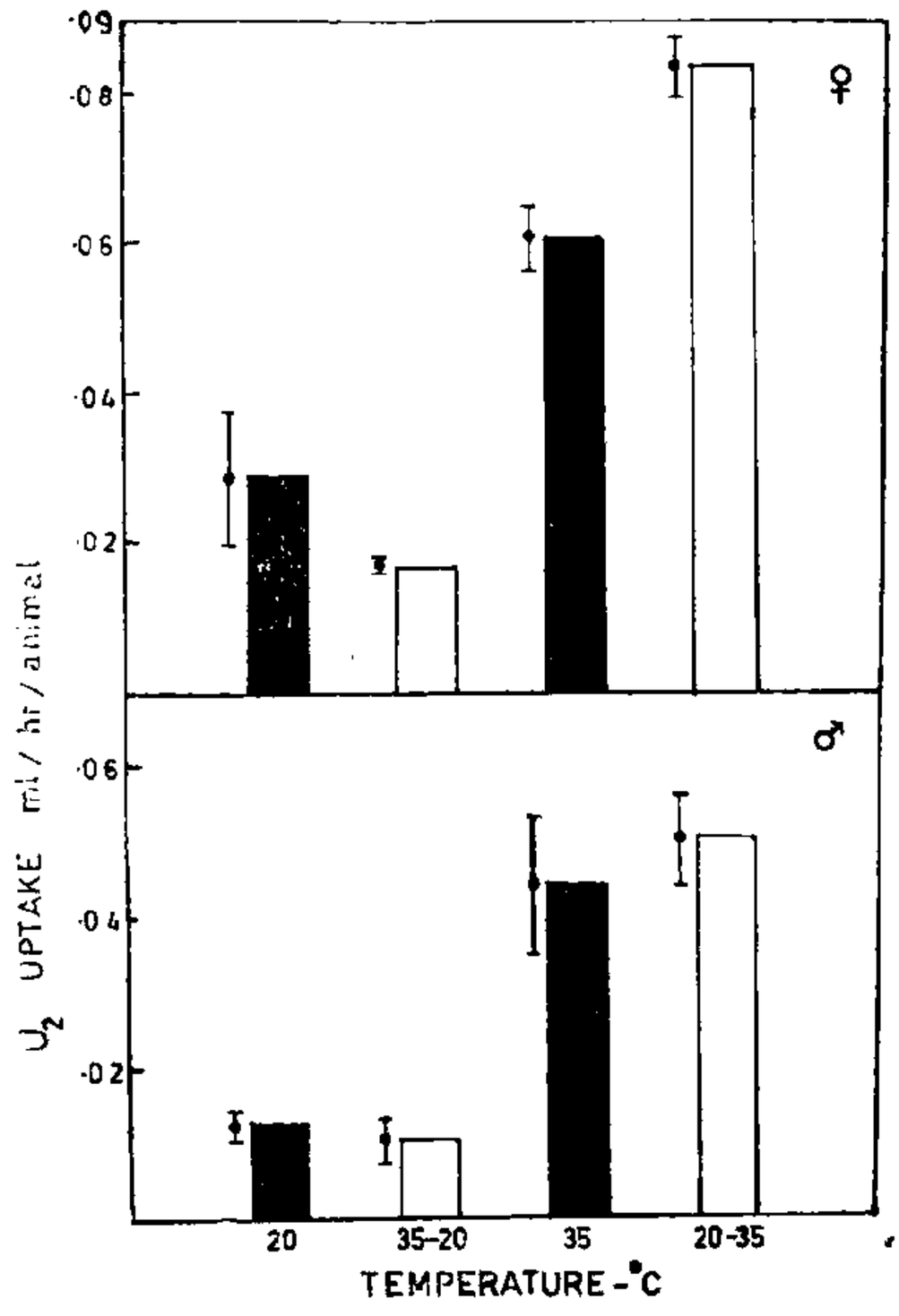

FIG. 1. Oxygen consumption of *P. gracilis* in the acclimated and unacclimated temperatures. Seven millipedes were used for each temperature.