## $\triangle$ STUDY OF THE MUSICAL TALBNT AMONG

 IMDIAN CHILDREN FROM THR PANINER INDIAN AGBNCY JURISDICTION, PAMNRE, OKLAHOMAA STUDY OF THE MUSICAL TALGNT AMONG INDIAN CHILDRIN FROM THE PAHNSI INDIAN AGMATCY JURISDICTION, PAMNES, OKLAHOMA

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1945

## APPROVIS BY:



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R. R. ${ }^{1}$.

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## CHAPTHRR I

## INTRODUCTION

The purpose of this study is to discover the nature and extent of musical talent as it exists anong Indian children who come under the jurisdiction of the Pawnee Indian Agency or/ and live at the Pawnee Indian Boarding School.

The average American citizen living outside of states having an Indian population of from two to three per cent of the total population on living near Indian groups receives varied impressions of the characteristics, modes of living, and special aptitudes of this minority racial group. Such impressions are not always based on actual facts or scientific findings. Movies, comic strips, certain fiction and "old wives" tales" may have contributed estimably to many prevalent notions. Many of these notions upon close scrutiny may be misconceptions.

Prior to his association with Indians many well-meaning friends have tried to influence the writer with certain convenient platitudes such as: "Be fair with the Indian, then you will have no trouble"; "Do an Indian a favor once and he will be your friend for life"; "You will find the Indian very musically talented"; "They certainly have beautiful voices"; "Their voices are beautiful while they are in the primary and intermediate grades, but as they enter adolescence their voicea become raspy": "They are just natural musicians"; and, "They have a very keen sense of rhythmmof course, from their dancing."

The writer has heard more Indian bands then white bands playing lustily but quite oblivious to any necessity for playing in tune
with others. Having taught various types of ensembles, vocal and instrumental, the author has observed that lack of consciousness for adherence to certain pitch standards is rather common. One could all too frequently note the students comparative difficulty in understanding and feeling time values. This may indicate a certain racial deficiency In being able to conform to white standards in respect to exact tone duration and rhythim. The 'lusty' playing may indicate a lack of sensitiveness of feeling for tone quality.

Despite these critical observations, the general public is always impressed by musicales presented by Indian groups. However, the white man prefers to hear Indians perform Indian music. He is very much impressed with Indian ceremonials. People will travel many miles to witness these ceremonials which are unrehearsed pageants. There seems to be a definite fascination that holds people almost spell-bound watching native dances and listening to native ceremonial music. This music is done reverently, with utmost feeling and sensitiveness to pitch, quality of tone, rhythm and time.

This arouses several thought-provoking questions. Do white people, as a race, or a nation, or a social or religious group, find expression of their inner-most longings, desires, hopes, ambitions, griefs or joys in music or in the dance? Why does the white man, in his schools, have to hire specially trained teachers of music who, daily, and almost vainly, struggle to make music a living thing for childreni Why doesn't the white man let himself go into music? Could it be that the white man is surrounded by so many restrictions and conventions or taboos that regulate everything he does so that no time remains for masicf th, but his kind does love music dearly,
and wants so much to participate in any kind of music expression. One needs merely to watch any small group with common interests proceding from serious talk to small talk or gossip or tales and finally to song. Recently it was the writer's fortune to be stationed at an induction center for several days. Here, in this maelstrom of personalities, was one lad, age twenty, height five feet two inches, weight over three hundred pounds and an umbilical girth of seventy inches, who originated from an unknown village in the western section of the state. Dressed in overalls, and ignorant of any music training, even unable to discern one note from another, this lad was entertaining five hundred forty selectees by playing (as well as the better popular radio artists) popular and patriotic songs on the piano in every style of modern dance music. Hour after hour he played without diminishing enthusiasm from the crowd. Uneducated and unknown, he had the key to enjoyment of hundreds of others. Tes, one does crave music also as an expression of the inexpressible. But these are isolated instances where we expose our souls to the excitant charm of music. The Indian has always used music for purposes that go beyond the verbal expressions.

The Indian may not be able to perform the white man's music nearly so well as his own, which in turn, the white man cannot reproduce effectively at all. This is natural. Let us remember this when we try to measure Indian talent in music with white man-made scales. Much of the Indian's music is created for the occasion as was also the music produced by the ancient Grecian bards and the minnesinger of the Middle Ages. The Indian creates and produces music, whereas, the modern white man does well when he reproduces it, or even takes the time to listen to it.

The entire economy of primitive groups is built around worship, song, dance, and ceremonials. Modern existence condemns such an economy as too time consuming, and detaches its existence from its self expression. Modern man relegates his self-expressive activities to set short periods at times when they do not conflict with his mad rush for existence. It is the impression of the writer that more Indians perform Indian music than proportionally the average person performs white music, possibly because the Indian does not let his work hamper his freedom of self expression.

Irven today, and in a locality where the Indians enjoy almost all of the opportunities which the white man enjoys, Indian culture provides very abundantly for the expression of the individual through frequent ceremonials, which may take the form of memorial services, prayer meetings, social entertainments, hand games, give-aways, and patriotic celebrations. World War II has contributed tremendously as a motivating factor for more frequent ceremonials. Men and women leaving for the armed forces, home on furlough, about to go overseas, wounded and dead are all feted with ceremonials that cause one to realize the immense amount of feeling that is nurtured for all. Civilization's inroads have not measurably lessened this form of expression. It merely has caused the Indian to express himself with close regard to time limits. J. H. Salomon says:
"It (music) was used as a means to express every emotionsongs were private property and could only be performed by rightful owners. Though the ( ) Indians performed the dances (and songs) or their neighbors, they did not do so before they had obtained the right to use them by trade or purchase.

IVery song, ( ) connected with a ceremony had to be performed correctly, for it was believed that misfortune and divinely inflicted punishment would follow any failure to give a strictly accurate performance.

Dhasic for the dunces was furnished by the singing of the dancers and the playing of instruaents they carried, or by a separate chorus ant orehestiva.

Clownd of delicht aders relievan the seriousness of the () ceremonies by making merry and doing what inischief they could rinle the dance was in progress. ${ }^{1}$

Instead of anyexsing with indian masic with but a fey cursory remarian ag is done in most history of music texts and courses, the miter woula like to take the liberty to qugeat that the rough study of the type of native ousic comared with the Creek drana and chorus, the musie of the barde and minmesinger, to seaieval hystexy Hay, the developinent of the Opera and of Christian rituals and lituretes pould indoed be fruitful study. Musicologiste sad anthropolagists shoula be able to expand moat profitably by the study of native Indian music ixi ralation to other mative music.

The people who participace in or come under the influenee of this astive makic tave specithe ability to comprehend or eyjoy or perform mach tuste. dhey use to an gxtent talented. In atteroting the ducovez the ntare mad extent of masical balent in apect fed sanorlty group it is quite important so bear in aind wat purpose can
 Lutself have been interestel in the probea of honoroble survival in a white noctety. It is expected-that the Iusian produces for a invelihood. It is desirabie that the Indian learn to excel profitably in various 理elds. If there is fown a sufficiently large percentage of Indians with an overmelming amoun of salable mustcal talent, this talent should be encouraged, trained, brought to light, and its results
 (TeW Lorle and Loridon: Taryer anâ Brothers, 1928 ) pp. 3845.
traded for a livelinood. Very fev Indians have becone maceesaful profossional masicians. Wo choral or instrumental grougs ásplaging and nurturing purely native masic are active profescionaliy and in a luerative way. If music is one of the fortes whereby the Indian can find himself in this society, lat us find out and give hin much more opportanity.

In order to tiad out whether or not Indian dave masical falent In a comparabie, or even salable anount or extent, it is necessary to resort to falrly accurate standardzed measures to diacover or verify such talent. Whacational and psychologichi itterabure tecords very few intances here an attonpt has been made to gain awch bonledge.

The triter has undertaken to test for adotical talent indian boys ad girlit who live within the Pamee Intian fency furisaiction and those attenctig the famee Indan Boording sehosl. It is hoped that such a testing progrow whil eventualy reault in testing all Indian youngsters ander the jurisdiction of the federal governatht, Sa order to arreve at definite conclustons and be of nore specifte help to Indians.

CNMPN


War time restrictions made if impossible personelly to reach beyond the maediate territory for subjects avaliable for testage ghavefore, this gtudy limits itself to those stadents attenaing the lagest gehools
 number tested in a large percentage of the Indian chilaren af this Jurisaiction that can be gotten feirly recularly to any school at all.

Two hundred sixty gtudents were selected from four schools. They range from erade five to grade eleven, and ranged in age from ten years to stixteen years.

Whe schols from which these subjects cane were the Panee Indan Boapding School, Pamee, Oklahoma, from whech one huncred sixty-six subjects wore taken, eighty-one of whon were boys and aightymive, Efrlst the Pawnee Mmentary Scheol, Pamee, orlehoma, from wher tuenty-three cafer were taken, stxteen of whom were boys and seven, sirls; the Thiteagle District mo. 2. Schnol, Mhteagle, Uclahotas, from which forty etudents mere taken, twenty-five of whon were boys and fiftgeng. Eirls; and the ged Bock Consolfated school of sed zock cklohe when yielded thirty-one studenty, seventeen of whoy wene boys aum fourteen, 8trl部。

Sable I is fntented to portray the grade ond ser dthtrabuthon of the andents tested from-the four schools.


W

| Eatcos | Fivo | 3 |  | seven | W⿺𠃊 | 童ht |  | 25 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total | 䇝 | 3 | Total | 颔 | F | Sotal | 3 | W |
| Pamaed Tmater |  |  |  |  |  |  |  |  |  |
| Boarding School | 85 | 49 | 36 | 62 | 26 | 34 | 15 | 4 | 11 |
| Pamee mlenentary |  |  |  |  |  |  |  |  |  |
| Schoot | \％ | 6 | 1 | 5 | A | 1 | 13 | \％ | 5 |
| Bed Reck ©onsotidater |  |  |  |  |  |  |  |  |  |
| School | 26 | 14 | 12 | 4 | 2 | 2 | 3 | 0 | 3 |
| Ihiteagle School |  |  |  |  |  |  |  |  |  |
| Dietract Wic． 2 ． | 38 | 16 | 9 | 16 | 9 | 7 |  |  |  |
| Totals | 143 | 85 | 50 | 37 | 41 | 44 | 30 | 10 | 20 |

Table $t$ shows the breakdow of two hundred sixty gtudents to the nugber attenting esch of the separate schools mentioned above．It Inticates the grade and sex dsatribution fron each school，adso the toter grate and histribution．The grades were peired into three
 ton，and over．The nobject were divided tnto these grade grough Bepanse the stondards thet have ben set up as the chief criteria of comoarison smer beon baged on this grouping．A fusther brealenom woule not semve the propose more agty foue table serves more as a picture of the subjects usen than as the basis from which all tho innazgs axe taken．

Table II shows primarily the tribel distribution of all the students tested.

5ack II


| Sribes | Sumber Pested |
| :---: | :---: |
| Eatnee | 70 |
| Ponca | 76 |
| Otoe | 60 |
| 5am | 14 |
| Tonctata | 13 |
| Shatuee | 9 |
| Bac and Fox | 5 |
| \%intapoo | 4 |
| Osage | 3 |
| Lot tametorse | 2 |
| cheztane | 2 |
| Ohicesent | 1 |
| Cherokee | 2 |
| Motal | 260 |

WG selective phan gus uscd to determine mhich stwdents were to be Bested. Sinoe standarde tar the tests used mere originully set up from the testhng ot echool age youngsters in "run of the will" famion, comarable results would be obtained by followine the same systam with Indian youncsters. Therefore, as many students as possible were tested.

He sampling was taken from schools located in oach fair sized center whthe the jurisatetion.

From an thnological verpoint it may hava been destrable to select only full-blood Indiants However, such a strict growifict would not serve a practical purpose since it would be very difficult to establish What comprises full-bloodedness. One woula have to take only those from each tribe that have never mixed with other races, nationalities, or tribes. Fith the increasine asbivilation into white civilization much blood is constantly being mixed, and much has been mixed these four centuries past. It would be as difficult to find a pare stock Intian from any of the oklahoma tribes as it would be to find a pure atock whate from the various grougings of whites. After all, we are trying to peasure abilities or characteristics of a race as they appear now and not how they would appear in a very theoretical stuation. me average Indian chald livine in this jurisdiction comes from a home which one may consiter as being grite below standari. we Indian child coning from a home which one congiders good or mell managed, though hamble, is indeed rare.

Beporte from the local Bducational Fiela Agent over this Juriseiction Indicate that those students enrolled at fhederal Boardine School are espectally favored with healthful shelter, food, clothing and services conougtve to good heath. When they arrive at the school a good share of the chiltren are lnadoquately clothed, wnerfed, and not cared for in other ghysical and mpiritwal areas. facilities are available for him, but the averase Indian does not avall haself properiy of those things that aight help him.

The puthe schools from which a nunber of the subjecto were gram try in a limited may to offset these deficiencies.

Alnost all of the children have participated in the tribal cerenonials and dances from infancy. They all speak gaglish, although in any cases, the parento spear the tribal tongue at home and anone friends.

Wone of the children cones from homen mere good music is listened to, used, or encouraged (that is, good music according to our standardeafter all, we are testing and judelne thear min our ftandards for survival in our society). The "gospel song" is the nearest approximation within their realm of appreciation better music. Dence orchestras are quite mell zpreciated. Roadhouses, honky tonks, juke boxes, and pool halls produce docs of the recreation for a goody portion of these folt.

The test used to determine the resulte eviluated in this study wos Series 4 ai Semhore's Revised Measures of Musical mient. this battery of tests was selected as an adequate neasure because its entire instorical backgrown was as thoroughly scientific and objective as any testa yet devised. These messures vere the basis of vastly more talent investigations then the total of all other talent teet batteries In existence. The measures havo been investigated for rellability and vallaty more scientifically, frpartially, and searchingly by the outstanding leaders in the field and bundreds of others than any combination of the total of other tests of similar nature and purpose.

Cartainly, the tests have been found wanting. James tursell was one of the most cruel and exacting critics of this battery. The inventor, Carl Seashore, pditted the limptation of this battery of tests. He concluded;

1. The testa developed can be administered to large groups.
2. Tace teste eltainate the effecto practace and frafing ond lagne of mormal intelligence.
3. The teats are ae fool prooz as any possible to that date.
4. Ste taste are juntritad.
a. for the fafomothon gathered
b. for the instruction gained through critical training flumshet for the hearimg of the berge.
5. whe toats are wo constructes that thoy measurs the Inosent componeats of talent. ${ }^{2}$

Seashore contenced that muste contouns nothing that in not in tite sount wave." hut tosto, therefore, do mot tost rowe than absoiute
 soun wava. lumsell feels that the test battery measures acountical
 teats proference over all others.

 recorded by the Colwota Roonogranh Company at that trae, and wam in Wec for twonty years besore the Revised gtition appeared. Muriag this period of baenty years tuch literatra appeared pointhns out zanzts
 Lato acount the many craticisman suggestions when they made the


The ortginal resonven contajnod the folloring tertes

1. The
2. The sense of Intins教 or Toveness.
 Wew York: S1lver Burdett Co., 1919) pp. 1-288.
3. Thense ot max.
A. We finne of consonance.
4. Tha Gease of fistion.
5. The ?

The Conssuance Teat ${ }^{3}$ whe ortttad th the 1930 Sevision since titwas
 Beterntwe whether fudgants wore arieatea by harmate prognession,

 consterably moditad since th previous zavestigatons, especialle we by Fumstorti, 4 these two teats are hound to have comarativeny low solablltites.








 art mexhet andichonty on the rospective recoris that the tester can


[^0]certaiz startine piace, fest mose exhautively mithin the scope of each bsrosholal.

The agumant wich provided the gource from which the recorange Were made which tere anciuded in this test battery will be discumsed brteng.

The Ditch reat was developed by use af a General kadio beat
 cowanner, type 53\%-s.

Gho owe source bas wad to davelon the The test. The equipment was, however, gaged to 40 creles. 7he blae ox duration factor was contrallea

A sencrator of electromstatic type was designed to measure



 partials was used in the tinbre tost at aca diange in fone paality.

Two aschintors, the beat frequarey instracent and the Geaneq
 riyytum tast.
 by a competert wustelen.

One can readily mppectate the stgaticant stridee that have been sude in producing an accurate and controlled tast as compere with

Ssetrest, Iewis, and Seashore, ge cit.


#### Abstract

"the best available test to dates of tenty years ago. Compare the sourees of the 1939 Revision with the sources of the 1919 battery: the tuning fork, the palton ghistle, sudtometers, and other relatively crude instruments used. It is of noterorthy interest thet no human hand touched or influenced any of the equipment used in the pevised test during the final recordine by the R. C. A. Co., except the tonal Hemory gest, and there the criterion was utaost conpetence of the performer.


In a mechanical way the equipment was handled in as foolproof and controlled a maner as humenly possible. Wwo relatively uncontrolled factors reaain. They are, of course, the test administrator and the subject. It is more importans to possess rsport and a feeling of well-being in the successfal performance of this test battery than In the usual type of paper and pencil test. The object of this test is not to express lnowhedee as a esult of either expertence or lasraing, but to express a saxgle of innate ability or an innate reaction to sound atimulus. The machine, the adaninstrator, the es ant tho snbject must milinely naet on comoza eromis to produce relinble pesults. Were it possible to control the administrator ana the subject as one can do to the reaction os a machine, the result would be unreliable since it would be too much lite testing rabots. Such mechanical cxeatures have no need for betnet tested for certain aptitudes; they are namufactures with perfected atancerdized specific aptitudes. It is the flexible, evasive, and intangible human sind and soul that one mishee to grasp, if but for short whils, and zeasure itis musical content.

The materials that were used to test these Indian chiluren were in perfect conation.

The teet itself hat been purchased new from a reliable and nationally kom music wholeswle house．It comprised six records vith twelve sides．Series $A$ or the first three records containine the sit tests，配道 need was felt in using Sertes $D_{\text {p }}$ neither would the aims be acconplithed more thoroughly thereby．

The test blank tere nineographed confas of the blanks recomended In the Manual of Instructions and Interperetation．Several pertinent questions were added to the te thank．The questions were interded to elfcit such infometion as neme，age，grade，school，parent＇s occupation，tribe，degree of Indian blood，previous music training in school，or private masic instruction，amd preference for tyoe of masic．

A specially overhauled R．C．気．reato－phonograph was used．Io this wes attachen one of the more expenstive brancs of chromium pointed recalev．

The Pitch Rest contalned cisty triels arranged in five group with ten trials in each group．A rest panse was provided on the recordtre betpean each group of ten trials．Whe subject nas asked to judge whether the second tone produced in each trial wes higher or lower
 sabjectle judgaent on the test blank．

The teat itself increased in affeccity by means of a gradual lessaning of the cycles of freauency differences from seventeen cycien to one eycle．The tasts incressed in discrininative difficulty 2

ITve triale wh peventeen cycles difference between both tones seven trimk with twelw cycles difference betmen both tones ten trinls with eight cycles differeno:betreen beth tores ten trials with flve cyclas effersneo betweon botitones efeht trials gith four cycles difierence betweon botia tonea five trials with thre cycles tifference betwen both tones ATve triale with tro cycles difexence between both tonec In 政eging with the terainology ndonted by the Acoustical soctety
 of treat and the swo converient grouphe for the subject extsto in then test ad in the prevtously describer test. The fubject was requared to recort whether the second tone in each trial wes stranger or weake than the finst tone, notne the syabols ${ }^{4} \mathrm{~g}^{2}$ and " for stronger ank wealer, respectively.
ghas test incrasse ta iticiculty by gradualy lessentig the decibela of efference in intensty betheen the tones of eack trial, as follows:
five trishs of 4 . dectbed afference
Pive trials of 2.5 decibin thference
tex triols of ? dectbel diference
ten triala of 1.5 dectbel disforence
ten trinim of 1. accibel atifference
ben urdele of 5 dectiol difforenco
The wime gest also has sifty trisls growed znto fivo equal prows. So subjects fudged the secons tone of ench triat to be etther longer
${ }^{5 \text { TbId. }}$. 18.
 " in and "g wor longer or thorter, respectively.

The tat facrased the decrianative difilculty by decreasing the aifereace in duxation of seconds Iron:s of a second to .05 of a second, 53 50110\%
five thela st 3 cacond difference fivo tufale at $\cdot 2$ ascond difference ten benals at . 15 socond differenee ten trials at 10 second diflexerce ten triale at .1 second atiserence five triais at . 075 second difference
fite trials at . 05 seeond differenco
The fimbre rest is, by far, tie aost compex an structure. che subjects are reguirst to jutge iffy parm of tones as te whehher or not the two tones in the pair have the same sound to the ax arr a
 for wame or defferent, respectively. SLx hamones were und in

 as foliows:

Manis

1-10
11-20
21-30
31. 40

41-50


10. decibels
8.5 decibels
7. decibels
5.5 decibels
4. Lecibels

3ra mamowe Ducamsiou
IM Impans ity

## 9.5 decibels

4. eectbel.
5. dectbels
1.2 tecibels
.7 decibels

She Rhythr Tast used thirty pasre of rhythic patterns. The subject was reguired to decide whether the two patteras in eadi frish

 two cuartor notes per minuto.

The follownt sample inlustrates aporgan bety hot these pairs of

 howeyers, mpon hearing such a succestion of gatteme the sudcuent nay





10
10
10
 RHyTHIC PATEGM

| 10 | 5 | $2 / 4$ |
| :--- | :--- | :--- |
| 10 | 6 | $3 / 4$ |
| 10 | 7 | $4 / 4$ |

In the Tonal Menory West the subject needed to judge upon repetition of there, four, of five tone (ar npan) melody, which tone differed fron the original rendition. The subject indicated on the tost blenk
which tone was eltered, by using the following numers: $1,2,3,4$, or 5 .
"or Connor recently made an anaiysis of the itams in the original mewory tent. Mes worly was beseh woa the responeat of eight hunared observers. HI major conclusion was that,
 and the nurber of notes $4 n$ it can be expressed by the equation
 and x is the number of notes. He also found that chenges in
 gerceive as changes in the first note. Kifs analysis alse
indiceted that the afficulty of an item varied directly With both the number of turns in the aelodic pettern and the size of the interval between the ajacent notes of the pattern. This anclysis provided a basis for selecting items for this Teviolon. Difierences in tonal pattern dopended upon fuil-step rather than halimter changes in order to reduce the correlation betwen fonal meary and pitch tegta. $\mathrm{H}^{\prime}$

The trials mere arrange in increasing afficulty follow:
ten trials of three tonos in a melody span
ten trials of lour tomes th a melody span
ten trials of fitve tones in a melody span
The preceding material ${ }^{\text {s }}$ a description of only series a of tio Senshore thasures of Musical Aptitudes, since sories B was not used in thas study.
${ }^{7}$ IbId. mp 30-31.





 Pemee, orthanm, zere terted.



 the decimot grates were teated togethar. The foy hatroven frou the

 Foturady morning.
 commencement of the achool day, or fumedietely after the noon receas.


 leaving the rom duxing the tecting.

Pexulsaion to edminister thes tests was obtained by wating to the reapective princtpols man mexintanderts. They also mado
 were relessed from other echocl pork for tikn testing.

The actual teating procedure in each of the nine rooms, with children fren four schoolis, wae quite alize gho megor problens had to be token into account. paey vert proper ramort aud avoidng patigue.

The obtaining of proper rapport, i. e. creating developtat, sud. sustaining interest, seers to bave constituted a mator problem in the succesful administering of tha test battery to the Inain youngters.

Thite it to of donothl value to this peport to decke whether the Indian chataren of this grouy are naturally reticent by reasoce of thelr rece, cultural level, or rupel iffe, mevertheless the problen had to be overcome. Therefore all diractions were given greatly afmplified. The experimenter went to great langta to ake certain that each chill wes confident in his om mind how to procede when the test achally startelig. Th assure hinself of this, several students were asked to repoat the diroctions for procecure orelly. A few were asked to demonstrate at the blackboand how the syabols mere to be pleced on the bleaks.

The experimenter st first demonstrated vocally aporoximately how the test would sound to the subject. Thereugon he asked the growe to give their antwer or judement orally as group response. After several vecally produced trials the subjects were given at least twelve practice
 or individuals were aked to reppond. Their judgnent mas either agreed to or corrected by the group. This gractice in no way helpent the perforance of the test to the extent of makne scoros feworably uxpeliable. It mas mater of equat tin and equal practice to overcome knom and aparent reticence.

Great care mes taken to explaln, aspecially to the oldex students. that the remults in no way would afiect the masic gredes on the wr seport cosds. This problen of susgicion seems to have arisen te the Boarding School where the subpecte 11 vo together in dormitorieg and have the opportunt by of contitioning acin other favorably ar unfavorably fox cartain events.

In orter to avold fatigu as much so possible the experinenter raised the needle from the record st each reat period after ten trials to provice \& longer period of rest in order to give each student a better chonce to regain composure aftor the strain of ten trials.
 rest periods of each test were extended. Wost of the mubjects, seandigly by nature, were trifle alower thon average in perforance, posinbly becase of dack of a negd fox fast work, or by reaton of theis maral Life.

These caxeful dixections were reiterated before anch of the wix tests. Also, \& sweminate relaxation and refrester period wos proclaimed after the thind test. Iasally, ft may have been bettex to haye fiven onemale of the test batbery en one day and the other hall on another Gay Fonever, es proviously montiongd, wan-time travel and time restrictiong prevented thats.

Ghe 药mal of Instructions and Intergretationg for the feachore

 1imitation. Nowevex, this swgestion was oftret in thet the expersmenter
 tor what he waz to 1 whten, how he was to judge how he wec to tranglabe
the juagrents into symbols, and how he was to record the symbols. Thenty-aix subjects from the fifth and sixth grade group were retented. Rowever, the results did not merrant general retenting. The group that mes retestad was by far the most aifficult to pregare for twe test.

The experimenter, before aministering the test to others, tested hinself on each test three times, following such testing with series B. At each retesting, various types of distarbances and interruptions were experienced. These disturbances did not affect the high level al performance set by the initial test, nefther ata the scores of the tests inprove noticeably by retesting. The results of Series mere 35 good as the results on the Seriss $A$. Whe experimenter had never adindatered this test prior to this the to any individual or group, nefther hat he ever been tested with thim or any similar masic talent test before. Eis only interest was in doin a good test after an understanding of the direction, with certhin mount of atsturbence in arder to ascertain just what conditions really were essentially necespary in order to adiainister the tost successfuly.

Such atters as proper ventilation, roon tomperature and light trere chectred before any grow man tosted. Suficient comfortable aesk space was provided for each student. Rach sudent mes provided With a sharpened pencil. All gtudents pere in apparent good health none suffering visibly from amy raspiratory ailachts that might wroce auditory discrimination.

The subjects were asked to close their ayes whle listeang, and open then meroly long anough to record their juctenents.

The test proceeded with perfectiy controlled equipment and good or 1 heal physical enviroment, woll trained sud experienced tese administrator and groups who had been conditioned to doing a good job under the best passible circumstances. It is doubtful whether result from testing a large group of two or three humbed at the sane time could hons to be more reliable.

The general directions for procedure were followed, bowever, in the above mentroned simified moditied form. The entire experiment lasted, in each case, approximbty one hour and thirby mirutes. Fans included rest periods, recess and explenations. The test can be performed without these in about thirty-five minutes. This is the length of tine the experinenter allowed hiaself when he tested himself with both series of these measures.

## CHAMTM TV



In Chater II the writer geve a complete description of the groups that were tegtod. The total numbar of subjects was broken dom into Erade, sex, school and tribel groups. The preaent chapter will deal fixstly in recoraing the fudinge in teras by which the zecognizea sua

 Do sond on neparabe tables.

245LI $1 T$

PTME

| GROUP |  THETET | MRA8 $500 R 707$ \% comerer | S. 7. |
| :---: | :---: | :---: | :---: |
| A11 croupe | 260 | 58.5 | 13.72 |
| Grades 586 | 142 | 55.3 | 10.63 |
| Qrades 788 | 87 | 59.7 | 13.96 |
| Grades 9. 10, A Acuit | 29 | 65. | 13.54 |
| Rammees | 70 | 58.2 | 12.3 |
| Poncss | 76 | 57.5 | 14.8 |
| Otoes | 60 | 55.5 | 14.58 |
| Wale | 140 | 57 | 13.65 |
| cemale | 120 | 60.5 | 15.46 |
| Fublic school sudians | 98 | 57 | 15.13 |
| Boarting School | 162 | 59.4 | 14.79 |
| 等usic students | 28 | 70.4 | 8.5 |
| Wul 3100a | 30 | 62 | 29.39 |
| test than $\frac{3}{\text { S }}$ blood | 36 | 63.5 | 11.64 |

The reader will please note that these tablex include merely the
facts from winch all implacation will be gleanea later in this choter. The stzndardtzed noxus which are the betes for compertson will be listed aloxe mith the implication. these tables merely intond to list the
number tested in each group, the respective mean score of per cent correct, and the respective sigmas.

Tablis IV
LOUDNESS

| GROUP |  |  |
| :--- | :---: | :---: | :---: |

## TABLR V

RHYTHM

| QROUP | TOTAL MUMBR THESTRI | MREAN SCORES OF \% CORRECT | S. D. |
| :---: | :---: | :---: | :---: |
| 411 Groups | 260 | 68.9 | 1.5. 27 |
| Grades 5 \& 5 | 142 | 67.3 | 15.6 |
| Grades 7 \& 8 | 89 | 71.5 | 12.2 |
| Grades 9, 10, \& Adult | 29 | 66 | 17.95 |
| Pawnees | 70 | 67.1 |  |
| Poncas | 76 | 70.5 | 14 |
| Otoes | 60 | 67.8 | 14.92 |
| Male | 140 | 67.7 | 13.92 |
| Temale | 120 | 69.5 | 14.3 |
| Public School | 98 | 67 | 15.95 |
| Boarding School | 162 | 70 | 13.47 |
| Music Students | 22 | 78.2 | 8.4 |
| Full Blood | 30 | 71.8 | 11.97 |
| Less than $\frac{1}{4}$ Blood | 26 | 71 | 14.86 |

TAREX 7
THE

| asoup | FOTAL MURHR TMS世童 |  | \$. 1. |
| :---: | :---: | :---: | :---: |
| A11 Groups | 260 | 65.1 | 11.48 |
| Grates $5^{\text {E }} 6$ | 142 | 63.2 | 11.61 |
| Grames 788 | 89 | 66.2 | 13.6 |
| Gxaden 9, 10, a Aalt | 28 | 68.5 | 10.6 |
| Pamees | 70 | 64.8 | 9.8 |
| puncas | 76 | 66.4 | 10.98 |
| Otoms | 60 | 63.2 | 11.7 |
| deste | 140 | 63.6 | 13 |
| Feasle | 120 | 65.3 | 10.55 |
| Fublic school | 98 | 64.3 | 10.81 |
| Boartiag School | 162 | 65.3 | 1.8 |
| Wusce students | 28 | 75 | 6.4 |
| Eull Blood | 30 | 61 | 10.48 |
| Luests than $\frac{1}{4}$ Blood | 26 | 64.6 | 9.8 |

WhBLE TII
TMAB

| groue | Toma Whablit Tw |  7 002asee | S. ${ }^{\text {d }}$ |
| :---: | :---: | :---: | :---: |
| 411 Groups | 260 | 67.5 | 13 |
| Qrades 586 | 142 | 6.9 | 11.5 |
| Graces 7 \% | 89 | 68 | 10.65 |
| Grotes 9, 10, \% Ault | 29 | 64.5 | 11,85 |
| Pamaees | 70 | 85.5 | 11.58 |
| Poncas | 79 | 65 | 11.8 |
| Otoes | 60 | 63.8 | 11.57 |
|  | 120 | 64 | 31.08 |
| Teame | 120 | 64.9 | 10.75 |
| Fublic school | 98 | 60.3 | 14.62 |
| Doerdins School | 162 | 67.5 | 14 |
| Muste Studentia | 2 | 74.5 | 7.20 |
| Eall Blood | 30 | 70 | 9.35 |
|  | 26 | 66.5 | 12.62 |

TABLS VIII

TOMAL MTMOTY

| crode | Toxat munber TESTd | Wan scone on <br>  | 3. 3. |
| :---: | :---: | :---: | :---: |
| 41 Groups | 260 | 51.3 | 19 |
| Grades 5 E 6 | 143 | 44.9 | 15.3 |
| Grades 788 | 89 | 56.5 | 20.6 |
| Grace 9, 10, 息sult | 29 | 6.4 .5 | 14.34 |
| parnees | 70 | 51.2 | 13.38 |
| Poncas | 76 | 51 | 19.33 |
| Otoes | 60 | 50.63 | 18.89 |
| fale | 140 | 49 | 12 |
| Pemale | 130 | 52.9 | 20.8 |
| Pxolic somool | 98 | 49.3 | 19.443 |
| Bearding sohool | 162 | 51.9 | 15.52 |
|  | 22 | 67.3 | 14.7 |
| Full Slood | 30 | 55.6 | 20.37 |
| Lets than ${ }^{\text {息 Dlood }}$ | 26 | 59 | 18.9 |




| 32002 | RITCE |  | PETM ${ }^{\text {a }}$ |  |  | SEORY |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| L11 Sroups | 17-96 | 21-96 | 29-99 | 17.96 | 21-86 | 9-100 |
| \%redes 5 \& | 21-92 | 21-96 | 29-96 | 21-96 | 17-86 | 13-100 |
| Grados 788 | 17-96 | 25-96 | 33-97 | 17-88 | 25-36 | 9-100 |
|  | 97-92 | 45-88 | 29.99 | 49-88 | 41-68 | 17-100 |
| Paminess | 37-84 | 29-83 | 37-99 | 41-92 | 29-92 | 17-100 |
| Pozase | 17-96 | 21-96 | 29.99 | 20.96 | 41-8\% | \$-100 |
| Dtoes | 21-84 | 37-86 | 37-96 | 44-88 | $41-96$ | 13-92 |
| \%ale | 34-83 | 21-96 | 29-99 | 17-96 | $37-96$ | 13-96 |
| Femste | 21-96 | 25-96 | 29-99 | 37-RA | 25-96 | $9-100$ |
| Public school | 17-95 | 21-96 | 29-90 | 37-88 | 21-96 | 9-100 |
| Boerring kchool | 38-92 | 29.06 | 20-99 | 17-96 | $17-95$ | 9-100 |
| Phate students | 51-85 | 61-96 | 61-95 | 51-85 | 61-95 | $36-100$ |
| Fall Mlood | 41-85 | 31-55 | 46-99 | 36-85 | 51-95 | 11-95 |
| Wess than $\frac{4}{6}$ mood | 36-85 | 51-30 | 36.95 | $46-85$ | 41.90 | 11-90 |



 throughout than the Indian scores.

The man scores or per cent correct in grabex seem to cineter dithin a close rauge in comparison with the aisproportionate conctoton





 Asproportionately larger than the slgmes on the other bets. the Thatan signay in these two tabley are oven larger than those on the
 ar a rectangulus sistritation, without a clearly defined elustering


 st the means. 0r. let us say, out of one hondred inity caces, one
 gromat 3 , ane to remaining casta occupying the conter ot the distribution.

By glancing quacky at mabea TIT-VIT one can eather that the
 to the semalis on the ather bents The menn score of per cent compect

and tenth grode group on these two testa and the spectal music students group are proportionately much higher．The Eitch，Rhytha，and Tonal Wemory mests hove the highert standera Devintions，with the Tonal圱enory gest leading the two others．the range of scores on the Tonal tomory lests is consistently the greatest of all tests for all
 large number of scores at the extremen．

$$
8_{\text {CIABLS }} X
$$



| Texs | 60985 5 \％ 6 |  |  | GRabms 728 |  |  | Gagh 9 \＆Muth |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | No． | 械een | S．s． |  | Teas | S．I． |  | Wecn | S．D． |
| Pitch | 1538 | 69.9 | 12.9 | 1295 | 72.2 | 13．4 | 1071 | 75.9 | 12.2 |
| Loudness | 1705 | 70.7 | 10.3 | 1352 | 74.1 | 10.2 | 1087 | 81.4 | 10.8 |
| Thytho | 1644 | 73.6 | 10.9 | 1192 | 77.4 | 10．4 | 1104 | 33.5 | 9.2 |
| Wime | 1606 | 68 | 10.3 | 1217 | 70 | 10 | 1116 | 76.8 | 9.7 |
| Hmbre | 1536 | 68 | 10.4 | 829 | 70.6 | 10.3 | 852 | 7.1 | 9.7 |
| Tonal Memory | 1472 | 67.6 | 17.7 | 1064 | 69.6 | 17.9 | 980 | 83.3 | 13.5 |

Tables XI to XVI will show to what extent the Indians tested compare with the noma set up in the Revision of the Seashore teanures．

It is easy to see that differences do extst，but the following analysis will attempt to show the dignificant or real differences when and If thoy exist．筑e formalas used to calculete the real or Ggaftcant difforences are：

[^1]9．The rellability of the sean．or，the standard error of the nexan（ $6_{3}$ ）

$$
c_{M}=\frac{6}{\frac{3}{y}}
$$

2．The reliabluty of the difference between two means，or， the stendard error of the difference man means are uncorrelated（ $6_{\mathrm{D}}$ ）

$$
6_{D} \text { or } \sigma_{21}-M_{2}=\sqrt{62_{1} \text { plus } 6_{4}^{2}}
$$

$6^{6}$ in the following analysis will represent the higher of the two故eans，and $6{ }^{2}$ will represent the lower of the two mane under comparison．

8．The significkt aifferance，

$$
\frac{\mathrm{p}}{\mathrm{C}_{\mathrm{D}}}
$$

Tablix XI

## pIxcis

|  | GRDNES 5.86 |  | GRADS 788 |  | GRavas e \＆SuOL |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Indian | White | Indian | 部去to | Indian | minte |
| Eumber | 142 | 1538 | 87 | $12 \% 5$ | 29 | $10 \% 1$ |
| Wean Score | 55.3 | 69.9 | 57.9 | 72.8 | 65 | 75.9 |
| S．${ }^{\text {a }}$ | 10.63 | 18.9 | 13.96 | 13．4 | 13.54 | 22.2 |
| $\frac{3}{60}$ |  |  |  | 2 |  | 3 |

 comparison is between Grades inve and six of the Indian chitiren tested and grades five ant alt of the noma set moy beachere and his

Genry ${ }^{9}$ ．Garrett，Statistics in Psychology and gheation，（London， Wew York，Toroato：Longmens，Green and Co．．1937）p． 211.
collaborstors. Thy table leal only whthe Pitch best.
$3 / \sigma_{0}$ represents the significant or true aifference. Since $s$ D/6 of 3. ox more repreaents a diference of virtual certantyt it

 that any $D / 6_{0}$ greater thon 3 . definitely inaicates that the true difference is greater then zexo. The result 15 gives this just so much additionat security. It in, therefore, likely thet these Indian chaldren from grades five and six are definttely inferior to the winte children used in the noms of the sade grade.

This Slentficant afference of virtual certainty kininishes in tha comparimons of swades meven and eithty enc still nore in the comparisons of grodes nixe and anove. However, the respective difference of ${ }^{n}$ virtual certainty" 9.2 and 4.3 are resl end very certaly. Two questions arise in intexpreting the diminishag certaintiss with Sdvance in se or achooling

1. Does test performance improve with $w g$ and schooling mong Indisn ehaldren? (of course, in respect to plech)
2. Does hearing acusty improve vith age or schoolingt





 aversee Indan child bested han not. becmuse of environmental facomy, develonea the power vader scrutiny in thet rave as the white child
tested by seashore. He startec, as it were, in a race a number of paces behind the pegiming line. Se is increasiag as he ratures. Add to the InAtan child nore wears af axporience in whate soctety and more years of white man's education, he may, according to Indications, ether approch a condition where no siguffeant difference exists, or even mhere he overtakes and surpasses whte man, in Pitch acuity. 铞is suggestion, howover, constitutes a problen for m entirely searate piece of research which may prove irattul.

TABLE XII
wowness

|  | Inctan | $\frac{53_{2} 6}{\text { Tinte }}$ | $\frac{\operatorname{and} y}{\operatorname{In} \sin }$ | $\frac{7 \% 8}{5 i n t e}$ | $\frac{\text { Gendis }}{\operatorname{Indian}}$ | $\frac{9 \text { ghuth }}{\text { white }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sumber | 142 | 1705 | 37 | 2352 | 29 | 1087 |
| Rean score | 63.2 | 70.7 | 60.5 | 74.1 | 70 | 81. ${ }^{\text {a }}$ |
| 3. D. \% | 11.2 | 10.3 | 14.18 | 10.2 | 11.78 | 10.8 |
| $\frac{0}{60}$ | 7.7 |  | 4.9 |  | 3.45 |  |

The three comparisons with nown on the Loudness show a certain aiference, 7.7 . 4.9, and 3.45 , respectively, for esch of the grade groups. This means that there is a difference of "virtual certainty". thet the Indtan children tested are inferior to the nows in respect to discriminating decrees of loudness. The decreasing difference situation as in the gitch tect prevails. The neen improves with maturation at nascly the same rate wh these Indians as anong the whites in the nores.

|  | $\text { Indian } \frac{5 \% 6}{\text { Ghite }}$ |  |  |  | $\frac{\text { MRNDS } 9 \text { \& ADULT }}{\text { Indian White }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Number | 142 | 1644 | 87 | 1192 | 29 | 1104 |
| Mean Score | 67.3 | 73.6 | 71.5 | 77.4 | 66 | 83.5 |
| S. D. | 15.6 | 10.9 | 12.2 | 10.4 | 17.95 | 9.2 |
| $\frac{D}{6 D}$ | 4.6 |  | 4.4 |  | 4.3 |  |

The Rhythre test on Table XIII shows that the actual difference seems to decrease between whitas and Indian childron as they advance in grade groups. The mean scoras increase with age for both Indians and whites; however, the mean score on grade nine and above take a definite drop with the Indian group. This may indicate that if rhythm is a special aptitude of Indians, rhythmic aptitude shows itself at an early age in native form but diminishes as the Indian associates more and more in white society. This is an assumption from figures, and again, is seed for furthor study.

The significant difference on Table giv of 2.5 is sufficiently close to 3. to make a vixtual differancs. In fact, ninety-nine chances out of a hundred the difference would remain reel in favor of the white norms no matter hom many cases would be sdded to the number of Indians tested. In other words, it is very problengtical whether it is possible to increase the reliability of the Indian means by adding more cases.

|  | $\begin{gathered} \text { GRADMAS } \\ \operatorname{Inctan} \end{gathered}$ | $\begin{aligned} & 5 \& 6 \\ & \text { 縕 } \end{aligned}$ | $\begin{aligned} & \text { Gady } \\ & \text { maisan } \end{aligned}$ | $\begin{aligned} & 7 \& 8 \\ & 7 \mathrm{otte} \end{aligned}$ | criows <br> Tutha | 9 a ADUS wht te |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Hamber | 142 | 1609 | 87 | 1817 | 29 | 1116 |
| deen Score | 63.9 | 68 | 66.2 | $\%$ | 68.5 | 76.8 |
| 玉. ${ }^{\text {b }}$ | 11.6 | 10.3 | 13.8 | 10 | 10.6 | 9.7 |
| $\frac{p}{s_{e}}$ | 4.55 |  | 2.5 |  | 4.32 |  |

mate 2 y
Tuxben

|  |  |  | Gubgt \% \% |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Indian | White | Indiam | hat te | Indien | nite |
| Mumber | 148 | 1644 | 87 | 828 | 29 | 852 |
| Sean score | 68.9 | 68 | 68 | 70.6 | 64.6 | 75.1 |
| 3. ${ }^{\text {a }}$ | 11.5 | 30.4 | 10.65 | 10.3 | 11.85 | 9.7 |
| $\frac{.}{62}$ | 5.1 |  | 6.9 |  | 5.3 |  |

The difterences sureat for grades inve and wix and grades mine axd above, as indicsted by $5.2,6.9$, and 5.2 , respeotively.
 Scores of the Inciam chitaren to not mproach those of the norne. The aifierences are true significand difierences. One can sem that


TA
TOMAI H2YCRY

|  | GRADES 586 |  | GRODS 768 |  | G84]S 9 8 GOLI |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Indian | Thito | Indion | Whate | Indian | White |
| Number | 142 | 1472 | 87 | 1064 | 29 | 980 |
| Mean Score | 44.9 | 67.6 | 56.5 | 69.6 | 64.5 | 33.3 |
| s. ${ }^{\text {a }}$ | 16.3 | 17.7 | 20.5 | 17.9 | 14.24 | 13.5 |
| $\frac{1}{60}$ |  |  |  |  |  | . 9 |

seeas to depend rore on raturation than any af the other itve tests. The scores on gredes five and six, also on seven and eight, could approach the same mean almost by hit man misa guessmoric. Although, this is unituely with so large a sompling. The posulte indicate efther that the test was not understood propery or that this type of talent is not an inderent capactty mong Indian chluren. Obvigosly, this capacity grow proportionately from grade group to grode groug. Age conands a neet for a keener meaory from any group of people. zis can be seen on the white norm also.

The sigras from the norms of the Indian children seem to indicate a rather wusually wide range above and below the mean score of thit type of menory capactity. men the adult group is aproached there appears a lessening of the range of disperion.

In general, the Inden children rated below the norms get up by Seashore ane his collaborators on all six teate. Although the numerg in the individud groups tested were very much snaller than the number of cases used in settine up of the standerde, nevertheless the
significant aifferences axe in almost all cases over 3. sicunfyut Virtual certainty of differences irsespective of an increased number of cases in like circunstances.

The major portion of the comparisons are herewth concluded. Now will follow soveral comparisons which may have some value, such as:
2. Comprison of mulcal talents among three lerger tribeg represented. (Famees, Foncas, and Otoes)
2. Comparison of maical talents betwen the Indisn Doys and sirle.
3. Comparison of musicel talents Detmen Boardimes Bohol Indian chllaren and gublic School Indian children.
4. Discussion of the nusical talento of Indian children who have been recognizod as possessing better than the averege masic abilty.
5. Comparison of the musteal talent of amber of mil-0100d Induens with a nuber of less then one-fourth blood madans.

Row Table XII the Indinn chlldren tested were divided according to tribes. The three tribee having the largest numbar of test participats vere selectea for special congideration. There were not sufficient numbers of the other tribes avallable in orex to fora rasonably feliable conclustonn about them. Besides the problea of sufficient numbexs, the ge three tribes are less mixed with other tribes or wht be bood then many other local Indion groms.

The following meries of statenents can best sua up any important points of comparison on Table xuIt.

1. The Pamees, Ponces, and otoes ho not ditfer essentially or sufficieatly in any of the gix talents in regpect to their mean score of naraber correct.



2. The troe differeaces on the pitch test indicate that the Roncas and Pamees diffor less thas the Foncas and Dtoes. The pamees and Otoes differ more than the other two pairs. The Pamees had the highost mean score; the otoes hat the lowest.
3. The troe differences on the bouncess teet indicate that the Pamaes and poncas differ aore than the Otoes and Poncam. These two phieg differ wore then the Otoes and Pamees. The Poncas nad the highest mean score; the pamoes hed tho lowrst.
4. The true diferences on the Rhythm test indicate that there is more of a fifference betneer the Pawnees are Poncas on thit test than on the Pitch or Loudness tests, and also, than between the Otoes and Pamees. There is the least difierence between the otoes and Poncas. The difference of 1.6 between Pawnes and Poncas incicate 94 in 100 chances that the true difference is greater thon zero. The Poneas had the highest mean score: the Pamees had the lowest.
5. The true difference on the Time test indicates that the pamees and Poncas, also the Pamees and Otoes, differ lesm than the Poncas and Otoes in 解s respect. the Poncas had the highest mean scora; the Otoes had the lowest.
6. The true afference on the Timbre test indicetes thet the Fawnees and Poncas, also the Poncas and Otoes difrer less than Pamees and Otoes. The Pamees and otoen approch a aignticant aiferonce With 1.7 or 96 in 100 chences that the true aifference is greater than sero. The Pamees had the highest mean score; the otoes had the lovest.
7. The true differences on the Ponal henory test indicate that the Panees and Poneas affer loss than the Poncas and Otoes, also
that the Fanaman ank otoos differ nore tham the other wo peirs. The differences in all the pairs are, horever, so noglighble thot they are wot sufficiently importeat te note except for the sate of petty argungi. Ne Bannees have the highest msen secre; the otaen heve the lowest.

Ho denlsfte reason can be afexea to thase obteined an trae dtefrences. wo explanation can be fortheoming since there is a definte lack in consistexicy of aperiority sion comparing these three tribes.

TABLE RYIII
BOYS AND GIRAS

|  | Finct |  |  |  | maymes |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Boys | Girl | Boys | Girls | Bogs | Girls |
| Yumber | 140 | 120 | 140 | 120 | 140 | 180 |
| Mean score | 57 | 60.5 | 66.8 | 68.5 | 67.7 | 69.5 |
| \$. 2. | 13.65 | 15.45 | 13.38 | 12.78 | 13.92 | 14.3 |
| $\frac{\bar{m}}{\sigma_{5}}$ | 1.9 |  | 1.05 |  | . 7 |  |
|  | T5 ${ }^{\text {d }}$ |  | THBR |  | Totax mexony |  |
| Wuaber | 140 | 120 | 140 | 120 | 140 | 120 |
| Mobar \$core | 06.6 | 65. 3 | 64 | 84.9 | 49 | 52.9 |
| 3. ${ }^{\text {a }}$ | 13 | 10.55 | 11.09 | 10.76 | 14 | 20.8 |
| $\frac{p}{6_{D}}$ | 1.8 |  | . 7 |  | 1.6 |  |





 tara.







## 

|  | +1404\% |  |  |  | 3nymme |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 7oswitue | 2ublie | Woardine | rublic | Basplin | \%nblic |
| Watera | 182 | 08 | 153 | 9 | 168 | 38 |
| Wean Scora | 59.4 | 57 | St.3 | \% 6 | 7 | ¢ ${ }^{\text {a }}$ |
|  | 2.6\%7 | $2{ }^{2} \mathbf{2}$ | 12,86 | 14.53 | 12. 67 | 12.08 |
| $\frac{2}{6 D}$ | 2.3噱 |  | *.35 |  | 1.6 |  |
|  | THE |  | \%anes |  |  |  |
|  | 7nardata |  | Sotratay | 7ubute | Ftatime | \%ubutc |
| Mupber | 162 | 98 | 162 | 98 | 162 | \$0 |
| Bean score | 65.3 | 64.3 | 67.5 | 60.3 | 51.2 | 48.3 |
| 8. ${ }^{\text {d }}$. | 12 | 10.32 | 14 | 14.62 | 15.58 | 19.44 |
| $\frac{3}{63}$ | . 49 |  | 3.8 |  | 1.15 |  |

Although the results on wable xI do not reveal extreortinarty stgneficant differences, never theless, a muben of interesting onganisons cad conjertares cos be ventured with these results.
 tested ith this fursediction cone from the sane family background. In any cases, children thet heve been tested at the bearding schoot had hrothers sand asterg thoy had been teated by the same oxpertmenter in the ratpective public school in the comontity wers they live. hont of the other chfldren teated in the public schools have close kinfolles that hed been tested in the boarding school. Whe family backeround are yery similer. The needi are the same. The local gochan, caltural, economic, and health levels are the sane. The local yucattonal meld Agency recentiy stated that it was the conviction of the agent that che chadaren attending the bowding school mert truly fortunate, fe felt that they mare bence taken care of much aore adequately in all the najor areas of good living than those living at home. Jurthermare, he felt that, since all suffered from poor hone eavironnent, therefore all constistute reasonable alependency problens. Since the boratag school can eccowadate but a linited number of the trae dependency ensas the others have to make out as best as they cew home. In other mordis, the boarding school children are not detinitely the worst off in areas of proper living; it is rare of matter of fairly equal home envisoment. If this is a true picture of cond tions one covid expect reaconably valit azswers to the following guestions:

1. Does life away from home, in b bomeging school onvironmentr affect test perforance, or sharpen musteal talente?
2. If any alfferences occur between the two growps sre they a regult of ofther atate public schol influence operating uncer the
state curriculuar geared to the neede of white society, or federal Indicn schocl infiuerce, whote teachere aro federal atvil wervata, and fhose curriculum is geared to Indian neede?

It appears thet, in geners, the chstaren atterdiat the foderal beardine school we slightly more talented in wespect to all mat one ©f the areas tectec. It $\$$ geubtrul whether the instraction in susic st the bearding sehool te met better than that Er ethor sehools. However, this is true: the invtruation offered in the boardine school
 were they attending pablic schools, mould not be in the social position to avall thenselve of Secial attentiex in such instruction mat is net tho fent of the schoo, but possioly more of a netate problem


 note, beanse whatpored opperthat in wyexal areas, such as better
 mental atsatude of the childrea, beeaxse of the onvtronment plamed
 that can tate place whewe thero is no reservel os motral profutice

 seores. This last statement, alone wh tho previously mentronet ideal


Thexe agyears to be no paticulax factitacation tor the atiference


Since there in a xeal or sigulfican tifference in the results of the timbre test, a guestion arises milich would be os possible interest to rasearch workers in acoustics; can the recognition of changea in tone quality or tunal thabre be affectad by phystcal and mental environment?

TMBLIM XX


|  | PITCE |  | Loupises |  | RHY ${ }^{\text {Rem }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 8011 | One-Fourth | Full | One-sourth | 3 l | One-fourth |
| Mumber | 30 | 26 |  | 26 | 30 | 26 |
| Whean Score |  | 63.8 | 68.7 | 67.6 | 71.8 | 71 |
| b. D. | 19.39 | 11.64 | 14.9 | 12.45 | 11.97 | 14.86 |
| $\frac{D}{60}$ | . 44 |  | . 3 |  | . 219 |  |
|  |  |  | TYBES |  | TOWAL METORY |  |
|  | Tuil | One-Pourth | Full | One- Wourth | Fuall- | One-7ousth |
| Wumber |  | 25 |  | 26 |  | 26 |
| Mean score | 61 | 64.6 |  | 68.5 | 55.6 | 59 |
| S. ${ }^{\text {b }}$ | 10.48 | 9.8 | 9.35 | 12.61 | 80.37 | 15.9 |
| $\frac{1}{60}$ | 1.3 |  | . 5 |  | . 7 |  |

There are no signtficant afferences between the results of the thirty full-blood Thdems and the twentymix Incian children of less than one-fourth Inden blood.

The subjects involved in this analysis were deliberately selected. The thirty fall-blood Indian children were solected from four tribes which had a preponderance of full-blood Indians. They were the Rawnees, Poncas, Otoes, and Kickapoos. Between seven and ofghtubjects were selected from each of these tribes. An even grade aistribution is also reprosentee in this ersde. whe witer drem nurbers corresponding to the individual subjects in order not to select any subjects irreapective of know special aptitudos. The same core was taken in selecting the twenty-six Indian children wh have less than one-fourth Indion blood.
the witer feels zeenly that the very small gampling is, indeed, a serious linatation. However, he feel穯 that the results indtoste definite noteworthy drends that tay be of far-reaching fugortance.

The fact that this stall group of full-bloods and nearly witec diffet wery sitghtly from each other, the difierence favoring the full-bloods very minutely on thre of the six tests, and favoring the nasily whites on tive renainine thre tastin inacate alinost a toss-up in the aistribution of talents.

In all livelihood, Seashore dit not build his noms around subjects from the lewer stretur of society. Fhis lower sacial or oconomic group was moth likely part of the lower extrenty of the probability curve. The results of Table NX seen to indicate that the differences discovered between the Indian children and the nows may not be as much a racial problea as an enviromental problen. It could almost apyear that this group of Indtan children could rine their counterparts soneviat below the heavy clustering of scores of a probability curve set up by the Seashore norms mong an
equal-sized group of white children.
It had been pointed out that the type of enviroment fror ghich these Indian children spring and in which they live part of the time, and from which the ninety-eleht tested at public schools live from one end of the gear to the other, is not conducive to accepted good physical, mental, or moral growth. The children have been found retarded in many areas, not because they are Indian, but because of the type of gnvironent frow which they come. Regardless of the nature or nurture theory adhered to by seashore and his collaborabort in regard to masical talent testing (that these are raw, native talents, and as such are not easily subject to improvement through gee, frowth, or specific practice, except to a linited extent), the oriter feela that there is an indication in Tables XIX and \%x that it the Indian chidren tasted had possessed that sade average Anertcan social, economic, moral, aesthetic, and hell thackeround as those children tosted by seastore, the reauls mola yossibly have been much more favorable.

There are indications, then, that the indian test resul 6 would be more neariy the the qesults hom ta the norma if for cack case tested by Seashore in his setting of nomms one moula select an inden child of sme environment (in every raspect). To woris out such a problam accurately, it would be necessary to tate into account the complete backeround of each und maze certain that the pairing of an

 be wery costly and timenconsuang. But suce th stucy would for all tines establisin mether or aot there is a racial afference in mutal talent. However, it is problematical whether or not one shoula be

Interested in zuch an Indan problen. Arter all, the major share of Indian porulation is the type testod in this gtudy. A fur ther etudy would be of intereat, arter the Indian has taken hat place in white society on a proportionately eçat plane. This stady takes the Indian
 to worls. It entablshes hew talented theso garticular Intian children are now regardese of gossible outcomen under future deal or controllea condetions.

THBL XTI


| 2test |  | man moma 0 名 \$ Contice | B. ${ }^{\text {a }}$ |
| :---: | :---: | :---: | :---: |
| Fitch | 22 | 70.4 | 9.5 |
| Lowdness | 22 | 76.9 | 6.7 |
| Raystua | 22 | 72.8 | 8.4 |
| 515 | 2 L | 75 | 6.4 |
| 2inbre | 22 | 74.5 | 7.26 |
| Tonal femory | 23 | 67.3 | 14.7 |

 cutstanding ability. This is not the case. These twenty-two students are Indian chaldren who have taize music opportunities more seriously than others, and have grasped opportunities offered to all. Welr performance is not bettor than many of the others out the athtude
 to start out with as the others but made more of thetr nusical experiences.

Henty-two is a mall gromp but it is near tho same pax cont of any wasedected groug of stadentis whe caxy ont the gusic wort of a chool more successhilly than others. They raw quate now the nom gat to for sevanth and etights erghe students, in a fem toun above the nora, wad in
 Gtudentis whentred highemt on the seashora feasures, but those who can be doyeaded upor to put over masical progren.

## CEAMME $V$

## SUHARY OT RGSULTS ARD COMCIUSIONS

The results fron this study analyzed in Chapter IV may be summerized as follows:

The Indian children in the three grade groups rate considerably lower than the chilaren in the norins set up by Seashore in the Revision of the feasurem of furical Talents.

The result of the fitch test show that there is a real difference in favor of the norms in each grade group. here is, however, a strong indication that this efference decreases considerably from grade to grade.

A comparison of the results on the Loudness test indicates that A real difference existh in favor of the noras. This difference decreases from grade to grade.
 and the nomm in respect to the Byytion test. There is a slight decresse In difference from grade to ershe.

The results of the pme test also indicated a real eifference between the Irdian children tested and the norms.

The rsaults of the crabre test show that although there are afferences on other tosts, here there is a real afference in each of the Indian groups teated when compared with the nomms.

The results of the tonal Menory fost show that a real difírence exists between the noxas and the Indian children.

The differences betwen the Pamees, Poncas and Otoes on each of the aix musical talent tests are very insiendificant.

Of the three tribal groups the Pamees had the highest mean score and the Otoes had the lowent mean score on the Pitch test.

The Poncag had the highest mean score on the Loudness test and the Pempees had the lowest mean score.

The Ponces also had the highest mean score on the Rhythe test and the Powness has the lowest mean score.

The Roncas had the highest mean score on the mime test and the Otces had the lovest mean score.

The Pamees had the highest mean core on the mabre test and the Otoes bad the lowest mean score.

The afferences of the three tribes on the phal gemory test Indicate that the Pamees had the highest mean soore and the otoos had the lowest. In this case the differences are so alight that they can be disregarded.

The India girls had a higher mean score on all tests except the Mue test. However, these aifferences are so insignificant that tomey cannot be counted as real.

The Indian children attending the boarding school had a higher mean score on all but the Loudness test than thoso attending public shool. The difierence between the public school and boarding school groups are not significant, but thoy indscate the poscibility of onvironaental influences.

There is no siguificant difference between the full-blood chileren and those wao mere anost completely whte. The full-bloods hod a sleghtly higher mean score on the Lowaneas, Rhythe, and mimbre tests, and the children who wero almost white had a slightiy hither mean score on the fitch, Time, and Tonsl Mowory bests.

The special maic studentry testad ranked near the nom set ur for the seventh and eightiv zrace eaildren.

Before araming conclusions fron these results it appears necesagy to ovaluate the result to an extent that the reeder all not regard them an senarglizations concernins all Indians.

The results cleasiy show in what respect and to what extent these perticular Indian children differ from the nomma There are indieationa, however that the results would be different if a continuous and dieqergnt oxvironeent prevailed. rinese indications are takea froa the observations that the full-bloods tate as high as those Indian cailaren who heve but negligiole per cent of Tnaian blood, and that the boardug school Indian children under better sectal and physical environnents rate somemhet higher that thone Intitan chingen living Ghroweont the gear of the reservetton and ottenting the nearest publie school. Also, it was observed Irom the resulto of three or tha teats that the diferences between the Indian chilarea ard the norms decreased ss they advanced in grade level.

Theme staterants do not intend to cantradict any general statemente made by authortica concemine the test battery used, especially one Dy Geashore:

Whey do not mensure tresuing or achievement in masic. wrellonco in theae the condtion for artistic mprectation and sizills in performance; but it does not itself guarmatee such achievements. They do not 楽essure intelligence, fagling. or the will to morta ghey do not furnish e single all-inclusive finder to mustoal ability they ghoula not be avereged; each score is but an ften in the musical proille. Hey are not
 tut the use of them requires tact, skill, abtlity to motivate, favorable thosphexe, ama man in interpretation.

[^2]In thete two statements are contalnad as good a critical evaluation of the tsgt battery used as any. Fhe writer has found a fem cases who rated hith on the musical talent testa, but rated very low in performance and will to werk." shwever musio stadeata who had an apparent will to moris rated hish also.

## COMCTESIORS

The we ter feel safe in onelusing that the tost battery used tneteates quite well the reletave postiton ot the subjects tested If the six areas of madeat talonts in mespect to tho name that have ben set wo.

Tith no apolosien or exemses the Indan chiducn tested are Infexion to the morus in the gix axeak tostod.

The Indian children are mowe talented in Rhythic sense than in the other tive mreas

These same Jubun children are least balented in Tonal henory end in Sexse of Pitch.

The special masc students performed better on the besto than the seventh and etghth exatexs in the rorad and are therefore rore talented in these wespecta desptte thetr sockal handicaps.
 Interpretations and Instructions. (Canden, Tew fersey: Rca handiacturing 60.. 1939) p. 4.

There ig an inducted trend shomiyg that Indian children under
 tests as the children used it che roms.
shis last staterant opens possibilitias for mach useful research. It is a possibility that neods to be explored.

These conclustons are net definite to the end that they intend to btegatize the mains, placing then in an inferior category. Ne conchusions reached are based on figures and the effect certaniny is melloved when the reader aequalnts himself with the bonaticaps wader which mony Inclans liwe aven nowadays, who have not been able

 Winck hinder then from distinguishime thenselves more.

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Pypist: Kildrea Fruett


[^0]:     of the Seashore heasures of 发的ical ghent, (University of Iowa Buditer win. 65, Town Gity: Univareity of Tote Press, 1940).
     reste in Prodiction of several kinds os Ensic Grades " Journal of Sonlet psycholosey XIA fone, 1935\%, 3af-350.

[^1]:    ${ }^{8}$ Ibia．p． 34.

[^2]:    HThe conclusion to be dram mat be lintted syectically to the frolication of the factor which has been neasurea undex control. Thus if we measure the sense of rbythat and Inind very supertor performance, the conclusion is not that the rubject is masteal; it is merely that the individual has - very superiox sense of rlaythe. *10

